Station E Substation Project

Draft Initial Study and Mitigated Negative Declaration •
January, 2014

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Station E Substation Project

Draft
Initial Study and Mitigated Negative Declaration

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MITIGATED NEGATIVE DECLARATION

Introduction

SMUD proposes the Station E Substation Project (also referred to as "the Proposed Project") to replace the existing North City Substation. This Draft Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared to evaluate the environmental effects of the Sacramento Municipal Utility District's (SMUD) Proposed Project for compliance under the California Environmental Quality Act (CEQA). SMUD is the lead agency responsible for CEQA compliance.

Project Description

SMUD proposes to develop the Station E Substation Project (Proposed Project), located in the City of Sacramento in Sacramento County, California. The Proposed Project consists of installing a new substation with overhead and underground utility lines, steel structures, and electrical equipment to replace an existing substation. The Proposed Project would replace the existing North City Substation, which was constructed in the 1950s and has reached its planned operational end of life.

SMUD is proposing to replace the existing North City Substation with the new Station E Substation to improve operational reliability. Replacing the substation at an adjacent site allows construction of the new Station E Substation to occur while maintaining electrical service from the existing North City Substation. The Proposed Project would meet SMUD's performance objectives by locating the substation near the load center of the existing service area.

Findings

As the CEQA lead agency, SMUD finds that the construction and operation of the Proposed Project would not cause a significant adverse impact on the environment with implementation of identified mitigation measures for potentially significant impacts to air quality, biological resources, cultural resources, geology and soils, greenhouse gases, hazards and hazardous materials, and hydrology and water quality. A Mitigation Monitoring and Reporting Plan is provided in Appendix A to this IS/MND that summarizes the identified mitigation measures.

Cumulative Impacts

CEQA requires that SMUD assess whether its Proposed Project's incremental effects are significant when viewed in connection with the effects of other projects. Based on the analysis presented in this IS/MND, the Proposed Project would not contribute incrementally to considerable environmental changes when considered in combination with other past, present, or planned projects in the vicinity. The environmental effects of

the Proposed Project were determined to be less than significant or would be less than significant with mitigation incorporated. The Proposed Project is also located in a developed area with few other planned, proposed, or recently completed projects in the vicinity with effects that, with the Proposed Project, would contribute to cumulatively considerable impacts.

Growth-Inducing Impacts

A project is defined as growth inducing when its development directly or indirectly triggers population growth within a region. SMUD's Strategic Directive Four requires that the ability to meet its customer's energy requirements in a safe manner remains a core value. SMUD exists as a public agency to supply electrical energy to customers in the Sacramento area in response to regional growth projections. It has an obligation to serve existing and new development approved by the local agencies and jurisdictions within its service area, which includes most of Sacramento County. SMUD does not designate where and what new development may occur. Consequently, when SMUD plans or proposes additional service capacity, it is to accommodate development or growth that has been previously reviewed and approved by cities or counties in its service territory. Therefore, development of the Station E Substation would be considered growth accommodating rather than growth inducing.

Determination

On the basis of this evaluation, SMUD concludes:

The Proposed Project does 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, substantially reduce the number or restrict the range of a rare or endangered species, or eliminate important examples of the major periods of California history or prehistory.

The Proposed Project would not achieve short-term environmental goals to the disadvantage of long-term environmental goals.

The Proposed Project would not have impacts that are individually limited, but cumulatively considerable.

The Proposed Project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

No substantial evidence exists to demonstrate that the Proposed Project would have a substantive negative effect on the environment.

This IS/MND has been prepared to provide the opportunity for interested agencies and the public to provide comment. Pending public review and SMUD Board approval, this IS/MND will be filed pursuant to CEQA Guidelines Section 15075. Written comments should be submitted to:

SMUD Environmental Management
Attention: Jose Bodipo-Memba
6201 S Street B203
Sacramento, CA 95817

All comments need to be submitted prior to the close of public review.

Signature
Jose Bodipo-Memba
Environmental Management Specialist III

Dec. 27, 2013
Date

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ACRONYMS AND ABBREVIATIONS

Term	Description
AB	assembly bill
ASTM	ASTM International
BMP	best management practice
BPS	best performance standard
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CO_2	carbon dioxide
CRHR	California Register of Historic Resources
CWA	Clean Water Act
EIR	Environmental Impact Report
EMF	electromagnetic field
EPA	United States Environmental Protection Agency
GHG	greenhouse gas
HCP	Habitat Conservation Plan
IS	Initial Study
kV	kilovolts
MND	Mitigated Negative Declaration
MRZ	mineral resource zone
MVA	million-volt ampere
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
ND	Negative Declaration
NOI	Notice of Intent
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
OPR	California Office of Public Resources
PAH	polycyclic aromatic hydrocarbon
PM_{10}	particulate matter under 10 micrograms in diameter
$PM_{2.5}$	particulate matter under 2.5 micrograms in diameter

ACRONYMS AND ABBREVIATIONS

Term	Description
ROG	reactive organic gas
RWQCB	Regional Water Quality Control Board
SF_6	sulfur hexafluoride
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SWRCB	State Water Resources Control Board
SQIP	Stormwater Quality Improvement Plan
UPRR	Union Pacific Railroad
USFWS	United States Fish and Wildlife Service
VELB	valley elderberry longhorn beetle

1.0 INTRODUCTION

1.1 Project Overview

The Proposed Project's purpose is to maintain and improve SMUD's electric transmission and distribution system reliability within the downtown and midtown areas of the city by replacing an existing older substation with a new substation with more efficient equipment and increased capacity to accommodate potential future increased demand for electrical service triggered by planned growth. The Proposed Project would build a new electrical substation with steel structures, transmission towers, overhead and underground electrical components, a control building, and a perimeter fence.

The Proposed Project would replace the existing North City Substation, which was constructed in the 1950s. The existing North City Substation has reached its planned operational end of life, and SMUD is proposing to replace the existing substation with the new Station E Substation to improve operational reliability. After the proposed new Station E Substation is operational, the existing North City Substation would be dismantled. No future land uses are planned for the existing North City property, and potential future uses of that site are not evaluated in this document.

Siting the Proposed Project adjacent to the North City Substation allows SMUD to minimize new electrical transmission and distribution infrastructure, and meet performance objectives for the substation to be located near the electrical load center of the service area.

1.2 Purpose of This Document

The purpose of this draft Initial Study/Mitigated Negative Declaration (IS/MND) is to disclose environmental impacts that may result from the Proposed Project. This IS/MND assesses the environmental effects of the Proposed Project, as required by the California Environmental Quality Act (CEQA), and is in compliance with State CEQA Guidelines (California Code of Regulations [CCR] Title 14, Section 15000, et seq.), which requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects.

As the CEQA Lead Agency for the Proposed Project, SMUD has prepared the following IS to determine if the Proposed Project may have a significant impact on the environment. In accordance with CEQA Guidelines Sections 15063 and 15074, an Environmental Impact Report (EIR) must be prepared if there is substantial evidence supporting a fair argument that the Proposed Project under review may have a potentially significant impact on the environment. A Negative Declaration (ND) is a written statement prepared by the Lead Agency describing the reasons why the

Proposed Project would not have a significant impact on the environment, and therefore would not require preparation of an EIR (CEQA Guidelines Section 15371).

From the CEQA statute, Sec. 21064.5, a Mitigated Negative Declaration (MND) is a ND that is

> *…Prepared for a project when the initial study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.*

Regarding the decision to prepare an ND or an MND, CEQA Guidelines Section 15070 states the following:

"A public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when either:

(a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or

(b) The initial study identifies potentially significant effects, but:

- Revisions in the project plans or mitigation measures made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
- There is no substantial evidence, in light of the whole record before the agency, that the project as revised and with mitigation measures incorporated may have a significant effect on the environment."

SMUD has analyzed the potential environmental impacts associated with the Proposed Project and determined that the Proposed Project's impacts would be reduced to a **less-than-significant** level with implementation of the identified mitigation measures. SMUD has also determined that the proposed mitigation measures would not cause new significant environmental impacts. Therefore, the preparation of an EIR would not be required and an MND was determined to be the appropriate environmental document for the Proposed Project to comply with CEQA.

1.3 Public Review Process

This draft IS/MND shall be circulated for a minimum 30-day public review period to individuals and interested parties who have requested a copy, local libraries, the City of Sacramento, and appropriate resource agencies. A Notice of Intent (NOI) (Appendix B) is being distributed to property owners of record identified by the Sacramento County Assessor's office as having property within 500 feet of Proposed Project boundaries. The NOI is advertised in local newspapers and SMUD's website (www.SMUD.org). The NOI identifies where the document is available for public review and invites interested parties to provide written comments for incorporation into the final IS/MND. The document is available at SMUD's headquarters 6201 S Street in Sacramento, CA 95817, and online at www.SMUD.org.

A public meeting about the Proposed Project that will be held at SMUD's headquarters at 6201 S Street in Sacramento, CA 95817-1899 during the public review period. The purpose of the public meeting is to receive comments on the IS/MND. A copy of the NOI is included as Appendix B.

A final IS/MND, including written responses to comments received on significant environmental issues, will be prepared. The final IS/MND will be circulated to all parties commenting on the IS/MND before a decision on the Proposed Project is made.

1.4 SMUD Board Approval Process

The SMUD Board of Directors must adopt the IS/MND and approve the mitigation monitoring plan (Appendix A) before it can approve the Proposed Project. The project and environmental documentation pertaining to it will be formally presented to the SMUD Board of Directors for information at an Energy Resources and Customer Services Committee meeting. The SMUD Board of Directors will then consider adopting the final IS/MND at the next Board of Directors meeting. The Energy Resources and Customer Services Committee and Board of Directors meetings are held at SMUD's Headquarters at 6201 S Street in Sacramento, CA 95817-1899, and are open to the public. The public may comment at both meetings.

1.5 Organization of the Initial Study and Mitigated Negative Declaration

This IS/MND is organized into the following chapters:

Chapter 1.0: Project Overview and Background. This chapter summarizes information about the Proposed Project, describes the public review process for the IS/MND, and includes the CEQA determination for the Proposed Project.

Chapter 2.0: Project Description. This chapter gives a detailed description of the Proposed Project.

Chapter 3.0: Environmental Checklist. This chapter assesses Proposed Project impacts by resource topic. The Environmental Checklist form, from Appendix G of the State CEQA Guidelines, is used to make one of the following conclusions for each impact of the Proposed Project:

- A conclusion of ***no impact*** is used when it is determined that the Proposed Project would have no impact on the resource area under evaluation.
- A conclusion of ***less than significant impact*** is used when it is determined that the Proposed Project's adverse impacts to a resource area would not exceed established thresholds of significance.
- A conclusion of ***less than significant impact with mitigation*** is used when it is determined that mitigation measures would be required to reduce the Proposed Project's adverse impacts below established thresholds of significance.
- A conclusion of ***potentially significant impact*** is used when it is determined that the Proposed Project's adverse impacts to a resource area potentially cannot be mitigated to a level that is less than significant.

Mitigation measures, if necessary, are noted following each impact discussion.

Chapter 4.0: List of Preparers. This chapter identifies the individuals who contributed to the environmental document.

Chapter 5.0: References Cited. This chapter identifies information sources used to prepare this document.

Appendices. This portion of the document contains technical reports and other information supplementing this IS/MND.

1.6 Environmental Factors Potentially Affected

Impacts to the environmental factors below are evaluated using the checklist included in Chapter 3.0. No significant impacts were identified. SMUD determined that the environmental factors checked below would be less than significant after the implementation of mitigation measures. It was determined that the unchecked factors would have a less than significant impact or no impact.

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

DETERMINATION: On the basis of this initial evaluation:

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

☒ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Proposed Project have been made by or agreed to by the Proposed Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

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

☐ I find that the Proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

Signature	Jan. 1, 2014 Date
Jose Bodipo-Memba Printed name	Sacramento Municipal Utility District Lead Agency

2.0 PROJECT DESCRIPTION

2.1 Introduction

Sacramento Municipal Utility District (SMUD) proposes to develop the Station E Substation Project (Proposed Project), located in the City of Sacramento in Sacramento County, California. The Proposed Project consists of installing a new substation with overhead and underground utility lines, steel structures, and electrical equipment to replace an existing substation. The Proposed Project would replace the existing North City Substation, which was constructed in the 1950s, and has reached its planned operational end of life.

SMUD is proposing to replace the existing substation with the new Station E Substation to improve operational reliability, increase efficiency, and allow for increased capacity if electrical demand increases in the service area. Replacing the substation at an adjacent site allows SMUD to utilize existing transmission and distribution infrastructure and maintains performance objectives for the substation to be located near the electrical load center of the service area. The Proposed Project would locate the new substation on a vacant parcel of land adjacent to the existing substation.

The Proposed Project includes an expansion of capacity at the substation by 20,000,000 volt amperes (20MVA). If demand for electricity increases in the service territory in the future and additional capacity at the substation is required, SMUD would consider the option of expanding capacity at that time. If future demand in the service area increases such that additional capacity at the Proposed Project is required, SMUD will conduct an additional environmental review to address potential effects of construction and operation of the additional substation equipment and facilities.

2.2 Project Location

The Proposed Project site is in the City of Sacramento, California, located north east of downtown at the north end of 20th Street, south of the American River, west of Sutter's Landing Regional Park and the 28th Street Landfill, and east of the Blue Diamond almond processing facility. The south and west sides of the project are separated from adjoining land uses by the Union Pacific Railroad (UPRR) tracks. South of the Proposed Project area is the Boulevard Park neighborhood and Grant Park in Sacramento.

The Proposed Project site is located on Section 31 of Township 9 North, Range 5 East, of the Sacramento East U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (quad), Mount Diablo Baseline and Meridian. The centroid coordinates of the Proposed Project site is 38° 35' 10.31" North, 121° 28' 23.45" West.

The existing site can be accessed via a paved road at the end of 20th Street. An overview of the Proposed Project area and vicinity is shown in Figure 2-1. The existing and proposed new substation locations are shown in Figure 2-2. The site plan of the Proposed Project is shown inFigure 2-3.

2.3 Project Objectives

The overall mission of SMUD is to provide energy with quality and reliable service to its customers. To meet SMUD's overall mission, the objective of the Proposed Project is to maintain and improve SMUD's energy transmission and distribution system reliability within its service area by replacing an existing older substation with a new substation. The current substation was constructed in the 1950s and has reached its planned operational end of life. The location of the new substation adjacent to the existing substation would allow SMUD to meet objectives for system performance and minimize energy loss by its location near the center of the service area and by being able to utilize existing electrical transmission and distribution infrastructure up to the existing substation.

The Proposed Project would continue the function of the existing substation to step down electrical voltage to a level usable by households and would also expand the substation capacity by 20MVA. If demand for electricity further increases in the service territory in the future and additional capacity at the substation is required, SMUD would consider the option of expanding capacity at that time and conduct an additional environmental review.

2.4 Proposed Project

The Proposed Project would involve replacing the existing North City substation with a new substation and corresponding supporting infrastructure on an approximately 15.42 acre parcel. The Proposed Project includes dismantling the existing substation after the new substation enters operation. The Proposed Project does not include any future planned or proposed land uses on the existing substation site.

The Proposed Project would serve the same service territory as the existing North City Substation, and step down transmission line voltage from 115 kilovolts (kV) to 21kV through power transformers. The existing seven 115kV overhead and underground transmission lines and seven 21kV overhead and underground distribution lines would be transitioned from the existing substation to the location of the new substation.

Figure 2-1 Project Vicinity

URS Sacramento Municipal Utility District
Station E Substation Project

Figure 2-2
Existing and Proposed New Substation Locations

Figure 2-2 Existing and Proposed New Substation Locations

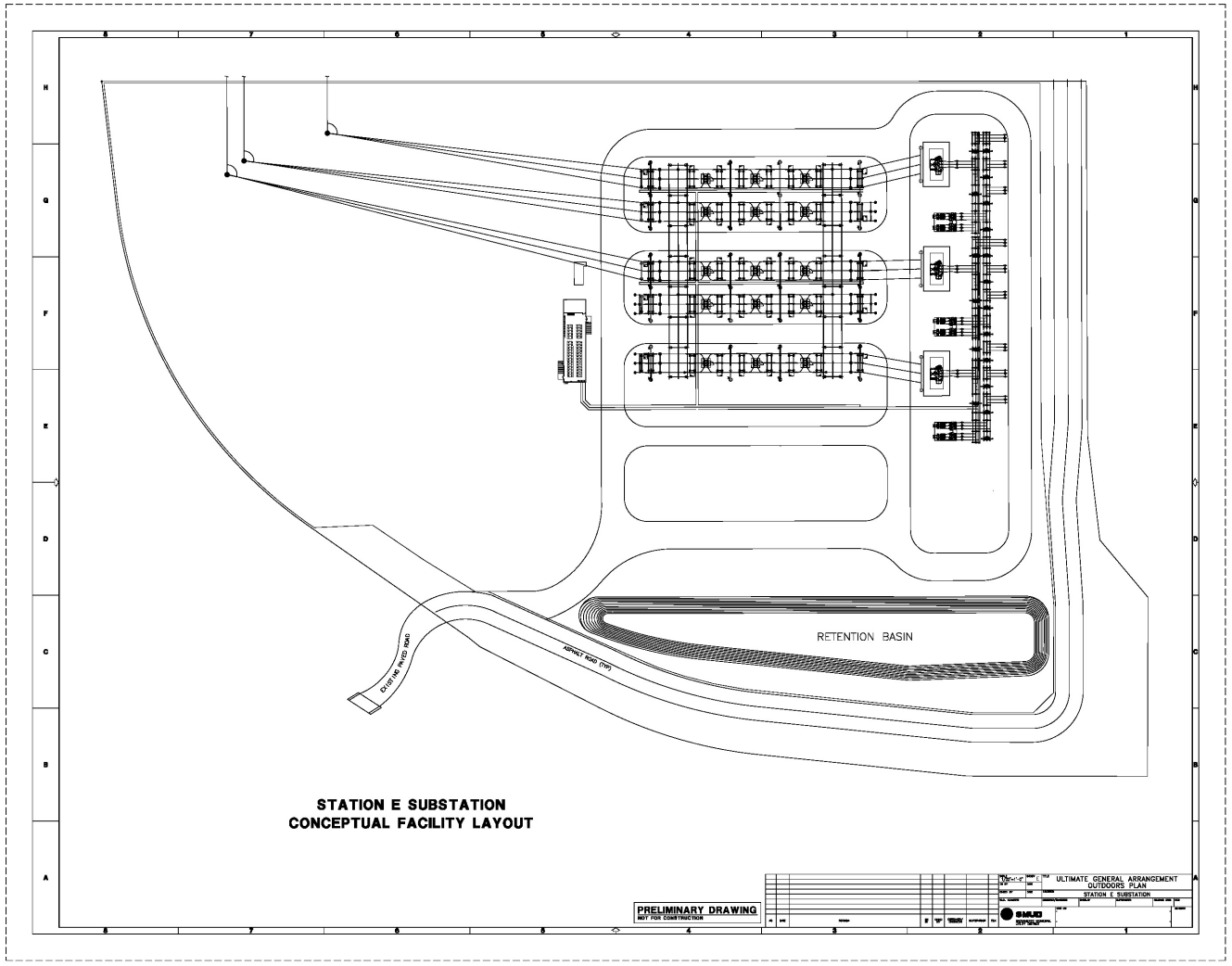

Figure 2-3 Proposed Project Substation Site Plan

Electrical substations are an assemblage of electrical components that are connected to allow for a circuit to be shut off during normal operations or during abnormal conditions. The substation receives electrical power from a generating station via incoming transmission lines and then delivers electrical power to customers via the outgoing distribution network.

The Proposed Project would consist of: electrical equipment including power transformers; circuit breakers; capacitors; instrument transformers; control and relay equipment; remote monitoring equipment; telecommunications equipment; batteries; steel structures; transmission towers, switches; overhead and underground conductor and cable; electrical bus; and, a control building (approximately 24 by 90 feet).

Steel structures that would support equipment, electrical buses, and conductors would vary in height from 15 feet to 40 feet. Steel structures that support overhead conductors entering the substation from the transmission and distribution lines would be up to 70 feet tall. Incoming transmission line conductors would be supported by steel poles up to 170 feet tall. Power transformers and circuit breakers inside the substation would be approximately 40 feet tall. To maintain site security and public safety, the Proposed Project's substation would have a 9-foot fence around the perimeter of the substation. The fence would be chain link with barbed wire and razor ribbon at the top.

Construction would include: clearing and grubbing; removing the existing metal storage building on the west end of the property; removing the existing reinforced concrete foundations; importing fill soil and site grading; installing drainage facilities, sanitary sewer and storm facilities, below-ground conduit systems, underground electrical grounding, reinforced concrete foundations, asphaltic concrete surfaced roads, rock surfaced areas, fencing, electrical equipment enclosures, a control building, galvanized steel structures, overhead electrical bus, power transformers, circuit breakers, switches, overhead and underground electrical conductor and cable, and other electrical equipment. The staging area would be located on the Proposed Project site. The Proposed Project also includes the construction of an access road along the southern property line to the eastern property line and north along the eastern property line to allow access to the property north of the Proposed Project.

Upon completion of the Proposed Project, SMUD would transition the existing transmission and distribution interconnection from the existing North City Substation to the new Station E Substation. Following the transfer, SMUD proposes to dismantle the existing substation by removing electrical equipment, structures, and the control building.

2.4.1 Existing Conditions

There are no current existing active land uses on the Proposed Project's site. Past land uses of the site included a cogeneration plant and landfill. Remaining onsite facilities from the plant include a below-ground open concrete vault, a concrete above-ground water holding structure, a metal storage building, and concrete pads. The American River Flood Control District uses a portion of the asphaltic concrete pad for stockpiling rock.

The existing North City Substation steps down the transmission line voltage of 115kV to the distribution voltage of 21kV through power transformers. Generally, the North City Substation serves SMUD customers in parts of the downtown and midtown areas of the city. Adjacent land uses include SMUD's existing North City Substation and vacant parcels immediately to the north of the Proposed Project site, the Blue Diamond processing plant to the west, residential and commercial uses to the south, recreational uses at Grant Park to the south, and Sutter's Landing Regional Park and the 28th Street Landfill to the east. A UPRR rail line borders the southern and western sides of the proposed new substation property (Figures 2-1 and 2-2).

2.4.2 Proposed Project Components

The following sections provide detailed information about Proposed Project components, plans, phasing, schedule, and construction methods.

2.4.2.1 Electrical Equipment

The substation would include three 40 MVA 115kV/21kV power transformers. Each power transformer contains 6,500 gallons of insulating oil. Typically, mineral oil is used in the transformers. Each transformer would have a secondary containment system to collect and hold any oil leaks from the transformer. The maximum average sound level for each transformer would not exceed 80 decibel A-weighting (dBA) measured at a distance of 6 feet around the periphery of the transformer. The measurements are usually made at one-third and at two-thirds height of the transformer tank.

The 115kV power circuit breakers would use sulfur hexafluoride (SF_6). The 21kV power circuit breakers would use air as an insulating medium. During operation, the sound levels for the circuit breakers would not exceed 140 decibels (dB). The substation would also include battery systems using lead acid, located inside the control building or in an enclosure in the substation.

The Proposed Project's new substation would include 21kV capacitors. The capacitors contain 2 gallons of insulating oil. The oil is typically nonhazardous synthetic oil.

The Proposed Project's new substation would include 115kV and 21kV instrument transformers. The 115kV instrument transformers contain approximately 8 gallons of insulating oil. Typically, mineral oil is used in the transformers. The Proposed Project's new substation would also include 21kV/480V station service pad-mounted transformers that contain approximately 85 gallons of insulating oil, which is typically mineral oil. The existing 115kV underground transmission lines consist of electrical cables inside of mineral-oil-filled pipes.

2.4.2.2 Transmission and Distribution Lines

The proposed substation would use the existing three 115kV overhead transmission lines that currently cross the American River to the north and enter the existing North City Substation at its northern end. These existing lines would be extended into the Proposed Project's new substation. The Proposed Project would use the four existing 115kV underground transmission lines that are parallel to and east of the existing UPRR tracks. These lines would be intercepted just south of the existing substation and would be redirected onto the new substation property. The existing underground and overhead 21kV lines would also be intercepted and redirected into the proposed substation. No new electrical transmission or distribution lines would be constructed, and the Proposed Project would not include any work on existing transmission lines over the American River or in the American River Parkway to the north. Similarly, the Proposed Project would not include any work on existing distribution lines in the Boulevard Park neighborhood to the south.

2.4.2.3 Screening and Landscaping

The initial construction of the Proposed Project would not include landscaping. At such time that landscaping standards or screening requirements are established by the City of Sacramento, SMUD will work with the City to construct the agreed-upon improvements. Until that time, SMUD would leave land between the property line and the new substation chain link fence for potential installation of landscaping and/or screening improvements.

2.4.2.4 Storm Water

The Proposed Project site would be graded to collect storm water drainage for infiltration into the existing property sub-grade. A 0.88-acre onsite retention basin would collect surface runoff. The Proposed Project's retention basin design includes drainage storage, dry wells for infiltration, and evaporation (see Figure 2-3).

2.4.2.5 Water/Sanitary Sewer

SMUD would install one restroom with lavatory for use by SMUD workers when they visit the Proposed Project site monthly or when they perform occasional maintenance. SMUD would request water service from the City of Sacramento that would be sized for the proposed restroom. It is expected this service would be located at existing city water facilities on the southern property line. If the Proposed Project is approved, SMUD plans to install a sanitary sewer septic tank and leach line system for a sanitary sewer.

2.4.3 Operation and Maintenance Activities

The Proposed Project would operate continuously. Substation maintenance would occur on a regular basis from two to four times per month for internal inspections and four times per year for perimeter maintenance. Major maintenance would occur about every 3 years. After the Proposed Project has been in operation for an extended period of time, the transformer oil would require filtering. Impurities in the filtrate would either be removed and recycled or disposed of in accordance with federal, state, and local hazardous waste disposal requirements.

2.5 Project Schedule and Phasing

Construction of the Proposed Project would occur in multiple phases. The phases of the Proposed Project and required equipment and durations are described below. A summary table of the Proposed Project is provided below in Table 2-1.

SMUD would begin construction of the Proposed Project's new substation following completion of the environmental review, detailed design, and permitting process. Construction is currently planned beginning in 2014 and would be completed in 2016. Construction would require approximately 80 weeks and would include eight phases. The estimated duration of each phase is provided in Table 2-1. The phases may be intermittent and not all pieces of construction equipment would be used for the entire duration of a construction phase.

Table 2-1 Phases and Duration for the Station E Substation Project

Project Phase	Duration
1. Demolition	4 weeks
2. Grading, Drainage and Access Road	10 weeks
3. Fencing and Retaining Wall	4 weeks
4. Civil Construction	8 weeks
5. Grounding, Conduit, Encasement	8 weeks
6. Steel Erection	8 weeks
7. Electrical Equipment Assembly (new substation, new transmission line, and cutover)	26 weeks
8. Demolition of Existing North City Substation	12 weeks
Total	80 weeks

Source: SMUD, September 2013.

2.5.1 Phases

2.5.1.1 Phase 1: Demolition

Demolition and removal of existing structures at the Proposed Project's property including the storage shed, asphalt, and concrete pads would include clearing vegetation and grubbing. Demolition of existing structures at the Proposed Project's new substation site would require about 4 weeks, and would include use of the following vehicles and equipment: excavators with breakers; semi-end dumps; front loaders; 1-ton service trucks; pavement grinder; 30-ton crane; 49-horsepower (hp) air compressors (250 cubic feet per minute [cfm]); water truck; 20-hp generator; street sweeper, and construction staff vehicles.

2.5.1.2 Phase 2: Grading, Drainage and Access Road

The Proposed Project's site would be graded for substation equipment, drainage, and access roads. Approximately 47,000 cubic yards of material for engineered fill will be imported to the Proposed Project site. Grading, drainage facilities, and access road creation would require 10 weeks, and include use of the following: grader; scraper; sheepsfoot compactor; 1-ton service trucks; 20-ton tandem haul trucks; rubber tire drill rig; 5-ton 20-foot semi flatbed truck to deliver casings; front loader; semi-end dump truck; 30-ton crane; water truck; 20-hp generator; street sweeper; and construction staff vehicles.

2.5.1.3 Phase 3: Fencing and Retaining Wall

The perimeter fence and retaining wall would be constructed. Construction of fencing, perimeter grounding, and a retaining wall would require 4 weeks, and include use of the following: 2-ton trucks; skid steers with drills; semi-flatbed truck for material delivery; backhoe; concrete trucks; 3- to 5-ton roller; street sweeper; and construction staff vehicles.

2.5.1.4 Phase 4: Civil Construction

Water lines, drainage pipes, cable troughs, and foundations would be installed. Construction of water lines, drain pipe, foundations, and the cable trough would require 8 weeks and use the following equipment: truck-mounted drill rig; track-mounted drill rig; 1-ton service truck; front loader; semi-end dump trucks; 5-ton 20-foot semi flatbed truck for materials delivery; 16-hp welder; water truck; concrete delivery trucks; 20-hp generator; street sweeper; and construction staff vehicles.

2.5.1.5 Phase 5: Grounding, Conduit, Encasement

Electrical grounding, below-ground conduits, and encasements would be constructed and installed. Installation of the grounding, conduit and encasement would require 8 weeks and use the following equipment: backhoes; 5-ton 20-foot semi flatbed truck; concrete truck; 3- to 5-ton roller/compactors; front loader; semi end dump trucks; 1-ton service trucks; construction employee vehicles; and a street sweeper.

2.5.1.6 Phase 6: Steel Erection

Erection of structural steel components and steel poles at the new substation would occur. Erection of the steel would require 8 weeks and the following vehicles and equipment: semi flatbed trucks for steel delivery; 60-ton crane; 60-foot manlifts; 10,000-pound reach forklift; construction employee vehicles; 1-ton service trucks; 20-hp generator; 16-hp welder; and a street sweeper.

2.5.1.7 Phase 7: Electrical Equipment Assembly (New Substation, New Transmission Line and Cutover)

New substation equipment and overhead electrical conductors and cable would be installed to provide connectivity to existing incoming electrical transmission service and outgoing distribution service. Assembly and installation of the substation equipment and transmission and distribution lines and the cutover from the old substation to the new substation would require 26 weeks and include use of the following: SMUD crew vehicles; SMUD crew trucks; SMUD foreman trucks; 5-ton 20-foot semi flatbed truck for deliveries; 290-ton crane; 9-axle semi flatbed trucks; 20-hp generators; SMUD network crew vehicles; and a street sweeper.

2.5.1.8 Phase 8: Demolition of Old North City Substation

After the Proposed Project's new substation is operational, demolition of the existing North City substation would occur and aboveground structures would be removed. Demolition and removal of the existing substation equipment would require 12 weeks and would use the following equipment: excavator; 150-ton crane; 30-ton crane; front loader; semi flatbed trucks; 1-ton service trucks; 290-ton crane; 9-axle semi flatbed trucks; 16-hp welder; 20-hp generator; construction employee vehicles; street sweeper.

2.6 Permits and Approvals

The Proposed Project would comply with all applicable laws, permits and required approvals. The Proposed Project is expected to require the following federal, state, and local government permits and approvals.

2.6.1 Federal

No discretionary federal agency permits are anticipated for this Proposed Project.

2.6.2 State

- General Construction National Pollutant Discharge Elimination System (NPDES) Permit from the Central Valley Regional Water Quality Control Board (RWQCB).

2.6.3 Local

- City of Sacramento building, grading, and tree removal permits.
- City of Sacramento's NPDES Permit
- Sacramento Metropolitan Air Quality Management District's (SMAQMD's) Off-Site Mitigation Fee Program

3.0 ENVIRONMENTAL CHECKLIST

Pursuant to CEQA Guidelines Section 15063(c)1, an IS should provide the lead agency with sufficient information to determine whether to prepare an EIR, an MND, or a ND for a project. The CEQA Guidelines state that an IS may identify environmental impacts by use of a checklist, matrix, or other method, provided that conclusions are briefly explained and supported by relevant evidence. If it is determined that a particular physical impact to the environment could occur, then the checklist must indicate whether the impact is Potentially Significant, Less Than Significant with Mitigation, or Less Than Significant. Findings of No Impact for issues that can be demonstrated not to apply to a Proposed Project do not require further discussion.

3.1 Aesthetics

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Environmental Setting

The Proposed Project site is located within the City of Sacramento's Central City Community Plan area, specifically the River District Focused Opportunity Area (City of Sacramento, 2009c and 2009d). The River District area is characterized by a mix of industrial, commercial, and residential uses, and undeveloped parcels. The American River Parkway and south levee of the American River are located approximately 1,150 feet north of the Proposed Project.

The Proposed Project site is located north of the Boulevard Park Historic District, a historic-era residential community that includes an eclectic mix of residential architectural styles and a dense canopy of mature trees. The Boulevard Park Historic District also includes a mix of light industrial, community park (Grant Park) and elementary school (Courtyard Elementary) land uses that are separated from the site by the UPRR rail road tracks and elevated berm. The berm parallels the southern and western boundaries of the project site, substantially limiting views of the site from the surrounding developed areas.

The dominant visual features to the west include the elevated UPRR rail line and berm, the Blue Diamond almond processing plant, and an elevated conveyor system that extends from the Blue Diamond plant over the UPRR rail line to the project site. The Sacramento Northern Bike Trail is located between the Blue Diamond plant and the UPRR rail line. It extends north from C Street between 19th and 20th streets to the American River Bike Trail.

The properties to the east have historically been used for municipal waste disposal (landfill) and are visually characterized by grasslands and an elevated landfill mound. Sutter's Landing Regional Park is located further to the east. Directly northwest is an existing electrical substation with surrounding grasslands extending north to the southern levee along the American River. The levee is characterized by a dense strip of riparian vegetation along its northern toe. The UPRR bridge crosses the American River to the north of the project site. Views of the Proposed Project site from surrounding areas are largely obscured by topography (the UPRR railroad berm and American River levee) and mature trees. Existing views of the Proposed Project site were captured from seven locations, as shown on Figure 3-1. Figures 3-2 through 3-8 show existing views from Sutter's Landing Regional Park, the American River Parkway South Levee (to the north), Grant Park at 22nd and C Streets, the American River Parkway south levee (to the northwest), Grant Park at 21st and C Streets, the Boulevard Park neighborhood from 23rd and C Streets, and the project site from the site's southeast corner, respectively.

Views of the Proposed Project Area and vicinity are described below.

- Viewpoint 1: Views from Sutter's Landing Regional Park looking west toward the Proposed Project site (Figure 3-2) include the white Blue Diamond building, a transmission tower, and overhead utility wires and structures.
- Viewpoint 2: As shown in Figure 3-3, views looking south to the Proposed Project site from the American River Parkway levee include ruderal vegetation, the existing SMUD substation, overhead transmission lines and steel structures, mature trees, downtown Sacramento's commercial and office buildings, the white Blue Diamond Almond building, and other industrial buildings. Prominent features of this view include ruderal vegetation, the two existing SMUD transmission structures, and the white Blue Diamond building.
- Viewpoint 3: From Grant Park at 22nd Street and C Street (Figure 3-4), prominent features in the view looking northwest toward the Proposed Project site include mature trees, the UPRR berm, and Grant Park's baseball field and the field lighting poles.
- Viewpoint 4: Views looking southeast to the Proposed Project site (Figure 3-5) from the American River Parkway levee include ruderal vegetation, the existing SMUD substation, overhead transmission lines and steel structures, the UPRR rail line, and mature trees.
- Viewpoint 5: From Grant Park at 21st Street and C Street (Figure 3-6), prominent features in the view looking northeast toward the Proposed Project site include mature trees, the UPRR berm, and Grant Park's baseball field and the field lighting poles.
- Viewpoint 6: From 23rd Street and C Street (Figure 3-7), prominent features in the view looking north toward the Proposed Project site include mature trees, a railroad berm, vehicles parked on 23rd Street, and light industrial buildings.

- Viewpoint 7: Views looking northwest across the Proposed Project site (Figure 3-8) from the UPRR berm near the site's southeastern corner include the perimeter chain-link fence, ruderal vegetation, the former Blue Diamond storage shed, and the existing SMUD North City substation.

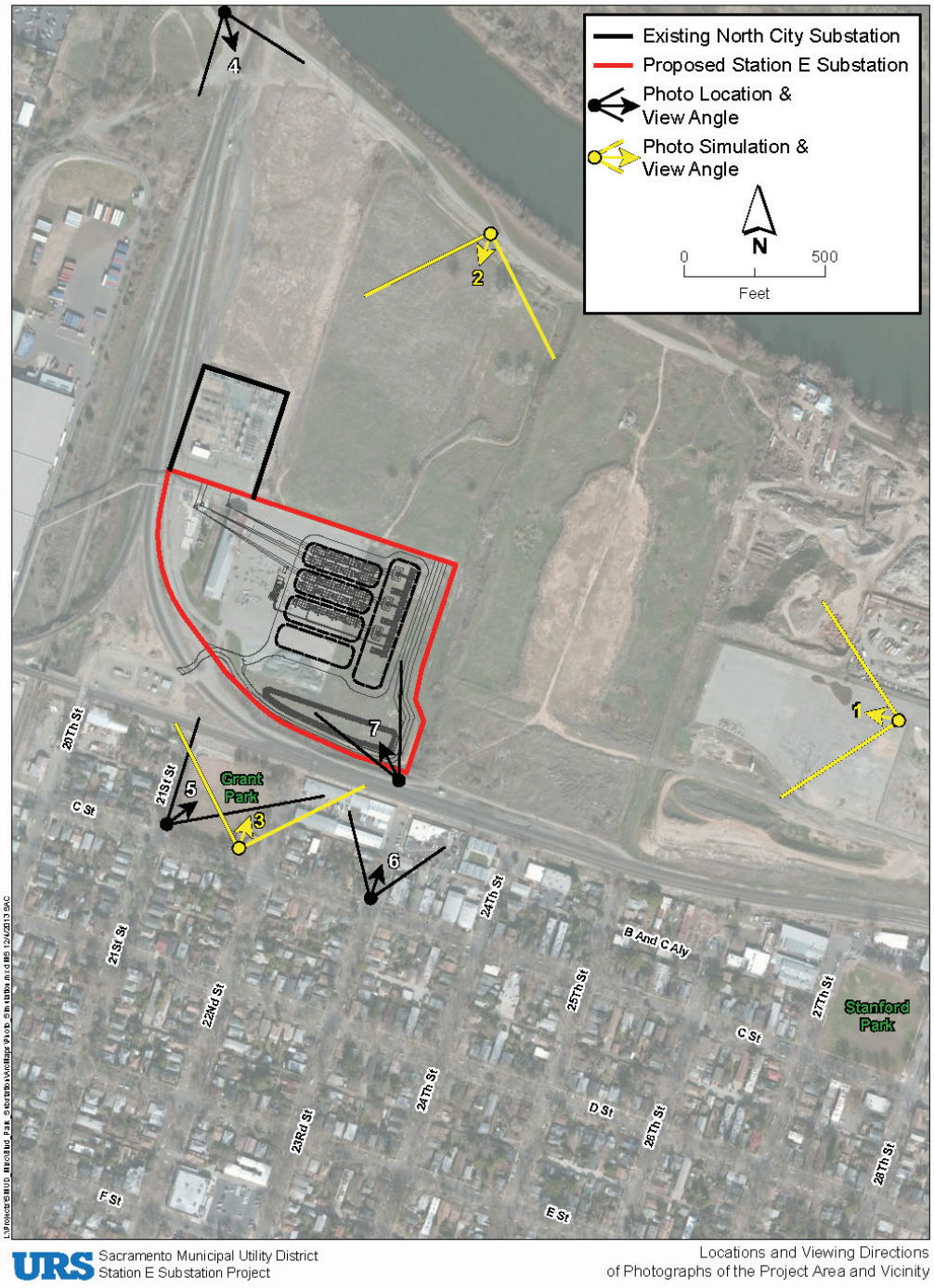

Figure 3-1 Locations and Viewing Direction of the Existing and Simulated Views

Figure 3-2 Existing View from Sutter's Landing Regional Park (Viewpoint 1)

Figure 3-3 Existing View from American River Parkway South Levee (Viewpoint 2)

Figure 3-4 Existing View from Grant Park at 22nd and C Streets (Viewpoint 3)

Figure 3-5 Existing View from American River Parkway Levee looking Southeast (Viewpoint 4)

Figure 3-6 Existing View from Grant Park at 21st and C Streets Looking Northeast (Viewpoint 5)

Figure 3-7 Existing View from 23rd and C Streets Looking North (Viewpoint 6)

Figure 3-8 Existing View from UPRR Berm Looking Northeast (Viewpoint 7)

Regulatory Setting

Federal

The Wild and Scenic Rivers Act (Title 16 of the United Stated Code [USC], Sections 1271 to 1287) established federal protection and preservation of some of the country's remaining free-flowing rivers. Eligible rivers can be designated as Wild River Areas, Scenic River Areas, or Recreational River Areas. The American River from Nimbus Dam to the confluence of the Sacramento River is designated as a Recreational River Area and is managed through the American River Parkway Plan.

State

No state regulations are applicable to aesthetic resources in the project area or vicinity as the project is not located within the viewshed of a state scenic highway.

Local

The City of Sacramento's 2030 General Plan (City of Sacramento, 2009a) contains aesthetic resources-related goals and policies to protect scenic views, minimize light and glare, promote visually complimentary development, minimize the removal of existing resources, and establish standards for new development.

The American River Parkway Plan (Sacramento County, 2008) provides land use policies that regulate uses in the Parkway, including the location and type of activities, as well as facilities and structures associated with those uses (Sacramento County, 2008). In addition, the plan provides policy guidance for uses adjacent to the Parkway. For the Parkway area between the confluence of the Sacramento and American rivers and the Capital City Freeway (Business-80), the Parkway Plan requires protection of aesthetic values by context-sensitive site planning and building design for development immediately adjacent to the Parkway. Further policies applicable to the Parkway reach near the Proposed Project site include the use of levees or other buffers to separate the Parkway visually from adjoining land uses. (Sacramento County, 2008).

Impacts and Mitigation Measures

Impacts

a) Have a substantial adverse effect on a scenic vista? — No Impact

No designated scenic vistas occur in the Proposed Project area or vicinity. Therefore, the Proposed Project would have **no impact** on scenic vistas, and no mitigation is required.

b) Substantially damage scenic resources, including, but not limited to: trees, rock outcroppings, and historic buildings within a state scenic highway? — No Impact

The Proposed Project is not located within the viewshed of a state scenic highway and does not include any scenic resources within the area of a designated state scenic highway. Therefore, the Proposed Project would have **no impact** on scenic resources within a state scenic highway, and no mitigation is required.

c) Substantially degrade the existing visual character or quality of the site and its surroundings? — Less than Significant

The Proposed Project site's visual character would be similar to the existing visual character of the North City Substation. The Proposed Project would replace an existing substation with newer and expanded equipment on an adjacent parcel. Views of the existing North City Substation and the Proposed Project area are largely obscured by topography and vegetation, and the sites are set back from surrounding land uses.

The Proposed Project area is represented by a mix of paved surfaces, ruderal vegetation, abandoned structures, power lines, and chain link perimeter fencing. As viewed from offsite locations, particularly from the Boulevard Park neighborhood to the south, the Proposed Project site's visual character would be represented by the limited electrical equipment associated with the existing substation facility that would

be partially visible over the UPRR berm. The Proposed Project site is visually isolated by this berm, which is located directly to the south and west. The site is also visually isolated from the north due to the dense riparian vegetation and levee along the American River. This visual isolation is represented by Viewpoints 4, 5 and 6. Visual simulations were not prepared from these surrounding viewpoints because little to no change in the visual character would occur following Project implementation.

The Proposed Project would introduce a new substation facility onto a site that was historically used for industrial uses and is directly adjacent to an existing substation facility. Project implementation would include construction of three steel poles up to 170 feet tall, steel structures up to 40 feet tall, and electrical equipment. These facilities would be taller and further southeast of the existing substation facilities. The existing North City Substation would be removed as part of the Proposed Project.

Simulated views of the Proposed Project from Sutter's Landing Regional Park, the American River Parkway South Levee, and Grant Park at 22nd and C streets are shown on Figure 3-9, Figure 3-10, and Figure 3-11, respectively. These locations were selected to represent typical locations from which members of the public would have the most unobstructed views of the Proposed Project, including recreational users of local parks and residential areas to the south. The simulated views include the removal of the existing substation facilities.

Figure 3-9 Simulated Views from Sutter's Landing Regional Park

Figure 3-10 Simulated Views from the American River Parkway South Levee

Figure 3-11 Simulated Views from Grant Park at 22nd and C Streets

View from Sutter's Landing Regional Park

Views from Sutter's Landing Regional Park to the east, as shown in Figure 3-9, would include the three steel poles of the Proposed Project and overhead transmission lines. The Proposed Project site is at a lower elevation than Sutter's Landing Regional Park and, as a result, the other proposed substation structures would be less visible. Views of the Proposed Project would be consistent with the existing visual character of views from this park location and the current views of industrial and above-ground utility facilities. Consequently, the Proposed Project would result in minor changes compared to existing views from Sutter's Landing Regional Park.

View from American River Levee and American River Parkway

As shown in Figure 3-10, the Proposed Project features would be partially visible from the American River south levee, with the most prominent features being the proposed three steel poles, and the two existing transmission structures. However, at this viewing location, few recreational users of the parkway would experience views of the Proposed Project. Designated bike, pedestrian and equestrian trails are approximately 3,600 feet (0.6 mile) north of the American River, and views of the Proposed Project site would be obscured by existing vegetation. The nearest bicycle or pedestrian recreationalists to the site would be users of the Sacramento Northern Bike Trail, which extends across the American River and between the white Blue Diamond Building and the existing North City substation. Due to existing topography and vegetation, recreationalists on this portion of the Sacramento Northern Bike Trail would have a temporary, peripheral view of the Proposed Project's facilities. The proposed substation facilities would result in a minor change from existing views of similar equipment and overhead transmission lines at the existing substation. In addition, the Proposed Project facilities would be located farther from the American River south levee and the Sacramento Northern Bike Trail, and would be consistent with the existing views of industrial and utility facilities in the area.

View from Grant Park and Boulevard Park Neighborhood

Views from the Boulevard Park neighborhood, including Grant Park at 22nd and C streets south of the Proposed Project site, include the Proposed Project's three steel poles (Figure 3-11). The existing UPRR berm separating Grant Park from the Proposed Project site would block views of the majority of the substation's structures. In addition, mature trees in Grant Park and in the surrounding neighborhood would minimize views of the steel poles and the substation to residents or recreationists nearest to the Proposed Project site. Although some equipment on the Proposed Project site would be visible from the Boulevard Park neighborhood, the Proposed Project is consistent with the industrial land use designation. The Proposed Project would replace an existing substation on an adjacent parcel. The specific heights, location, arrangement, and types of substation and transmission equipment would

differ, but the visual character of the Proposed Project is considered consistent with the existing substation. The Proposed Project is also considered consistent with the overall visual setting of the urban and industrial land uses in the River District area.

Therefore, the Proposed Project would not significantly affect the visual character or quality of the site and its surroundings. This is considered a **less-than-significant** impact and no mitigation is required.

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

The relocation of the substation would introduce no new sources of light and glare. Routine operation and maintenance work would be performed during the day. Outdoor security lighting installed at the proposed substation would be consistent with existing lighting at the existing substation. Proposed project facilities would be treated with either a dull green or light gray finish, which would minimize the potential for project facilities to emit glare. Therefore, a **less-than-significant impact** would occur, and no mitigation is required.

3.2 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 Range Assessment Project and Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Would the project:

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural uses?	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Environmental Setting

The Proposed Project is in an urban setting on the northern edge of Sacramento's midtown neighborhood. The surrounding land uses are characterized by existing and former industrial uses with a mix of commercial/residential/park uses to the south and the American River Parkway to the north. No agricultural or forestry resources occur in the Proposed Project area or vicinity.

Regulatory Setting

Federal

No federal agricultural or forestry regulations are applicable to the Proposed Project.

State

The Farmland Mapping and Monitoring Program land classifications system monitors and documents land use changes that affect California's agricultural land. This program, administered by the California Department of Conservation, produces maps, referred to as Important Farmland Maps, and statistical data that are used for assessing the significance and quality of agricultural lands. The project site is designated as both "Urban and Built-Up Land" and as "Other Land." Neither of these designations is considered farmland.

The California Land Conservation Act (Williamson Act) regulates a voluntary land conservation program that is administered by counties and cities, with technical assistance from the California Department of Conservation.

Local

No local agricultural or forestry regulations are applicable to the Proposed Project.

Impacts and Mitigation Measures

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? — No Impact

The Proposed Project site is designated as "Urban and Built-Up Land" and as "Other Land" in the Farmland Mapping and Monitoring Program land classifications system. The Proposed Project does not include land designated as Prime Farmland, Unique Farmland or Farmland of Statewide Importance and would not convert farmland to non-agricultural uses. Therefore, the Proposed Project would have **no impact** on farmland, and no mitigation is required.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? — No Impact

The Proposed Project site is zoned Heavy Industrial M-2. This zoning permits the manufacture or treatment of goods from raw materials. The Proposed Project site is not covered by a Williamson Act contract. Therefore, the Proposed Project would not conflict with and would have **no impact** on existing zoning for agricultural use or with a Williamson Act contract, and no mitigation is required.

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))? — No Impact

The Proposed Project site is zoned Heavy Industrial M-2. The site does not contain zoning for forest land, timberland, or timberland production. Therefore, the Proposed Project would not conflict with and would have **no impact** on forest land or timber zoning designations, and no mitigation is required.

d) Result in the loss of forest land or conversion of forest land to non-forest use? — No Impact

The Proposed Project site does not include forestry resources and no forestry resources occur in the Proposed Project area. The American River to the north contains a dense corridor of riparian trees, particularly along its northern bank. However, the riparian woodland is within the American River Parkway and is managed by the Sacramento County Regional Parks Department, and is not considered a forestry resource. Therefore, the Proposed Project would have **no impact** on forestry resources, and no mitigation is required.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? — No Impact

The Proposed Project site was historically agricultural land prior to 1963 based on the presence of orchards observed in historical aerial photographs, but was subsequently used as a disposal site for construction and demolition waste (Geosyntec Consultants 2013). A cogeneration plant operated on the site beginning in 1982 and operations ended in 1996, after which the property was left vacant (Tetra Tech EM Inc.2009). The surrounding properties have historically been used for municipal waste disposal (landfill) to the north and east, and have included industrial uses to the south and west, including an electrical substation to the northwest, a rail line elevated on an earthen berm along the site's western and southern boundaries, and the Blue Diamond almond processing plant to the west. The American River to the north contains a dense corridor of riparian trees, but these trees are not

considered a forestry resource and would not be impacted by the Proposed Project. No agricultural or forestry resources occur in the Proposed Project area and the Proposed Project site is not designated as farmland per the Farmland Mapping and Monitoring Program land classifications system. Therefore, the Proposed Project would have **no impact** on agricultural or forestry resources, and no mitigation is required.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.3 Air Quality				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
b) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Environmental Setting

The Proposed Project site is in Sacramento County, in the Sacramento Valley Air Basin. The Air Basin is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on east. These mountain ranges create a barrier to airflow, which can trap air pollutants in the valley under certain meteorological conditions, such as temperature inversions and stagnation events. Temperature inversions are caused by a reversal of the typical atmospheric temperature gradient, reducing the movement of air between lower and upper levels. Stagnation events occur primarily in autumn and winter when a lack of surface winds and vertical flow reduces the influx of outside air, and allows air pollutants to become concentrated.

The Sacramento Valley has a Mediterranean climate, characterized by hot dry summers and mild rainy winters. During the year the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist breezes from the

south to dry land flows from the north. Further information on the topology, meteorology, and climate of the Sacramento Valley Air Basin can be found in the SMAQMD Guide to Air Quality Assessment in Sacramento County (SMAQMD 2013).

Regulatory Setting

Federal

The federal Clean Air Act (CAA) and the 1990 Clean Air Act Amendments (CAAA) govern air quality in the United States and are administered by the United States Environmental Protection Agency (EPA). The EPA is responsible for setting and enforcing the National Ambient Air Quality Standards (NAAQS) for atmospheric pollutants, and regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. Areas where air pollution levels persistently exceed one or more of the NAAQS may be designated "nonattainment" by the EPA. As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

State

The California Air Resources Board (CARB) is responsible for meeting state requirements of the federal CAA and ensuring implementation of the California Clean Air Act (CCAA), which requires areas to achieve and maintain the California Ambient Air Quality Standards (CAAQS). CARB oversees activities of local air quality management agencies and is responsible for incorporating Air Quality Management Plans for local air basins into a SIP for EPA approval. It is also responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.

Local

The Proposed Project is within the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD). SMAQMD develops plans to achieve state and federal air quality standards, implements air pollution control strategies and regulations, and provides guidance on air quality assessments.

Sacramento County is designated as a nonattainment area for federal and state standards for ozone, particulate matter 10 micrometers in diameter or smaller (PM_{10}), and particulate matter 2.5 micrometers in diameter or smaller ($PM_{2.5}$). SMAQMD has adopted the Sacramento Area Air Quality Attainment Plan for ozone and particulate matter, which is designed to achieve these standards.

The plan presents comprehensive strategies to reduce ozone precursors (reactive organic gas [ROG] and nitrogen oxides [NO_X]), PM_{10}, and $PM_{2.5}$ emissions from stationary, area, mobile, and indirect sources. Such strategies include the adoption of rules and regulations, enhancement of CEQA participation, adoption of local air quality plans, and stationary, area, mobile, and indirect-source control measures. In addition, the Sacramento County General Plan includes land use strategies and policies that are consistent with regional air quality attainment goals.

SMAQMD has also produced the Guide to Air Quality Assessment in Sacramento County (SMAQMD, 2013). This guide includes recommended methodologies and thresholds to determine the significance of air quality impacts. Applicable mass thresholds for nitrogen oxide (NO_x) and ROG emissions include the following:

- Construction emissions: 85 pounds per day of NO_x
- Operational emissions: 65 pounds per day of NO_x, 65 lbs per day of ROG

The Proposed Project would also be subject to applicable state and district rules and regulations, which include but are not limited to:

- SMAQMD Rule 403: Fugitive Dust. This rule requires that reasonable precautions be taken to limit fugitive dust generation during operations such as construction, grading, or solid waste disposal.

- California Code of Regulations Title 13, Section 2449. General Requirements for In-Use Off-Road Diesel Fueled Fleets: This regulation includes fleet performance requirements and idling limits to reduce emissions of NO_x, ROG, PM, and other criteria pollutants.

- California Code of Regulations Title 13, Section 2485. Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling: This regulation limits the idling of diesel-fueled commercial motor vehicles to reduce public exposure to diesel particulate matter and other air contaminants.

Methodology

Emissions from construction and operational activities were estimated using the California Air Resources Board (CARB) OFFROAD and EMFAC2011 models. Consistent with SMAQMD Guide to Air Quality Assessment in Sacramento County, this method was selected due to the types of equipment and site-specific schedule that would be difficult to incorporate into other emission estimation programs such as CalEEMod or SMAQMD Road Construction Emissions Model which use the same CARB OFFROAD and EMFAC2011 models as primary inputs. Modeling assumptions and further details are provided in Appendix C. Where applicable, the analysis used methodology and assumption recommendations from the SMAQMD Road Construction Emissions Model v7.1.4 and the SMAQMD Guide to Air Quality Assessment in Sacramento County. Emissions from the Proposed Project were evaluated using the significance thresholds provided in the SMAQMD Guide.

Impacts and Mitigation Measures

a) Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation? — Less than Significant with Mitigation

Construction

Construction emissions are typically short term or temporary in duration. Grading would generate fugitive dust, including PM_{10} and $PM_{2.5}$. Fugitive dust emissions are primarily associated with site preparation and vary as a function of parameters such as soil silt content, soil moisture, wind speed, acreage of disturbed area, and miles traveled by construction vehicles on- and off-site.

Substation construction activities are anticipated to begin in 2014 and to be completed in approximately 20 months (80 weeks). Demolition of existing structures at the new substation site would require about 4 weeks. Installation of the perimeter fence and retaining wall would require 4 weeks. Grading and access road creation would require 10 weeks, and construction of water lines, drain pipe, foundations, and the cable trough would occur over 8 weeks. Installation of the grounding, conduit, and encasement would require 8 weeks and erection of the steel structures would require 8 weeks. Assembly and installation of the new substation equipment and transmission and distribution lines and the cutover from the old substation to the new substation would require approximately 26 weeks. Demolition and removal of the existing substation equipment requiring an additional 12 weeks.

Although construction equipment would generate emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$, SMAQMD has only developed a mass emission threshold for NO_x of 85 pounds per day. SMAQMD has established performance thresholds for PM emissions. As Table 3-1 shows, unmitigated project construction emissions would exceed SMAQMD's NO_x thresholds. This impact would be considered **potentially significant**. Implementation of Mitigation Measure AIR-1 would maintain NO_x emissions generated during construction to a **less-than-significant** level by reducing the emissions below the SMAQMD mass emission threshold for NO_x. Mitigation Measure AIR-1 includes a combination of construction equipment emission reductions such as a 20 percent reduction compared to the average CARB fleet mix, material hauling truck emission reductions such as the use of model year 2010 or newer trucks, and the payment of mitigation offset fees.

Table 3-1 Project Construction Emissions (Pounds per Day)

Totals/Threshold	ROG	NOx	PM_{10} Dust	PM_{10} Exhaust	Total PM_{10}	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	Total $PM_{2.5}$
SMAQMD Threshold	N/A	85	N/A	N/A	N/A	N/A	N/A	N/A
Unmitigated (maximum)	13.66	**213.74**	30.00	7.98	37.98	6.24	6.81	13.05
On-site mitigation (maximum)	12.66	**110.60**	30.00	6.15	36.15	6.24	5.63	11.87
Mitigated-onsite and offsets (maximum) with Mitigation Measure AIR-1	12.66	85.00	30.00	6.15	36.15	6.24	5.63	11.87

Notes:

Emissions estimated using the California Air Resources Board (CARB) OFFROAD and EMFAC2011 models. Mitigated emission reductions represent SMAQMD's recommended Enhanced Exhaust Control Practices for onsite construction equipment emissions (20% reduction compared to the average CARB fleet mix) and model year 2010 engines for offsite hauling emissions. Off-site mitigation fees represent payment into SMAQMD Off-Site Mitigation Fee Program to offset any remaining NOx emissions.

SMAQMD has established concentration based thresholds for PM_{10} fugitive dust emissions. PM_{10} and $PM_{2.5}$ dust generation occurs primarily during grading activities.

N/A – not applicable
lbs – pounds

Source: SMAQMD, 2013; OFFROAD and EMFAC2011 Model. Additional details in Appendix C.

SMAQMD significance thresholds for PM_{10} are based on the Proposed Project's contribution to ambient PM_{10} concentrations. Projects that implement SMAQMD's Basic Construction Emission Control Practices and that disturb less than 15 acres per day are considered by SMAQMD to not have the potential to exceed or contribute to the District's concentration-based threshold of significance for PM_{10} (and, therefore, $PM_{2.5}$) at an off-site location (SMAQMD, 2013). The maximum daily acreage disturbed per day is estimated to be 3 acres, below the SMAQMD screening size of 15 acres.

The Proposed Project would be subject to SMAQMD's Rule 403, which restricts fugitive dust generation during construction. The project would also be subject to California regulations that limit vehicle idling (California Code of Regulations Title 13, Section 2449(d)(3) and 2485). Compliance with these regulations would ensure that project construction would be consistent with SMAQMD's Basic Emission Control Practices. The Proposed Project has incorporated the Basic Construction Emission Control Practices as project design features. Consequently, the Proposed Project would result in a **less than significant** PM_{10} or $PM_{2.5}$ impact, and no mitigation is required.

Therefore, construction of the Proposed Project would not violate air quality standards or contribute substantially to an existing or projected air quality violation after the incorporation of Mitigation Measure AIR-1 (below).

Operation

The Proposed Project would generate operational emissions associated with minor maintenance activities. Maintenance vehicles would generate one two-way trip per month, and substation maintenance would generate one two-way service vehicle trip per month. Security vehicles would generate 10 two-way trips per month. The analysis assumed that the maximum daily activity would include one facility vehicle trip, one service vehicle trip, and one security vehicle trip. A light duty truck fleet mix was assumed for facility vehicles and security vehicles. Maintenance vehicles were assumed to be heavy duty trucks. As shown in Table 3-2, the operational emissions are below the SMAQMD significance thresholds. Furthermore, the Proposed Project's maintenance activities would not differ substantially from maintenance on the existing substation, and any increase in operational emissions would be negligible. These emissions are considered **less than significant**, and no mitigation is required.

Table 3-2 Project Operational Emissions (Pounds per Day)

Totals/Threshold	ROG	NO_x	PM_{10}	$PM_{2.5}$
Operation Emission Totals (maximum lbs./day unmitigated)	0.06	0.97	5.00	5.21
SMAQMD Threshold (SMAQMD, 2013)	65	65	N/A	N/A

Notes:

Emissions estimated using EMFAC2011 Model.

Source: EMFAC2011 Model. Additional details in Appendix C.

Mitigation Measure AIR-1

SMUD shall use SMAQMD's Construction Mitigation Calculator to implement a combination of the following measures to reduce construction NO_x emissions to below 85 pounds per day. Mitigation would include one or more of the following:

- *SMUD shall provide a plan for approval by the SMAQMD demonstrating that onsite heavy-duty (50 hp or more) off-road vehicles will achieve a project wide fleet-average of 20 percent NO_x reduction or greater compared to the most recent CARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The SMAQMD's Construction Mitigation Calculator would be used to identify an equipment fleet that achieves this reduction.*
- *Contractor shall be required, through contracting language, to ensure that heavy-duty trucks accessing the site shall be equipped with model year 2010 or newer engines, or have equivalent emission reductions using after-market control devices.*
- *SMUD shall pay a fee into the SMAQMD's Off-Site Mitigation Fee Program to offset Proposed Project NO_x emissions prior to obtaining a grading permit. The SMAQMD uses these fees to purchase emission reductions in the Sacramento region. The SMAQMD's mitigation fee calculator would be used to determine the total amount of the mitigation fee.*
- *If, at the time of construction, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with the SMAQMD prior to construction will be necessary to make this determination.*

Implementation of Mitigation Measure Air-1 will be verified as follows:

(1) SMUD shall submit to the SMAQMD an inventory of the contractor's off-road construction equipment, equal to or greater than 50 hp, that will be used an aggregate of 40 or more hours during construction. The inventory shall include the horsepower rating, engine model year, and projected hours of use. The inventory shall be updated and submitted monthly during construction. No inventory shall be required for any 30-day period in which no construction activity occurs.

(2) At least 48 hours prior to the use of heavy-duty off-road equipment, SMUD shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The SMAQMD's Model Equipment List can be used to submit this information.

(3) SMUD shall ensure that emissions from off-road diesel powered equipment used on the Proposed Project site do not exceed 40 percent opacity for more than 3 minutes in any 1 hour based on a visual survey conducted at least weekly. The inspections shall occur 1 hour per week by a CARB certified inspector. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented and a summary provided to the SMAQMD monthly. A monthly summary of the visual survey results shall be submitted during construction. No monthly summary shall be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles and the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this verification section shall supersede other SMAQMD, state or federal rules or regulations.

(4) With implementation of Mitigation Measure AIR-1, NO_x emissions from construction vehicle operations would be reduced through the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. If NO_x emissions still exceed the 85 pounds per day threshold, the fee under SMAQMD's Off-Site Mitigation Fee Program would be used by SMAQMD to purchase emission reductions in the Sacramento region sufficient to achieve the identified threshold. Therefore, with implementation of these measures, the Proposed Project's NO_x emissions would be reduced to below SMAQMD's significance threshold and would be considered a ***less than significant*** *impact. No additional mitigation measures are required.*

b) Would the Project conflict with or obstruct implementation of the applicable air quality plan? — Less than Significant with Mitigation

The Proposed Project includes replacing an electrical substation. Specific air quality impacts related to criteria pollutants are discussed in responses to questions a) above and c) below. The Proposed Project would be required to comply with SMAQMD regulations and construction activities would not facilitate growth beyond what is already anticipated and planned for in the City of Sacramento 2030 General Plan (City of Sacramento 2009a.) Consistency with the existing General Plan is a key criteria used to determine whether the Proposed Project is consistent with the Sacramento Area Air Quality Attainment Plan.

To be consistent with the Sacramento Area Air Quality Attainment Plan, the emissions should be less than established significance thresholds. As discussed in the response to question b), construction may result in emissions above the SMAQMD mass emissions thresholds of significance for NO_x. The Proposed Project's other criteria pollutant emissions would not exceed the SMAQMD thresholds. The Proposed Project's NOx emissions are considered a **potentially significant impact** and mitigation is required. Implementation of **Mitigation Measure AIR-1** would reduce construction NO_x emissions to levels below the SMAQMD mass emission threshold through a combination of construction equipment emission reductions, material hauling truck emission reductions such as the use of model year 2010 or newer trucks, and the payment of mitigation offset fees. With mitigation, the Proposed Project would not conflict with or obstruct implementation of the Sacramento Area Air Quality Attainment Plan. Therefore the Proposed Project would be **less than significant with mitigation**.

c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)? — Less than Significant with Mitigation

The SMAQMD is currently designated as a federal and state nonattainment area for ozone, PM_{10}, and $PM_{2.5}$. As discussed above in response to air quality criteria a), construction-related activities would result in temporary increases in ROG, NO_x, PM_{10}, and $PM_{2.5}$ emissions. Construction emissions of NO_x, an ozone precursor, would exceed the SMAQMD's quantitative threshold without mitigation. Mitigation Measure AIR-1 would decrease the NO_x emissions to less than significant. Because construction emissions would be temporary and Mitigation Measure AIR-1 would be applied, the project would not result in a cumulatively considerable net increase that could impede attainment or maintenance of the ambient air quality standards.

As shown in Table 3-2, the Proposed Project would generate a negligible amount of operational emissions since the primary component of the Proposed Project would not require workers for its daily operation, and would only require infrequent maintenance and service. In addition, discussion b) above states that the Proposed Project would be consistent with the SMAQMD's Air Quality Attainment Plan with implementation of Mitigation Measure AIR-1, which is designed to achieve attainment of air quality goals and standards. The contribution of the project to cumulative air quality impacts would be potentially significant. Implementation of Mitigation Measure AIR-1 would reduce the Proposed Project impacts to less than significant levels. Because the Proposed Project would not generate emissions that exceed quantitative thresholds for ozone precursors or any other pollutants following implementation of Mitigation Measure AIR-1, cumulative air quality impacts would be **less than significant with mitigation**.

d) Would the Project expose sensitive receptors to substantial pollutant concentrations? — Less than Significant

The closest sensitive receptor to the Proposed Project site is the residential area in the Boulevard Park neighborhood south of the proposed substation. The closest residences in this area are approximately 300 feet south of the Proposed Project site boundary. The pollutants of concern that could impact sensitive receptors are fugitive PM_{10} and $PM_{2.5}$ dust, and diesel particulate matter exhaust from construction equipment and hauling trucks. Emissions of ROG, VOCs, and CO are generally not a concern for a localized analysis of construction activities at the project site.

Operational activities would not involve earthmoving or use of diesel equipment, and would therefore not generate these pollutants in substantial quantities. Construction emissions of PM_{10} and $PM_{2.5}$ are discussed above in criteria b), and would not be significant. The construction period for the new substation is approximately 80 weeks, and limited construction equipment would be used. In addition, the assessment of cancer and chronic non-cancer risk is typically on a 70-year exposure period (Office of Environmental Health Hazard Assessment, 2012). Construction activities are sporadic, transitory, and short-term in nature. In addition, the Proposed Project is relatively small, which limits the amount of construction equipment, and associated emissions, necessary for construction. Construction activities would not generate diesel emissions that would exceed health risk screening levels (Appendix C). In addition, the Proposed Project would not generate diesel emissions during facility operations. For these reasons, the construction emissions associated with the Proposed Project would be substantially below health risk screening levels and would not expose sensitive receptors to substantial pollutant concentrations or health risks. Thus, Proposed Project construction activities would not pose long-term or significant health risks to nearby residents in the Proposed Project vicinity, and a **less-than-significant** impact would occur, and no mitigation is required.

e) Would the Project create objectionable odors affecting a substantial number of people? — Less than Significant

The closest sensitive receptor to the Project site is the residential area in the Boulevard Park neighborhood south of the proposed substation, with the nearest residences located approximately 300 feet south of the Proposed Project site boundary. The Proposed Project would not generate long-term objectionable odors during operations. During construction, odors associated with the intermittent operation of diesel-powered equipment may be detected at nearby residences. However, this effect would be minor and of short duration. Therefore, this impact would be **less than significant**, and no mitigation is required.

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.4 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 CDFW or USFWS?	☐	☒	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS?	☐	☐	☐	☒
c)	Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the federal Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, *etc.*) through direct removal, filling, hydrological interruption or other means?	☐	☐	☐	☒
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting

The Proposed Project area is a vacant 15.42-acre industrial parcel in the City of Sacramento, California. The western portion of the Proposed Project site is developed with asphaltic concrete, building pads, and a steel storage shed. The eastern portion contains non-native annual grassland. Native blue elderberry (*Sambucus nigra* ssp.

caerulea) shrubs occur within the grassland habitat. Habitats of the Proposed Project area are shown in Figure 3-12.

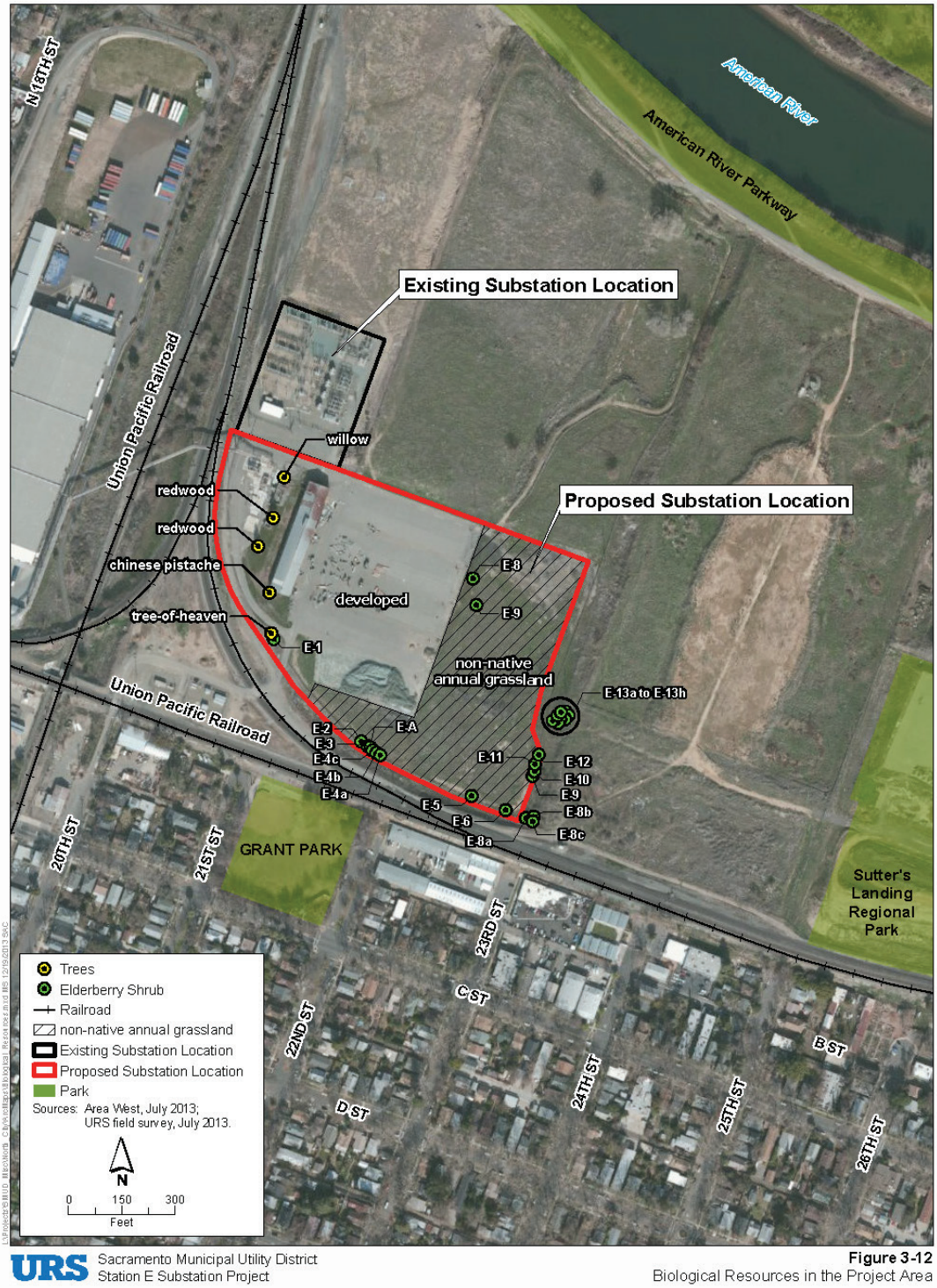

Figure 3-12 Biological Resources in the Project Area

Industrial land uses are to the west, residential and commercial development is to the south, and non-native annual grasslands on former municipal landfills are north and east. A UPRR railroad track on an elevated earthen berm delineates the southern and western boundaries of the Proposed Project area.

The Lower American River and American River Parkway support riparian woodland vegetation and riverine aquatic habitats approximately 1,150 feet north of the Proposed Project area. A flood control levee and former landfill separates habitats along the American River from the Proposed Project area; therefore, these habitats will not be described further.

During site visits on July 11 and November 6, 2013, URS biologists identified vegetation and habitats at the Proposed Project site and conducted focused searches for active nests and inactive nest structures, including burrows that could provide habitat for burrowing owls (*Athene cunicularia*).

Non-Native Annual Grassland

The eastern half of the Proposed Project site consists of a ruderal non-native annual grassland (Figure 3-12). Dominant species include ripgut brome (*Bromus diandrus*), yellow star thistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), Italian thistle (*Carduus pynocephalus*), and winter vetch (*Vicia villosa*). Wildlife species expected to occur in the Proposed Project include common native and non-native species. Multiple jack rabbits (*Lepus californicus*) were observed north of the site. Two red-tailed hawks (*Buteo jamaicensis*) were observed flying over the site. Several passerine bird species were observed flying and foraging, including red wing black birds (*Agelaius phoeniceus*) and house sparrows (*Passer domesticus*). Killdeer (*Charadrius vociferus*) were also heard. No active nests, nest structures, or potentially-occupied burrows were observed in the grassland habitats.

Developed Areas

Approximately half the Proposed Project site is developed. This developed area includes asphaltic concrete, building pads, and a steel storage shed (Figure 3-12). During site visits on July 11and November 6, 2013, the warehouse was observed to be providing roosts for multiple mourning doves (*Zenaida macroura*) and one barn owl (*Tyto alba*). The barn owl was observed using a steel structure as a roost. No owl nest or nest structures were observed. The structure was also visually inspected for evidence of bats, but no sign of bat occupation was observed.

Five ornamental or non-native invasive trees occur in developed areas. These trees and their sizes are listed in Table 3-3 and shown in Figure 3-12. No active nests or nest structures were observed in the trees, and no nests were observed onsite.

Table 3-3 Tree Species in the Proposed Project Area

Common name	Scientific name	Circumference (inches)	Diameter at Breast Height (inches)
Goodding's willow	*Salix gooddingii*	108	34
Coast redwood	*Sequoia sempervirens*	62	20
Coast redwood	*Sequoia sempervirens*	60	19
Chinese pistache	*Pistache chinensis*	82	26
Chinese tree-of-heaven	*Ailanthus altissima*	155	49

Source: URS field survey, July 11, 2013.

Elderberry Shrubs

Biological surveys identified 24 blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs growing on or within 100 feet of the Proposed Project site. The identified shrubs are shown on Figure 3-12. The shrubs are obligate host plants for the valley elderberry longhorn beetle (VELB), listed as a threatened species since August 8, 1980 (Federal Register 45: 52803-52807) under the Federal Endangered Species Act (ESA). Shrubs with live stems 1 inch or greater in diameter are considered suitable habitat for the VELB in California's Central Valley. Approximately 10 percent of suitable elderberry habitat in riparian corridors is occupied by the VELB. Sustainable populations of VELB also require habitat connectivity as individual beetles normally require shrub canopy spacing of less than 100 feet for dispersal. Therefore, optimal habitat for the VELB is considered riparian woodlands with large, mostly continuous populations of mature elderberry shrubs. The USFWS has designated an area of Critical Habitat for the VELB approximately 0.74 mile from of the Proposed Project site, in woodland habitat north of the American River.

A total of 13 elderberry shrubs or clusters of shrubs occur in the Proposed Project construction footprint, and 11 occur within 100 feet of proposed construction or maintenance ground disturbance activities (Figure 3-12). None of the shrubs are growing in riparian habitat, and one exit hole indicative of potential VELB presence was observed. Most of the elderberry shrubs are located along the perimeter fenceline of the Proposed Project site. Two shrubs, E-8 and E-9, are located within the proposed substation footprint (Appendix F).

Regulatory Setting

This section describes federal and state laws and regulations that apply to species and habitat with potential to be affected by the Proposed Project.

Federal

Endangered Species Act

The federal ESA, USC Title 15, Section 1531 et seq., provides for the protection and conservation of fish, wildlife, and plant species that have been federally listed as threatened or endangered. The ESA prohibits the "take" of threatened or endangered species unless authorized pursuant to either Section 7 or Section 10(a)(1)(B). “Take” includes any actions that may "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under the ESA, "harm" includes “any act that kills or injures the species, including significant habitat modification where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” (CFR Title 50, Section 17.3). Take of threatened species is also prohibited unless authorized by the USFWS.

Migratory Bird Treaty Act

Active nests of most native bird species are protected under the federal Migratory Bird Treaty Act. The USFWS administers the Migratory Bird Treaty Act. Projects that may affect active nests of birds listed under the Migratory Bird Treaty Act must consult with the USFWS.

State

California State Fish and Game Code

Most native raptors, including hawks, falcons, and owls are protected under State Fish and Game Code Section 3503.5. Active nests of barn owl, burrowing owl, and red-tailed hawk would be protected under this code.

Local

City of Sacramento

The City of Sacramento regulates the removal of native, ornamental, and heritage trees under the City’s Tree Ordinance (Municipal City Code Section 12.56). The Tree Ordinance defines a Heritage tree as any of the following:

- Trees with a trunk circumference of 100 inches or more, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.

- Any native oak species (*Quercus*), California buckeye (*Aesculus californica*) or western sycamore (*Platanus racemosa*), having a circumference of 36 inches or greater.
- Any tree 36 inches in circumference or greater in a riparian zone.
- Any tree, grove of trees or woodland trees designated by resolution of the City Council to be of special historical or environmental value or of significant community benefit.

Impacts and Mitigation Measures

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 CDFW or USFWS? — Less than significant with mitigation

The Proposed Project has the potential to result in incidental take of habitat for the federally-listed threatened VELB. VELB habitat may be affected due to the potential ground disturbance within 100 feet of active elderberry shrubs, or direct removal of elderberry shrubs within the construction area footprint. Two shrubs, E-8 and E-9, are located within previously leveled and disturbed habitat, and would be removed by the Proposed Project. Shrub E-8 has no stems greater than one inch in diameter, and is therefore not considered suitable VELB habitat. Shrub E-9 has one stem greater than one inch. However, no exit holes indicative of VELB occupation were observed, and the shrub is in a previously disturbed area that is approximately 350 feet from other shrubs with potential habitat. The shrub is also approximately 1,700 feet from riparian habitat that provides habitat connectivity for the VELB (Appendix F). Therefore, no direct removal of suitable VELB habitat would occur. The removal of shrubs would not result in a take of VELB.

The remainder of the elderberry shrubs inventoried would be located between 20 feet and 100 feet from the construction area footprint of the Proposed Project. Ground disturbance within 100 feet of elderberry shrubs has potential to adversely affect habitat values for the VELB.

A technical assistance letter, Reference 1-1-07-TA-1041, was issued to SMUD by USFWS on June 19, 2007. The letter presents a take avoidance approach for federally listed species for routine operation and maintenance activities conducted by SMUD in its service area. The approach includes species-specific avoidance and minimization measures that, when implemented, avoid take of federally listed species and their habitats. Although the technical assistance letter covers SMUD operation and maintenance projects, the letter does not apply to construction projects. The surveys for VELB followed the procedures described in the USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle (1999) and did not find evidence of VELB presence in the elderberry shrubs within 100 feet of

construction activities. Nonetheless, SMUD will adhere to all avoidance measures for VELB in the technical assistance letter. For VELB habitat found more than 100 feet from the project site, a 100-foot buffer zone will be established and maintained around the habitat, and no additional avoidance measures are necessary. For construction activities falling between 20 feet and 100 feet of an elderberry bush, SMUD will adhere to Mitigation Measures BIO-1. When these measures are implemented take of listed species and their habitats will be avoided.

Direct or indirect incidental take of habitat for a federally-listed species is considered a potentially-significant impact. Mitigation Measure BIO 1 will reduce this impact to a less-than-significant level, and would avoid incidental take of the species.

Mitigation Measure BIO-1

SMUD shall implement the following measures to avoid incidental take of VELB habitat during construction.

1. *No grading would occur within 20 feet of the dripline of the remaining shrubs.*

SMUD shall implement the following impact avoidance measures for activities conducted between 20 and 100 feet of elderberry shrubs to avoid incidental take during construction:

1. *The presence of elderberry shrubs in the construction area and vicinity will be documented on work orders and the SMUD Project Manager will be informed.*
2. *Construction personnel will receive instruction regarding the presence of elderberry shrubs, VELB, the importance of avoiding impacts to VELB and its habitat, and the possible penalties for not complying with these requirements.*
3. *A 20-foot exclusion boundary around elderberry shrubs will be clearly flagged or fenced in the field and marked on construction plans, and signs will be posted with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs shall be clearly readable and must be maintained for the duration of construction.*
4. *A biological monitor will be required to supervise construction activities falling between 20 and 100-feet of elderberry shrubs and stop work should personnel be out of compliance with the VELB avoidance measures, or if there is a risk that incidental take may occur.*

5. *Disturbance shall be minimized to the extent feasible, and the site will be restored following construction.*

Implementation of the above measures shall avoid direct and indirect take of VELB by establishing and maintaining a protective buffer area around mature elderberry shrubs, and no additional mitigation is required.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS? — No Impact

The Proposed Project site is a vacant industrial parcel with a mix of previously developed, disturbed and upland ruderal habitats dominated by non-native invasive plant species. No riparian habitats or other sensitive natural communities would be affected. Therefore, there would be **no impact**, and no mitigation is required.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? — No Impact

The Proposed Project site is a vacant industrial parcel with a mix of previously developed, disturbed, and upland ruderal habitats dominated by non-native invasive plant species. There are no potentially jurisdictional streams, wetlands or other waters of the U.S. or waters of the State that may be affected. Stormwater runoff from the site will be collected onsite in a graded retention basin, and no runoff is expected to nearby streams or wetlands. Therefore, there would be **no impact**, and no mitigation is required.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? — Less than significant with mitigation

The removal of structures and vegetation could impact birds or bats nesting or roosting locations. Active nests of most native bird species are protected under the Migratory Bird Treaty Act, and raptors are protected under State Fish and Game Code Section 3503.5. The Proposed Project site consists of developed or disturbed habitats and provides poor-quality nesting habitat for most species. Field surveys in July 2013 and November 2013 did not identify suitable nesting habitat or nest structures in vegetation in the Proposed Project area. Therefore, nesting birds are not expected to occur in the non-native annual grasslands or ornamental trees that would require removal.

A barn owl, however, was observed occupying metal structures in the western portion of the Proposed Project area. While no nest or nest structure was observed in the Proposed Project area during focused searches on July 11 and November 6, 2013, the site does provide potential nest habitat. An adverse impact to an active owl nest is considered a **potentially significant impact**. Implementation of Mitigation Measure BIO-2 below would reduce this impact to a **less-than-significant** level.

Mitigation Measure BIO-2

SMUD would avoid project construction in areas where nesting birds are present to the extent feasible.

If ground disturbance is initiated during the nesting season, a qualified biologist will conduct a focused survey of the Proposed Project area and out 250 feet from the Proposed Project site to determine if active nests occur within 14 days prior to ground disturbance. If no active nests are identified, no further mitigation is required.

If active nests are identified, work within 250 feet of the active nest will be postponed until a qualified biologist determines that nesting is complete, such as if the young have fledged from the nest or the nest is abandoned. If it is not feasible to delay construction, then SMUD will consult with the CDFW and/or USFWS as appropriate to identify additional impact avoidance measures. Typical measures may include establishing visual screening between the construction area and the nest, modifying work activities adjacent to the nest, and/or providing an onsite biological monitor to observe bird behavior with authority to stop work if it is determined that construction is adversely affecting nest behavior.

*Implementation of Mitigation Measure BIO-2 is expected to avoid impacts to actively nesting birds, and would therefore reduce this impact to **less than significant**.*

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? — Less than significant with mitigation incorporated

The Goodding's willow tree in the developed portion of the Proposed Project site meets the size requirement of a Heritage Tree of 100 inches or more in circumference as defined by the City of Sacramento Tree Ordinance (MCC Section 12.56). Removal of the willow tree without a permit from the director of the Department of Parks and Recreation is considered a **potentially significant impact**. The removal of other planted ornamental or invasive trees from the Proposed Project site is considered a less than significant impact. Implementation of Mitigation Measure BIO-3 would reduce the impact of removal of the willow tree to **less than significant**.

Mitigation Measure BIO-3

Prior to tree removal, SMUD will obtain a permit from the City of Sacramento to remove a heritage-sized tree. Payment of the appropriate permit application fee would go to the City's urban forestry programs to plant and maintain other trees within the City of Sacramento. Obtaining the tree removal permit and payment of the appropriate impact fee, with the funds supporting the City's tree program, would mitigate the impact of tree removal to a ***less-than-significant*** *level, and no other mitigation is required.*

f) Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan? — No Impact

No adopted HCPs or NCCPs apply to the project area. Therefore, there would be **no impact** and no mitigation is required.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.5 Cultural Resources				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Environmental Setting

The Proposed Project area is in the historical floodplain of the American River, a quarter mile from the river's current south bank, which is now restricted by a levee. The natural environment in the Proposed Project vicinity has undergone significant alteration as a result of numerous reclamation efforts and use for agricultural and industrial purposes. Industrial development and remnant infrastructure characterize the Proposed Project area at present, including the areas to the east and west. South of the Proposed Project is historic-era residential development, including the City of Sacramento's Boulevard Park Historic District.

The Proposed Project site's geomorphic setting is typical of floodplain environments. Fluvial deposits underlay a layer of fill, the depth of which varies across the Proposed Project area. Near the center of the Proposed Project area, native soil occurs immediately below the pavement according to a soil boring conducted by Brown and Caldwell as part of a Phase II site investigation (Brown and Caldwell, 2011). The remainder of the Proposed Project area is overlain by fill ranging from 20 feet deep at the west end and 5 feet deep in the east. Brown and Caldwell reported that the fill deposit at the east end of the Proposed Project area includes "soil mixed with construction debris (i.e., concrete, bricks, glass, wood, and metal)" (Brown and Caldwell, 2011). Beneath the fill deposit is loose sand and sandy silt that is 30 to 40 feet deep with pockets of silt and clay (Brown and Caldwell, 2011).

Prehistoric Context

Sacramento County and the surrounding Central Valley contain evidence of human use and occupation that spans the known periods of prehistory. The earliest sites are from the Paleo-Indian period (approximately 11,550 B.C. to 8,550 B.C.). Most of the evidence for the earliest occupation is in the Tulare Basin of San Joaquin Valley, although one fluted projectile point has been recovered in the Sacramento Valley near Thomes Creek. The Lower (8,550 B.C. to 5,550 B.C.), Middle (5,550 B.C. to 550 B.C.), and Upper Archaic (550 B.C. to 1,100 A.D.) periods followed the Paleo-Indian period. The beginnings of a unique Central Valley adaptation occurred during the Middle Archaic period. During late prehistory in central California, the Emergent Occupation period (1,000 A.D. to the 1770s) was a time of technological development. Groups migrating west from eastern desert areas to California introduced technological advances that included ceramics, bows and arrows, projectile points, and the cremation of remains. This period saw the introduction of the bow and arrow, population growth, more complex settlement and political traditions, and the development of much larger permanent villages.

Ethnographic Context

The Proposed Project area is located in the central portion of Sacramento County on the border of the historical territory of the Nisenan people.

The Nisenan lived in permanent villages along the American, Sacramento, Feather, Bear, and Yuba rivers. It is unclear which villages exercised the greatest influence in the region, but it is reported that the Nisenan village of Pusune, located at the mouth of the American River less than 2 miles from the Project area, was dominant in the area. The larger villages, with populations of up to 500, exercised political control over the smaller surrounding villages. Villages were constructed on rises near rivers or streams.

Historic-Era Context

The mid-sixteenth century saw the first European contact with indigenous groups throughout Southern California, and additional explorers had moved northward into the Sacramento region by 1772. Spanish missionaries and military personnel began to arrive in what was then called Alta California during the late eighteenth century. Between the founding of the first mission in northern California, Mission San Francisco de Asis (Mission Dolores) in 1776, and the last mission, the Sonoma Mission in 1834, the indigenous population in the region declined as the Spanish military and religious presence became permanent. California became part of Mexico in 1821 and missions were secularized in 1833.

During the Mexican period, large tracts of land were granted to Mexican individuals, and the rancho system was established. The downtown Sacramento area is rich in historical features, and includes portions of the old New Helvetia Land grant deeded to John Sutter by the Mexican government in 1841. Nearby historical features include Sutter's Fort, travel routes, canneries, and various houses.

During this period, cattle ranching superseded agricultural enterprises, restricting native tribal groups' access to traditional hunting and gathering areas. The Mexican period was officially ended at the conclusion of the Mexican-American War in 1848. A profusion of European and American immigrants began to arrive in the region in 1849 as a result of the Gold Rush. After California became part of the Union in 1850, ranching, farming, and dairy activities became the mainstay of the California economy. The area around Sutter's Fort and along the waterfront of the Sacramento River quickly urbanized in the 1850s, eventually becoming the seat of state government in 1854.

Following the Gold Rush, the Proposed Project site was used as agricultural land based on the presence of orchards in historical aerial photographs. After 1963, the site was used as a disposal site for construction and demolition waste (Geosyntec Consultants 2013). A cogeneration plant operated on the site beginning in 1982 as part of Blue Diamond's operations, and continued until 1996, after which the property was left vacant (Tetra Tech EM Inc., 2009). The surrounding properties have historically been used for municipal waste disposal (landfill) to the north and east, and as industrial uses to the south and west, including an electrical substation to the northwest, a rail line elevated on an earthen berm along the site's western and southern boundaries, and the Blue Diamond almond processing plant to the west.

Regulatory Setting

Federal

The Proposed Project site does not include any federal property and the Proposed Project does not require any federal approvals. Therefore, no federal cultural resource regulations, including Section 106 of the National Historic Preservation Act, are applicable to the Proposed Project.

State

CEQA Section 21083.2 and the CEQA Guidelines Sections 15064.5 and 15126.4

Section 21083.2 of CEQA requires that the lead agency determine whether a project may have a significant effect on unique archaeological resources. A unique archaeological resource is defined in CEQA as an archaeological artifact, object, or site about which it can be clearly demonstrated that there is a high probability that it:

- Contains information needed to answer important scientific research questions, and there is demonstrable public interest in that information.
- Has a special or particular quality, such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Though not specifically inclusive of paleontological resources, these criteria may also help to define “a unique paleontological resource or site.”

Measures to avoid, conserve, preserve, or mitigate significant effects on these resources are also provided under CEQA Section 21083.2.

Section 15064.5 of the CEQA Guidelines notes that “a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.” Substantial adverse changes include both physical changes to the historical resource, or to its immediate surroundings such that the significance of the historical resource would be materially impaired. Lead agencies are expected to identify potentially feasible measures to mitigate significant adverse changes in the significance of a historical resource before they approve such projects. Historical resources are those that:

- Are listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) (Public Resources Code Section 5024.1(k)).
- Are included in a local register of historical resources (Public Resources Code Section 5020.1) or identified as significant in a historical resource survey meeting the requirements of Public Resources Code Section 5024.1(g).
- Are determined by a lead agency to be historically significant.

CEQA Section 15064.5 also prescribes the processes and procedures found under Health and Safety Code 7050.5 and Public Resources Code Section 5097.95 for addressing the existence of, or probable likelihood of, Native American human remains, as well as the unexpected discovery of any human remains within a project. This includes consultations with appropriate Native American tribes.

CEQA Guidelines Section 15126.4 provides further guidance regarding minimizing effects to historical resources through the application of mitigation measures. Mitigation measures must be legally binding and fully enforceable.

The lead agency having jurisdiction over a project is also responsible to ensure that paleontological resources are protected in compliance with CEQA and other applicable statutes. Paleontological and historical resource management is also addressed in California Public Resources Code Section 5097.5, entitled Archaeological, Paleontological, and Historical Sites. This statute defines as a misdemeanor any unauthorized disturbance or removal of a fossil site or remains on public land and specifies that state agencies may undertake surveys, excavations, or other operations as necessary on state lands to preserve or record paleontological resources. This statute would apply to any construction or other related project impacts that would occur on state-owned or state-managed lands.

California Register of Historical Resources (Public Resources Code Section 5024.1 and 14 California Code of Regulations Section 4850)

Public Resources Code Section 5024.1 establishes the CRHR. The register lists California properties considered to be significant historical resources. The CRHR includes all properties listed or determined eligible for listing in the National Register of Historic Places, including properties evaluated under Section 106 of the National Historic Preservation Act. The four criteria for listing are similar to those of the National Register of Historic Places, and are listed below:

- Criterion 1: Are associated with the events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Criterion 2: Are associated with the lives of persons important in our past.
- Criterion 3: Embody 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.
- Criterion 4: Have yielded, or may be likely to yield, information important in prehistory or history.

The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

Local

City of Sacramento 2030 General Plan

The Sacramento 2030 General Plan (City of Sacramento 2009a) includes the following goal:

- Goal HCR 2.1 Identification and Preservation of Historic and Cultural Resources: Identify and preserve the city's historic and cultural resources to enrich our sense of place and our understanding of the city's prehistory and history.
- Policy HCR 2.1.3: Consultation. The City shall consult with the appropriate organizations and individuals (e.g., Information Centers of the California Historical Resources Information System, the Native American Heritage Commission (NAHC), and Native American groups and individuals) to minimize potential impacts to historic and cultural resources.
- Policy HCR 2.1.15: Archaeological Resources. The City shall develop or ensure compliance with protocols that protect or mitigate impacts to archaeological, historic, and cultural resources including prehistoric resources.

City of Sacramento Historic Preservation Ordinance (Title 12.64.040)

The City of Sacramento has a historic preservation ordinance. This ordinance provides for the protection, enhancement, and perpetuation of significant cultural resources within the City. The ordinance provides the statutory framework for local preservation decisions. In particular, Municipal Code Section 17.134.280 states that no permit shall be issued for, and no person shall commence construction of, or otherwise undertake, a development project as defined in this Municipal Code Section unless and until an application for preservation review of the Proposed Project is reviewed and approved or conditionally approved as required.

Methodology

This section is based on the information contained in the Cultural Resources Assessment prepared for the Proposed Project area and included in this IS/MND as Appendix E. Below is a summary of the investigations performed for the Cultural Resources Assessment.

Native American Consultation

On July 26, 2013, URS sent a letter to the NAHC to request their review of the Sacred Lands File. The NAHC responded July 31, 2013, stating no sacred lands had been identified in the Proposed Project area. The NAHC also provided a list of Native American individuals/organizations that may have knowledge of cultural resources in the Proposed Project area.

Archival Research

An archival records search was conducted at the Northern California Information Center, an affiliate of the California Historical Resources Information System, located at California State University, Sacramento. The records search was performed July 11, 2013.

Pedestrian Survey

An intensive pedestrian survey of the entire Proposed Project area was conducted July 18, 2013, by URS archaeologist Ben Elliott, RPA. The Proposed Project area was surveyed using 15 meter (approximately 16 yards or 49 feet) transect intervals. During the survey, the ground surface was inspected for evidence of prehistoric and historic-era use, including evidence of topographic disturbance, soil discoloration, charcoal, modified bone or stone, and exotic materials.

Archaeological Resources

No previously recorded prehistoric or historical archaeological resources were identified in the Proposed Project area during archival research conducted July 11, 2013. One previously unidentified potential historical archaeological resource was identified as a result of the pedestrian survey conducted July 18, 2013. The potential resource, designated SMUD-NC-01 consists of demolition refuse including fragmented brick, terra cotta pipe, floor tile, ceramic, and glass containers. Though most of the glass containers were highly fragmented, a few specimens were identified as retail foodstuff, domestic product and beverage containers. These materials are coarsely diagnostic and date to the mid-20th century. The following analysis determined the refuse deposit is neither a historical resource nor a unique archaeological resource.

- Under CRHR Criterion 1 (events), SMUD-NC-01 is not significant for its association with a specific event. The refuse material lacks association with events that have made a significant contribution to the broad patterns of the history of Sacramento County, California, or the United States. Though the fill material is temporally discrete it appears to consist of debris of a single or perhaps a few buildings and appears to have been deposited in a single episode.
- Under CRHR Criterion 2 (persons), SMUD-NC-01 is not significant for its association with a specific person. The artifacts deposited in the proposed Project site probably represent a single fill episode; however, given the evidence of burning and extensive mixing of these materials, there is no way to directly associate any of the materials with a particular person or place.
- Under CRHR Criterion 3 (architecture/engineering), SMUD-NC-01 is not significant for architectural or engineering values. The material was deposited in a single event for the purpose of disposal without an apparent design or method of construction.

- Finally, SMUD-NC-01 does not appear eligible under Criterion 4. SMUD-NC-01 does not include features or artifacts that would yield information important in history. Several open pit excavations were observed during the pedestrian survey on July 18, 2013. The deposit is 2 to 3 feet deep where observed and shows signs of being a mixed, single episode, secondary refuse deposit and therefore there is no stratigraphy available for analytical interpretation.

Lastly, though there are artifacts deposited within the fill layer that are older than 50 years, they consist primarily of typical domestic refuse from the mid-20th century and do not constitute a unique archaeological resource.

Buried Archaeological Potential

Soil conditions include a layer of fill soils 5 to 20 feet thick underlain by a unit consisting of loose sand and sandy silt approximately 30 to 40 feet deep (Brown and Caldwell, 2011). The sand and silt are fluvial deposits that accumulated in the historical channel and floodplain of the American River. The potential for buried archaeological resources to be present in the Proposed Project area is low because it is in an area subject to repeated flooding during the Holocene (within last 11,000 years). Ethnographic and archaeological research in the area has shown that, with little exception, the north bank of the lower American River was heavily occupied while the south bank was not. The nearest Nisenan village, Pusune, is on the north bank 2 miles downriver (Wilson and Towne, 1978).

Built Environment Resources

No previously recorded built environment or historical resources were identified in the Proposed Project area during archival research conducted on July 11, 2013. Nine previously recorded built environment resources were recorded within a quarter mile radius.

Two potential built environment historical resources were identified at the Proposed Project site, one of which is the existing SMUD North City Substation. By virtue of its age, the substation qualifies as a potential resource that must be evaluated for its significance and potential for eligibility to the CRHR. The second potential built environmental resource identified is the complex of structures and buildings associated with the now nonoperational cogeneration plant, including the Blue Diamond Growers metal shed.

The existing SMUD North City Substation is more than 45 years old, having been built between 1949 and 1956; however, the North City Substation does not appear to be eligible for listing in the CRHR as historical resources based on the following criteria:

- Under CRHR Criterion 1 (events), the North City Substation, although part of the system supplying power to the Sacramento area, is not significant for its association with a specific event or the development of electrical power in northern California in the early 20th century. Built in the 1950s, the substation is not the first of its kind, though it was built early in SMUD's service history. SMUD began providing electricity in 1946.
- Under CRHR Criterion 2 (persons), the North City Substation is not significant for its association with the lives of persons important to local, California, or national history.
- Under CRHR Criterion 3 (architecture/engineering), the substation was designed as a utilitarian facility, and, as such, is not associated with any special engineering, or the development of electrical power in northern California. The utilitarian nature of the substation limits any expression of aesthetics. Its design and construction do not represent innovations in electrical transmission technology; its components do not reflect a sense of time and place. The components and configuration of the substation are not unique and are shared by many similar substations.
- Finally, the North City Substation does not appear eligible under Criterion 4. The components of the substation and its method of construction are similar to components and methods used in the construction of modern substations. The substation does not appear to be a source of additional important information.

In summary, the North City Substation does not appear to be eligible for inclusion in the CRHR under Criteria 1, 2, 3, or 4, at the local, state, or national level. This substation does not appear to be significant individually, or as part of a larger whole and is therefore not considered a historical resource.

The remnants of the cogeneration facility include a steel building used for storing almond hulls used as fuel, a conveyor belt, concrete foundations and a paved area in the western portion of the Proposed Project site. The now-defunct cogeneration facility was previously owned by Blue Diamond Growers. Construction of the cogeneration facility was completed in 1981, and it operated from 1983 to 1996 before being partially demolished (Tetra Tech EM Inc., 2009). Because the Blue Diamond Growers cogeneration facility is less than 45 years in age and is otherwise unexceptional, it is exempt from consideration as a historical resource.

Thresholds

The Proposed Project would have a significant impact on cultural resources if it caused a substantial adverse change to a historic resource, as defined above, or if it disturbed human remains.

Impacts and Mitigation Measures

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? — Less than Significant with Mitigation

No historical resources eligible for inclusion in the CRHR were identified on the Proposed Project site during the cultural resources assessment. However, the cultural resources assessment did identify the Boulevard Historic District approximately 500 feet to the south. From this historic district, the view of the Proposed Project site would be largely screened by the UPRR berm. Also, the Proposed Project's new substation would be constructed of similar materials and components as the existing substation being replaced, and it would be bordered by existing industrial operations to its east and west, and the American River levee to the north. As a result, the setting, feeling and association aspects of integrity of the Boulevard Historic District would not be adversely affected by the Proposed Project.

Although no historical resources were identified on the Proposed Project site, the grading and vegetation removal associated with project construction has the potential to expose previously unknown or unrecorded historical resources. These resources could be damaged or destroyed during construction activities. Therefore, this impact would be **potentially significant**. Implementation of Mitigation Measure CUL-1 below would reduce this impact to **less than significant**.

Mitigation Measure CUL-1

If cultural resources are discovered during the Proposed Project's construction activities, they shall be evaluated for eligibility for inclusion in the CRHR. Resource evaluations shall be conducted by individuals who meet the United States Secretary of Interior's professional standards in archaeology and architectural history. If any of the resources meet the eligibility criteria identified in Public Resources Code Section 5024.1, or CEQA Section 21083.2(g), SMUD will develop and implement mitigation measures according to CEQA Guidelines Section 15126.4(b) before construction begins or resumes.

For resources eligible for listing in the CRHR that would be rendered ineligible by the effects of project construction, mitigation measures will be implemented. Mitigation measures for archaeological resources shall be selected from the following: avoidance; incorporation of sites within parks, greenspace, or other open space; capping the site; deeding the site into a permanent conservation easement; or data recovery excavation. Mitigation measures for archaeological resources shall be developed in consultation with responsible agencies and, as appropriate, interested parties such as Native American tribes. Mitigation measures for historic architectural resources shall consist of treating these resources according to the U.S. Secretary of the Interior's Standards for the

Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Implementation of the approved mitigation would be required before beginning/resuming any construction activities with potential to affect identified eligible resources at the site.

Implementation of the Mitigation Measure CUL-1 would ensure impacts on historical resources discovered during the Proposed Project's construction are reduced to a less-than-significant level by avoiding, protecting, or appropriately excavating the resources.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? — Less than Significant with Mitigation

No CRHR-eligible prehistoric or historic-era archaeological resources were identified as a result of the cultural resources assessment. However, grading and vegetation removal associated during construction has the potential to expose previously unknown or unrecorded archaeological resources. These resources could be damaged or destroyed during construction activities. Therefore, this impact would be **potentially significant**. Implementation of Mitigation Measure CUL-1 would reduce this impact to **less than significant**.

Implementation of Mitigation Measure CUL-1, identified above, would ensure impacts on archaeological resources discovered during project construction are reduced to a **less-than-significant** level by avoiding, protecting, or appropriately excavating the resources.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? — Less Than Significant with Mitigation

No evidence of a unique paleontological resource or site was detected during the site survey. The soils consist of fluvial deposits that accumulated in the historical channel and floodplain of the American River. The Proposed Project area was subjected to repeated high-flow flooding events during the Holocene era (within the last 11,000 years). The soil disturbance associated with these high-flow events would likely have eliminated any traces of paleontological resources. Fluvial deposits on the Proposed Project site are not unique in the region and do not represent a unique geological feature. Therefore, the destruction of a unique paleontological resource or site, or the destruction of a unique geological feature would not be anticipated with project implementation. However, there is always the potential that unique paleontological resources could be encountered during construction in areas where there is no surface indication of their presence. Impacts to inadvertently discovered paleontological resources would be **potentially significant**. Implementation of Mitigation Measure CUL-2 would reduce this impact to **less than significant**.

Mitigation Measure CUL-2

If paleontological resources are uncovered during any on-site construction activities, all work must stop immediately within 100 feet of the area and a Professional Paleontologist shall be retained to evaluate the deposits. Work in the area may only resume after authorization is granted by SMUD's project manager in consultation with the Professional Paleontologist.

d) Disturb any human remains, including those interred outside of formal cemeteries? — Less than Significant with Mitigation

No evidence of human remains was detected during the course of the site survey and historic research. However, construction could encounter buried human remains where there is no surface indication of their presence. Therefore, this impact would be **potentially significant**. Implementation of Mitigation Measure CUL-1 and CUL-3 would reduce this impact to **less than significant**.

Implementation of Mitigation Measures CUL-1 and CUL-3 would avoid substantial adverse effects on human remains uncovered during the course of construction by halting work if human remains are uncovered and requiring that the County Coroner be contacted. Adherence with these procedures and other provisions of the California Health and Safety Code would reduce potential impacts on human remains to a **less-than-significant** level.

Mitigation Measure CUL-3

If human remains are discovered during the project's construction activities, the requirements of California Health and Human Safety Code Section 7050.5 shall be followed. Potentially damaging excavation shall be halted in the area of the remains, with a minimum radius of 50 feet, and the local County Coroner shall be notified. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the Coroner determines that the remains are those of a Native American, he or she must contact NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). Pursuant to the provisions of California Public Resources Code Section 5097.98, the NAHC shall identify a Most Likely Descendant (MLD). The MLD designated by the NAHC shall have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods.

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.6 Geology and Soils					
Would the project:					
a)	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i) Rupture of a known earthquake fault, as delineated in 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 & Geology Special Publication 42.	☐	☐	☐	☒
	ii) Strong seismic ground shaking?	☐	☐	☐	☒
	iii) Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
	iv) Landslides?	☐	☐	☐	☒
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c)	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐
d)	Be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e)	Have soils incapable of adequately supporting the use of septic tanks or alternate wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Environmental Setting

The Sacramento area is in the Great Valley geomorphic province, a relatively flat alluvial plain composed of a deep sequence of sediments in a bedrock trough. The Great Valley is bounded on the west by the California Coast Ranges and on the east by the Sierra Nevada Mountains. Erosion of the Coast Ranges and the Sierra Nevada Mountains has produced the sediments deposited in the Great Valley.

According to the General Geologic Map of the Sacramento Quadrangle, this portion of the Central Valley is underlain by Quaternary age alluvium and channel deposits (Youngdahl, 2011).

On the Proposed Project site, the subsurface soils generally consist of silty sand fills in variable compaction up to 10 feet below the site grade in the middle and eastern portions of the site, loose to medium-dense silts and sands at depths up to 50 feet on the western portion of the site, and stiff to very stiff silt soils at a depth of 60 feet below the eastern portion. The depth to groundwater ranges between 21.5 feet below the ground surface in the center of the site to 32.1 feet below the ground surface directly west of the site entrance. Based on the groundwater elevations, groundwater flowed to the south-southeast under a net hydraulic gradient of 0.005 feet per foot (Brown and Caldwell, March 2011).

In approximately 1982, Blue Diamond Growers constructed and operated a cogeneration plant at the Proposed Project site, where nut hulls were burned to create steam for food processing and electrical generation. This cogeneration process produced ash waste, which was temporarily stored in piles at locations on the southern portion of the Proposed Project site, prior to off-site disposal. Residual ash remained in surficial soils in various locations in the southern portion of the Proposed Project site.

Based on investigations of the areas containing residual ash, concentrations of polycyclic aromatic hydrocarbons (PAHs) were initially detected in the Proposed Project site's soils in excess of the California Human Health Screening Level. Soils containing PAHs were removed from the Proposed Project site in August 2013 and were backfilled with 2.5 inches of aggregate subbase. Based on excavation confirmation sampling, the soil removal action was successful in removing soil with PAH concentrations such that the residual risk for commercial/industrial use of the Proposed Project site posed by the remaining soil would not pose a risk to human health or safety (Geosyntec Consultants, 2013).

Regulatory Setting

Federal

Federal Earthquake Hazards Reduction Act

Passed by Congress in 1977, the Federal Earthquake Hazards Reduction Act is intended to reduce the risks to life and property from future earthquakes. The act established the National Earthquake Hazards Reduction Program. The program's goals are to educate and improve the knowledge base for predicting seismic hazards, improve land use practices and building codes, and to reduce earthquake hazards through improved design and construction techniques.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Act (Public Resources Code Sections 2621-2630) was passed in 1972 to prevent the development of buildings and structures for human occupancy on the surface of active faults. The act is directed at the hazards of surface fault rupture and does not address other forms of earthquake hazards. The act requires the State Geologist to establish regulatory zones known as Earthquake Fault Zones around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning efforts. Local agencies regulate any new developments within the appropriate zones in their jurisdictions.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code Sections 2690-2699.6) addresses non-surface rupture earthquake hazards, which may include liquefaction and subsidence. A mapping program is also established by this act, which identifies areas within California that have the potential to be affected by such non-surface rupture hazards.

California Building Standards Code/Uniform Building Code

The State of California provides minimum standards for building design through the California Building Standards Code (CCR Title 24). CCR Title 24 is based on the federal Uniform Building Code used throughout the United States. CCR Title 24 includes specific safety and design standards for new structures to resist the forces of strong winds and seismic activity.

Local

City of Sacramento Grading, Erosion and Settlement Control Ordinance

The Grading, Erosion and Settlement Control Ordinance was enacted to regulate grading on property within the City limits to safeguard life, limb, health, property and the public welfare; to avoid pollution of watercourses with nutrients, sediments, or other materials generated or caused by surface water runoff; to comply with the City's NPDES Permit CA0082597, provision D2, which was issued by the Central Valley RWQCB; and to ensure that the intended use of a graded site within the City limits is consistent with the City of Sacramento's 2030 General Plan (City of Sacramento 2009a), any specific plans adopted to the General Plan and applicable City ordinances and regulations.

Impacts and Mitigation Measures

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42)? — No Impact

Surface rupture is an actual cracking or breaking of the ground along a fault during an earthquake. Structures built over an active fault can be torn apart if the ground ruptures. Surface rupture along faults is generally limited to a linear zone a few yards wide. The Alquist-Priolo Act was created to prohibit the location of structures designed for human occupancy across the traces of active faults, thereby reducing the loss of life and property from an earthquake. No Alquist Priolo zones occur on or adjacent to the Proposed Project area. Therefore, the Proposed Project would not be expected to be affected by the rupture of a known earthquake fault and **no impact** would occur.

ii) Strong seismic ground shaking? — No Impact

Ground shaking occurs as a result of energy released during faulting that could damage or collapse buildings and other structures depending on the magnitude of the earthquake, the location of the epicenter, and the character and duration of the ground motion.

No active faults or Earthquake Fault Zones (Special Studies Zones) are located on the Proposed Project site (Youngdahl, 2011). The nearest mapped active and potentially active faults are listed in Table 3-2. No evidence of recent or active faulting was observed during site reconnaissance (Youngdahl, 2011). Therefore, the Proposed Project would not be expected to be affected by strong seismic ground shaking and **no impact** would occur.

Table 3-4 Local Active and Potentially Active Faults

Activity Status	Fault Name	Distance, Direction
Active	Dunnigan Hills	43 miles northwest
	Rogers Fault	62 miles east
	Hunting Creek Fault	53 miles west-northwest
	Green Valley Fault	43 miles west-northwest
Potentially Active	Bear Mountains Fault Zone – West	25 miles east
	Bear Mountains Fault Zone – West	31 miles east
	Melones	34 miles east

Source: Youngdahl Consulting Group, Inc., April 2011

iii) Seismic-related ground failure, including liquefaction? — Less Than Significant with Mitigation

Liquefaction is the sudden reduction of soil shear strength and sudden increase in porewater pressure caused by shear strains, as could result from an earthquake. Saturated, loose to medium dense sands with a silt content less than about 25 percent located within the top 40 feet are most susceptible to liquefaction and surface rupture/lateral spreading. Typically, recent alluvial deposits such as those present on site are more susceptible to liquefaction (Youngdahl, 2011).

Layers of loose to medium-dense sands with occasional silt and gravel lenses were encountered in borings from the surface to a depth of about 50 feet. An analysis of the liquefaction potential for these layers was performed on three borings across the Proposed Project site to develop the input information and provide an understanding of the liquefaction potential across the Proposed Project site. Earthquake-induced post-liquefaction settlement of the Proposed Project site surface was found to be between 0.10 and 0.28 inches for the three analyzed borings. The settlement estimations are based on the soil conditions and groundwater level only and do not include the settlements generated by the construction of structures bearing above or in liquefiable soils (Youngdahl, 2011).

The native soils, and/or engineered fills, when composed of like materials and processed and compacted as recommended, are considered suitable for support of the planned surficial improvements (i.e. pavement and drive areas). The existing site soils on the middle and east side of the site are variably dense and contain several feet of relatively loose soil; these soils are not considered suitable in their present condition for support of structural improvements using shallow conventional foundations. The existing site soils on the west side of the site appear to be more dense, however, because the soils are considered undocumented fill, construction of shallow conventional foundations on the west side of the site without overexcavation does have some element of settlement related risk.

If liquefaction were to occur onsite, damage to proposed structures could occur. The amount of settlement as a result of liquefaction is dependent on several factors, including the duration of ground shaking, the depth over which the liquefaction occurs and the relative density of the liquefiable material.

Based upon the results of field explorations and analysis, liquefaction has potential to adversely affect the Proposed Project (Youngdahl 2011). Based on the potential for liquefaction to occur on the Proposed Project site and its potential to adversely affect the proposed site facilities, this impact is considered **potentially significant**. Implementation of Mitigation Measure GEO-1 would reduce this impact to **less than significant**.

Mitigation Measure GEO-1

To mitigate potential liquefaction hazards, the Proposed Project shall implement one or more of the geotechnical recommendations, as applicable, in the Geotechnical Engineering Study (Youngdahl, 2011) or as further recommended by Youngdahl. Applicable recommendations are summarized below.

1. ***Surficial Improvements such as pavement and drive areas****: Surficial improvements such as pavement and drive areas shall be supported by native soils, and /or engineered fills, when composed of like materials and processed and compacted.*

2. ***Shallow Foundations****: To provide a uniform support condition for shallow foundations for the west, middle, and east one-thirds of the site, the Proposed Project shall overexcavate and recompact undocumented fills.*

3. ***Structural Improvements****: Structural improvements shall be supported by cast-in drilled holes (CIDH) piles, as an alternative to soil over-excavation and shallow foundation construction.*

4. ***Site Design****: The site design shall be performed by a structural engineer and shall be reviewed by a geotechnical consultant to ensure consistency with the design recommendations included in the Geotechnical Engineering Study for North City Substation Relocation, Sacramento, California (Youngdahl, 2011).*

Implementation of Mitigation Measure GEO-1 would reduce liquefaction potential on the Proposed Project site to a **less-than-significant** level by reducing the exposure of site structures to liquefiable soils and ensuring the facility's foundations are suitable for the site conditions.

iv) Landslides? — No Impact

The Proposed Project is on a flat site that is not subject to landsliding. Therefore, the Proposed Project would not be subject to landslides and **no impact** associated with the exposure of people or structures to adverse effects from landsliding would be anticipated.

b) Result in substantial soil erosion or the loss of topsoil? — Less Than Significant with Mitigation

Construction of the Proposed Project would include excavation of soil for the substation's foundations and the short-term placement of soil in stockpiles during excavation activities. During these excavation activities, stockpiled soils would be exposed to wind and water erosion that could transport sediments onto adjacent parcels. This is considered a **potentially significant** impact. Implementation of Mitigation Measure GEO-2 described in Section 3.9 would ensure soil erosion from project construction activities is appropriately controlled. With implementation of Mitigation Measure GEO-2, this impact would be reduced to **less than significant**.

Mitigation Measure GEO-2

The Proposed Project shall comply with the City of Sacramento's stormwater ordinances (13.16 and 15.88), and the City's NPDES Permit (i.e., SQIP). In addition, the project shall comply with the NPDES General Construction Permit because the Proposed Project's construction activities would disturb more than 1 acre. Compliance with these regulations and permits would require preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP), including spill prevention and control measures, an erosion control plan, a grading plan, and a storm water management plan for the Proposed Project. These plans would collectively require the project to implement best management practices (BMPs) during the construction period to prevent and control the transport of pollutants, including sediments, trash, pathogens, and hazardous materials.

Typical SWPPP BMPs include:

- *Implementing practices to minimize the contact of construction materials, equipment, and maintenance supplies with storm water.*
- *Limiting fueling and other activities using hazardous materials to designated areas, providing drip pans under equipment, and daily checks for vehicle condition.*
- *Implementing practices to reduce erosion of exposed soil, including stabilization of soil stockpiles, watering for dust control, installing perimeter silt fences, and/or placement of fiber rolls.*

- *Implementing practices to maintain water quality including silt fences, stabilized construction entrances, and storm drain inlet protection.*
- *Developing spill prevention and emergency response plans to handle potential fuel or other spills.*

SMUD shall maintain the proposed 0.88-acre retention basin in a manner that protects water quality, including removing trash and/or sediments from the basin, per the requirements of the City's stormwater quality design manual and SQIP. This would maintain the project's construction and operation to comply with water quality standards or waste discharge requirements associated with the City's NPDES Permit and the General Construction Permit.

Implementation of these plans and their BMPs would minimize the potential for the project's construction activities to violate water quality standards or waste discharge requirements.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? — Less Than Significant with Mitigation

The Proposed Project site has the potential to be exposed to unstable soil conditions due to liquefaction. This is considered a **potentially significant** impact. As discussed in response to criteria a) iii above, Mitigation Measure GEO-1 has been identified to minimize this impact. With implementation of Mitigation Measure GEO-1, this impact would be reduced to **less than significant**.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? — No Impact

Soils on the Proposed Project site consist of non-plastic materials that are considered relatively non-expansive (Youngdahl, 2011). Therefore, construction of the Proposed Project would not be expected to require any special design considerations for expansive soils (Youngdahl, 2011). The Proposed Project would not create substantial risks to life or property associated with expansive soils and **no impact** would be anticipated.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? — No Impact

The Proposed Project includes installation of one restroom with lavatory for use by SMUD workers when they visit the Proposed Project site monthly or when they perform occasional maintenance. A sanitary sewer septic tank and leach line system would be installed for the bathroom facilities. The Proposed Project site's soils are generally silty/sandy and the depth to groundwater ranges between 21.5 and 32.1 feet below the ground surface (Brown and Caldwell, March 2011).The Proposed Project site's soils would be expected to adequately support the low use of the septic system by SMUD workers. Therefore, **no impact** would be anticipated.

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.7 Greenhouse Gas Emissions					
Would the project:					
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment?	☐	☒	☐	☐
b)	Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental Setting

Scientists have concluded that climate change is a regional as well as global concern that is likely caused primarily by human activity. Greenhouse gas (GHG) emissions, primarily carbon dioxide (CO_2) from fossil fuel combustion and vegetation removal, are increasing atmospheric concentrations of GHGs and are believed to be the primary cause of contemporary global warming. GHGs from human activities are shown to trap more of the sun's heat in the earth's atmosphere, resulting in warming. Nitrous oxide and methane also contribute to global warming. As part of SMUD's commitment to the environment, it is SMUD's goal to reduce CO_2 emissions.

Regulatory Setting

Executive Order S-3-05 establishes a goal to reduce California's GHG emissions to: 2000 levels by 2010, 1990 levels by 2020, and achieve 80 percent below 1990 levels by 2050. The Global Warming Solutions Act of 2006 (Assembly Bill 32 [AB] 32]) established the goal of reaching 1990 levels by 2020, while further mandating that CARB create a plan (including market mechanisms), and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 directs state agencies to begin implementing AB 32.

Pursuant to AB 32, CARB adopted a Scoping Plan in 2008, outlining measures to meet the 2020 GHG reduction limits (CARB 2008). To meet these goals, California must reduce its GHG emissions by approximately 30 percent below projected 2020 business-as-usual emissions, or about 15 percent from 2004-05 levels. The Scoping Plan estimates a reduction of 174 million metric tons of carbon dioxide equivalent (CO_2e) from the transportation, energy, agriculture, forestry, and high global warming potential sections. CARB has identified an implementation timeline for the GHG reduction

strategies in the Scoping Plan. Some measures may require new legislation to implement, some would require subsidies, some have already been developed, and some would require additional effort to evaluate and quantify. CARB is currently updating the Scoping Plan.

Senate Bill 97 provides greater certainty to lead agencies that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. Pursuant to Senate Bill 97, the state's Natural Resources Agency adopted amendments to the State CEQA Guidelines to address analysis and mitigation of the potential effects of GHG emissions in CEQA documents and processes.

The project would also be subject to applicable state and district GHG rules and regulations, which include: CCR Title 17, Section 95350, Regulation for Reducing Sulfur Hexafluoride (SF_6) Emissions from Gas Insulated Switchgear. The regulation requires reductions in SF_6 loss rates from gas insulated switchgear to achieve reductions in GHG emissions.

Methodology

Emissions from construction and operational activities were estimated using the California Air Resources Board (CARB) OFFROAD and EMFAC2011 models. Consistent with SMAQMD Guide to Air Quality Assessment in Sacramento County, this manual emission estimation was selected due to the unique types of equipment and site-specific schedule that would be difficult to incorporate into other emission estimation programs such as CalEEMod or SMAQMD Road Construction Emissions Model which use the same CARB OFFROAD and EMFAC2011 models as primary inputs. Full modeling assumptions and further details are provided in Appendix C. Where applicable, the analysis used methodology and assumption recommendations from the SMAQMD Road Construction Emissions Model v7.1.4 and the SMAQMD Guide to Air Quality Assessment in Sacramento County. Emissions from the Proposed Project were evaluated using the significance thresholds provided in the SMAQMD Guide.

Fugitive emissions of SF_6 were based on the mass of SF_6 onsite and the maximum leakage rate for compliance with the year 2015 gas loss rate of 6 percent, although actual leakage rate may be less than 6 percent.

Thresholds

SMAQMD, in its CEQA Air Quality Guidelines (2011), does not establish quantitative significance thresholds for construction-related emission impacts. However, SMAQMD has developed a list of Basic Construction Emission Control Practices to reduce construction GHG emissions. Implementation of these control practices represents Best Performance Standards (BPSs) for construction emissions, Consistency with these BPSs is used as a significance threshold. This is appropriate since construction

emissions are temporary and minimal when considered over the life of the Proposed Project.

The California Office of Public Resources has amended Appendix G of the State CEQA Guidelines to address impacts of GHG emissions. Although the amendments provide criteria to evaluate a project's GHG emissions, they do not establish quantitative significance thresholds. According to the revised Appendix G of the State CEQA Guidelines, an impact related to global climate change is considered significant if the Proposed Project would: generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. The SMAQMD CEQA Air Quality Guidelines (SMAQMD 2013) establish no construction-related thresholds for GHG emissions.

Impacts and Mitigation Measures

a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? — Less than Significant with Mitigation

The Proposed Project would generate GHGs during substation construction activities. GHGs would be generated by on- and off-road construction vehicles and equipment, and by worker commute trips to the site. Table 3-5 shows that emissions from construction activities associated with the Proposed Project would generate up to 1,397 metric tons (1,540 short tons) of CO_2 per year during the Proposed Project construction period. These emissions would result in a **potentially significant** impact and mitigation is required. However, it is noted that the Proposed Project's operational GHG emissions, as identified in Table 3-8 below, would result in an annual reduction in GHG emissions that would offset the estimated construction emissions after a period of six years.

Although the Proposed Project would be subject to California regulations that limit vehicle idling (California Code of Regulations Title 13, Section 2449(d)(3) and 2485), compliance with these regulations would not ensure that the Proposed Project's construction would be consistent with SMAQMD's Basic Emission Control Practices. Failure to comply with these practices would result in an inconsistency with SMAQMD's BPSs, which would be considered a significance impact. Therefore, the Proposed Project would result in a **potentially significant** construction GHG impact, and mitigation is required. Implementation of Mitigation Measure GHG-1 would require compliance with these practices and reduce the Proposed Project's construction-related GHG impacts to a **less-than-significant** level.

Table 3-5 Construction-Related GHG Emissions Summary

Construction Years	CO_2e (metric tons per year)
2014 to 2016	1,397

Source: CARB OFFROAD and EMFAC2011 Models. Additional details in Appendix C.

Operational GHG emissions would result from periodic maintenance and service at the substation, as well as leakage of SF_6 from substation switchgear equipment. SF_6 is a GHG with high global warming potential that is used at the existing substation, and will be used in units at the proposed substation. The new units at the proposed substation would be subject to the SF_6 regulation for reduction of SF_6 emissions from electricity transmission and distribution equipment (California Code of Regulations Title 17, Section 95350). The regulation requires reductions in SF_6 loss rates from gas-insulated switchgear, and was approved by CARB in 2007 as part of AB 32. This is used to determine the BPS for operational emissions. Approximately 9 pounds of SF_6 currently escape on an annual basis from the circuit breakers at the existing substation. With substation replacement, the volume of gas that would escape from the site would be reduced due to the use of new circuit breakers that are better designed to contain the SF_6. As shown in Table 3-6, the Proposed Project's substation would reduce annual GHG emissions by approximately 731 metric tons of CO_2e per year compared to the existing substation.

Table 3-6 Operation-Related Greenhouse Gas Emissions Summary

Source	CO_2e (metric tons per year)
Existing substation	1,678
Proposed substation	946

Notes:

The SF_6 emissions reduction regulation sets a maximum leakage rate for each year, with stricter requirements for future years. The GHG emissions presented for the proposed substation represent compliance with the year 2015 gas loss rate of 6%, although actual leakage rate may be less than 6 percent.

Source: Appendix C.

There would be periodic maintenance activity and associated GHG emissions at the Proposed Project's new substation. However, these emissions would simply replace maintenance activity and emissions at the existing substation, which is being replaced. These emissions are 4 metric tons of CO_2e per year. Therefore, the Proposed Project would not increase operational GHG emissions. There would be **no impacts** from substation operation, and no mitigation is required.

Mitigation Measure GHG-1

SMUD shall implement applicable and feasible BPSs to reduce greenhouse gas emissions from construction activities to meet SMAQMD practices as described below.

- *Improve fuel efficiency from construction equipment by implementing the following:*
  - *Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3 minutes (5 minute limit is required by the state airborne toxics control measure [Title13, sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.*
  - *Train equipment operators in proper use of equipment.*
  - *Maintain construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.*
  - *Use the proper size of equipment for the job.*
  - *Use equipment with new technologies (repowered engines, electric drive trains) to the extent feasible.*
  - *Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).*
  - *Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power to the extent feasible.*
- *Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.*
- *Recycle or salvage non-hazardous construction and demolition debris (goal of at least 75% by weight).*
- *Develop and implement a plan to efficiently use water for adequate dust control.*

Implementation of the above measures would ensure the Proposed Project would be consistent with SMAQMD's Basic Emission Control Practices, and that the Proposed Project's construction-related GHG impacts would be ***less than significant.***

b) Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? — Less than Significant

The Proposed Project would not result in a net increase in operational GHG emissions. The Proposed Project's construction-related GHG emissions would be **less than significant** with implementation of Mitigation Measure GHG-1. Thus the construction and operation emissions are consistent with SMAQMD guidelines, plans, and policies.

The Proposed Project is consistent with Sacramento County's Climate Action Plan Strategy and Framework Document, adopted November 9, 2011 (Sacramento County 2011). The SF_6 emissions associated with the substation are covered under the SF_6 regulation for reduction of emissions from electricity transmission and distribution equipment (California Code of Regulations Title 17, Section 95350), and would be required to be monitored and reported. SF_6 emissions would be lower than from the current substation due to the installation of circuit breakers that are better designed to contain SF_6. Therefore, the Proposed Project would be consistent with applicable local plans, policies, and regulations and would not conflict with the provisions of AB 32, the applicable air quality plan, or any other state or regional plan, policy or regulation of an agency adopted for the purpose of reducing greenhouse gas emissions. Therefore, a **less-than-significant-impact** would occur, and no mitigation is required.

3.8 Hazards and Hazardous Materials

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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 handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☒	☐	☐
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or to 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 a public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
h)	Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Environmental Setting

The Proposed Project site was historically agricultural land prior to 1963, but was subsequently used as a disposal site for construction and demolition waste (Geosyntec Consultants, 2013). A cogeneration plant operated on the site beginning in 1982, and operations ended in 1996, after which the property was left vacant (Tetra Tech EM Inc., 2009). The surrounding properties have historically been used for municipal waste disposal (landfill) to the north and east, and industrial uses to the south and west, including an electrical substation to the northwest, a UPRR rail line elevated on an

earthen berm along the site's western and southern boundaries, and the Blue Diamond almond processing plant to the west.

The cogeneration plant was owned and operated by Blue Diamond and was used to burn nut hulls to create steam for food processing and electrical generation. This cogeneration process produced ash waste, which was temporarily stored in piles at locations on the southern portion of the Proposed Project site.

Based on the historical uses of the site and the current and historical uses of surrounding properties, a Phase I Environmental Site Assessment was conducted on the three parcels constituting the Proposed Project site (Tetra Tech EM Inc., November 2009). The Phase I study determined that a Phase II Site Investigation was necessary to evaluate whether there were any indications of environmental impacts to soil, soil gas, or groundwater. These potential impacts were associated with the former cogeneration plant process, the existing substation's transformer pad, the ash product from the cogeneration plant, potential un-regulated fill in the historical landfill area, a potential off-site transformer oil impact site, and a vertical corrugated pipe that accesses the 28th Street Landfill gas recovery system.

The Phase II Site Investigation (Brown and Caldwell, May 2010) determined soil containing concentrations of polycyclic aromatic hydrocarbons (PAHs) in excess of the California Human Health Screening Level was present on the site.

A Phase III Site Investigation (Brown and Caldwell, November 2011) was conducted to delineate surface and near surface ash waste product (ash) present on the project site. The Phase III Site Investigation identified ash in three main pockets in the unpaved area of the site. The ash identified in the Phase III Site Investigation was removed in July and August 2013, as documented in the Removal Action Completion Report (Geosyntec, August 2013). Excavated soil was stockpiled adjacent to each excavation location and a discrete sample was collected from each stockpile and sent to the laboratory for analysis. All of the samples were profiled as non-hazardous waste. All of the excavated soil was distributed offsite, with a total of approximately 115 tons of non-hazardous waste was transported to the Class I hazardous waste facility Clean Harbors of Buttonwillow, LLC, located in Buttonwillow, California and a total of approximately 15 tons of non-hazardous waste soil was transported to Potrero Hills Landfill Class III facility located in Suisun, California.

The excavated areas were sampled and no detectable concentrations of PAHs were detected. Based on these results, the excavation work was considered complete (Brown and Caldwell, November 2011). The excavated areas were then backfilled with 2-1/2 inch aggregate subbase in shallow 6-inch lifts that were wheel rolled. According to the Removal Action Completion Report (Geosyntec, August 2013), the soil removal action was successful in removing soil with PAH concentrations such that the residual risk for commercial/industrial site use posed by the soil remaining on site was acceptable. The report concluded the removal action was successful.

Electrical and Magnetic Fields

Homeowners in neighborhoods adjacent to overhead power lines frequently express concerns regarding the potential for health effects from exposure to electric and magnetic fields (EMFs). Available medical and scientific research has not demonstrated that EMFs create a health risk. However, research has not dismissed the possibility of such a risk.

Natural and human-created EMFs occur everywhere. Electric fields are created between two objects that have a different voltage potential. Magnetic fields are created only when there is current flowing through a conductor or device. For example, when a lamp is plugged into a wall, an electric field is created around the cord to the lamp. A magnetic field is present when the lamp is turned on and current flows through the light bulb. Typically, the main sources for electric and magnetic fields associated with a substation are the power lines that enter and exit the substation.

Widespread misunderstanding exists regarding EMF levels from different types of facilities and the rate at which these levels decline with distance from the source. There are four basic factors that affect the strength of EMF: distance, conductor spacing, load, and phase configuration. An alternating current power line typically consists of three energized phase wires. The nature of three-phase alternating power systems results in a partial cancellation effect of the EMFs if the conductors are adjacent to each other.

EMFs are very difficult to shield; placing a line underground does not shield the magnetic field. Overhead electric power lines also produce EMFs; however, the structure of a house will shield most of the electric field from outside sources. Other objects, such as trees, shrubs, walls, and fences, also provide shielding.

Wildland Fire

The Proposed Project site is an urbanized area and is not located within any state or local wildland fire hazard severity zones (California Department of Forestry and Fire Protection 2007, 2008).

Regulatory Setting

Federal

Toxic Substances Control Act of 1976

Congress enacted the Toxic Substances Control Act of 1976 (USC Title 15, Section 2601 et seq.) to give the EPA the ability to track the thousands of industrial chemicals being produced in or imported into the United States. The EPA routinely screens industrial chemicals and reports and tests those found to pose a potential health hazard to the environment and/or to human health. Through the Toxic Substances

Control Act, the EPA can ban the manufacture and import of chemicals that pose an immediate risk. The EPA also can track and control new industry-developed chemicals to protect the environment and human health from potential risks.

Resource Conservation and Recovery Act of 1976

The Resource Conservation and Recovery Act, or Solid Waste Disposal Act (USC Title 42, Section 6901 et seq.) established a framework for the proper management of hazardous and nonhazardous solid waste. This act, along with the Toxic Substances Control Act, enacted a program administered by the EPA for regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. The Resource Conservation and Recovery Act was amended in 1984 by the Hazardous and Solid Waste Act, which affirmed and extended the "cradle to grave" system of regulating hazardous wastes from their creation to disposal. The Resource Conservation and Recovery Act focuses on active and future facilities; it does not address abandoned or historical sites, which are managed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (USC Title 42, Section 9601 et seq.).

Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA (USC Title 42, Section 9601 et seq.), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for the release of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. The law authorizes two types of responses: short-term removals requiring prompt response, and long-term remedial response actions that permanently and significantly reduce serious on-site dangers. CERCLA also enabled revision of the National Contingency Plan (USC Title 42, Section 9605). The National Contingency Plan provided guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List of contaminated sites warranting further investigation by the EPA. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986.

Superfund Amendments and Reauthorization Act

Under the Superfund Amendments and Reauthorization Act's Title III, a nationwide emergency planning and response program was established that imposed reporting requirements for businesses that store, handle, or produce significant quantities of hazardous or acutely toxic substances, as defined under federal laws. The Superfund Amendments and Reauthorization Act's Title III required each state to implement a comprehensive system to inform federal authorities, local agencies, and the public when

a significant quantity of hazardous, acutely toxic substances are stored or handled at a facility. In addition, the Superfund Amendments and Reauthorization Act provided new enforcement and settlement tools, increased the focus on human health problems posed by hazardous waste sites, and stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites. EPA Risk Management Program Ammonia is an example of an acutely hazardous material that the EPA regulates under the Risk Management Program, which is contained in the Clean Air Act (USC Title 42, Section 7401 et seq.).

Although a federal program, the Risk Management Program is intended to reduce hazards at the local level. The program requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes detailed safety precautions and maintenance plans and an adequate emergency response program. The information required is intended to help local fire, police, and emergency response personnel (first responders) in the event of an accidental spill or exposure event.

Uniform Building Code and Uniform Fire Code

The Uniform Building Code and Uniform Fire Code contain building standards and federal fire protection codes. The Uniform Building Code addresses proper building materials, spacing, and siting to minimize the potential for damage from fires. The Uniform Fire Code addresses applicable water pressure, fire hydrants, automatic fire sprinkler systems, fire alarm systems, explosion hazards, safety measures, and additional building-specific information.

U.S. Department of Transportation Office of Hazardous Materials Safety

Transportation of hazardous materials is regulated by the U.S. Department of Transportation's Office of Hazardous Materials Safety. The Office of Hazardous Materials Safety formulates, issues, and revises hazardous materials regulations under the federal Hazardous Materials Transportation Law (Code of Federal Regulations, Title 49, Sections 100 to 185). These regulations cover hazardous materials definitions and classifications, hazard communications, shipper and carrier operations, training and security requirements, and packaging and container specifications. The hazardous materials transportation regulations require carriers transporting hazardous materials to receive training in the handling and transportation of hazardous materials. Training requirements include pre-trip safety inspections, use of vehicle controls and equipment, including emergency equipment, procedures for safe operation of the transport vehicle, training on the properties of the hazardous material being transported, and loading and unloading procedures. All drivers must possess a commercial driver's license (Code of Federal Regulations, Title 49, Section 383). Vehicles transporting hazardous materials must be properly placarded. In addition, the carrier is responsible for the safe unloading of hazardous materials at the site, and operators must follow specific procedures during unloading to minimize the potential for an accidental release of hazardous materials.

State

California Hazardous Waste Control Law

The California Hazardous Waste Control Law is administered by the California EPA to regulate hazardous wastes. While the Hazardous Waste Control Law is generally more stringent than the Resource Conservation and Recovery Act, until the EPA approves California hazardous waste control program (which is charged with regulating the generation, treatment, storage, and disposal of hazardous waste), both state and federal laws apply in California. The Hazardous Waste Control Law lists 791 chemicals and approximately 300 common materials that may be hazardous, establishes criteria for identifying, packaging, and labeling hazardous wastes, prescribes management controls, establishes permit requirements for treatment, storage, disposal, and transportation, and identifies some wastes that cannot be disposed of in landfills.

The CCR provides the following definition for hazardous waste (CCR Title 22, Section 66261.10 (a) (1)):

> *…a waste that exhibits the characteristics may: (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed or otherwise managed.*

According to CCR Title 22, substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous waste. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, or contaminated or is being stored prior to proper disposal.

Toxic substances may cause short- or long-term health effects, ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Ignitable substances (e.g., gasoline, hexane, and natural gas) are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric (battery) acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal) may cause explosions or generate gases or fumes as a result of contamination or exposure to heat, pressure, air, or water.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase their stability. Radioactive waste mixed with chemical hazardous waste is referred to as “mixed wastes.” Biohazardous materials and wastes include anything derived from living organisms. They may be contaminated with disease-causing agents such as bacteria or viruses.

Department of Toxic Substance Control

The Hazardous Waste Control Law states that any person who stores, treats, or disposes of hazardous wastes must obtain a Hazardous Waste Facility Permit or a grant of authorization from the Department of Toxic Substances Control.

California Accidental Release Prevention Program

Similar to the federal Risk Management Program, the California Accidental Release Prevention Program includes additional state requirements and an additional list of regulated substances and thresholds. The regulations of the program are contained in the CCR’s Title 19, Section 2735.1 et seq. The intent of California Accidental Release Prevention is to provide first responders with basic information necessary to prevent or mitigate damage to public health, safety, and the environment from the release or threatened release of hazardous materials.

California Department of Transportation and California Highway Patrol

The California Department of Transportation (Caltrans) regulates the transportation of hazardous materials throughout the state. Caltrans requires that drivers transporting hazardous wastes obtain a certificate of driver training that shows the driver has met the minimum requirements concerning the transport of hazardous materials, including proper labeling and marking procedures, loading/handling processes, incident reporting and emergency procedures, and appropriate driving and parking rules. The California Highway Patrol also requires shippers and carriers to complete hazardous materials employee training before transporting hazardous materials.

California Health and Safety Code

In California, the handling and storage of hazardous materials is regulated by Chapter 6.95 of the California Health and Safety Code. Under Sections 25500 through 25543.3, facilities handling hazardous materials are required to prepare a hazardous materials business plan. The business plan provides information to local emergency response agencies regarding the types and quantities of hazardous materials stored at a facility and provides detailed emergency planning and response procedures in the event of a hazardous materials release. In the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by California code, facilities are also required to prepare a risk management plan and California accidental release

plan. The risk management plan and accidental release plan provide information about the potential impact zone of a worst-case release and require plans and programs designed to minimize the probability of a release and mitigate potential impacts.

Underground or aboveground storage tanks are typically used to store hazardous waste. Regulations regarding underground storage tanks used to store hazardous materials require owners and operators to register, install, monitor, and remove their tanks according to established standards and procedures. Releases are to be reported to the local Certified Unified Program Agency. Chapter 6.67 of the California Health and Safety Code (Sections 25270 through 25270.13) regulates the storage of petroleum in aboveground storage tanks and requires construction methods and monitoring to prevent petroleum releases. Owners of aboveground storage tanks containing petroleum products with an aggregate storage capacity greater than 1,320 gallons are required to prepare and implement spill prevention and response strategies and to contribute to the Environmental Protection Trust Fund that is used to respond to some spills. Proper drainage, dikes, and walls are required to prevent accidental discharge from endangering employees, facilities, or the environment.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. The California Occupational Safety and Health Administration's standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (CCR Title 8, Sections 337 through 340). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings.

Public Resource Code

The Public Resource Code includes regulations regarding the safe operations of electrical transmission lines. Applicable Public Resource Code regulations include Public Resource Code Section 4292, which requires clearing of flammable vegetation to reduce fire hazards around specific structures that support certain connectors or types of electrical apparatus. This cleared area (10-foot radius) is required to be kept clear of flammable vegetation during the entire fire season (California Public Resources Code Section 4291 et seq.). Public Resource Code Section 4293 requires specific clearance between conductors and vegetation (clearance requirements are determined by line voltage). This code section also requires the removal of trees adjacent to electrical transmission lines that may present a hazard if they fall on the line (California Public Resources Code Section 4291 et seq.).

Local

No local hazardous materials regulations are applicable to the Proposed Project.

Impacts and Mitigation Measures

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? — Less than Significant with Mitigation

Electrical and Magnetic Fields

The medical and scientific communities generally agree that the available research evidence has not demonstrated that EMF creates a health risk. However, they also agree that the evidence has not dismissed the possibility of such a risk. Finally, they agree that while this is an important issue that needs resolution, it is uncertain when such a resolution would occur. The present scientific uncertainty means that public health officials cannot establish any standard or level of exposure that is known to be either safe or harmful. No CEQA standards or health-based standards exist that indicate that EMF emissions are a potentially significant impact. In addition, the EMF emissions generated by the new substation, which would be located directly adjacent to the old substation, would generally replace the emissions currently being generated by the old facility. Some increase in EMF emissions could be anticipated due to an increase in capacity; however, this increase would be negligible, particularly when measured at the project site's boundary. Therefore, potential impacts relating to EMFs are considered l**ess than significant**, and no mitigation is required.

Contaminated Soil, Soil Gas, and Groundwater

The Phase I Environmental Site Assessment (Tetra Tech, November 2009) conducted on the project site revealed the possibility of soil, soil gas, and groundwater contamination from past uses and from uses on adjacent properties. A Phase II Site Investigation (Brown and Caldwell, May 2010) identified soil containing lead and concentrations of PAHs in excess of the California Human Health Screening Level. A Phase III Site Investigation (Brown and Caldwell, November 2011) identified ash in three main areas in the unpaved area of the site.

The ash and soil containing PAHs and lead identified in the Phase III Site Investigation was removed in July and August 2013, as documented in the Removal Action Completion Report (Geosyntec, August 2013). The soil removal action was successful in removing soil with PAH concentrations such that the residual risk for commercial/industrial site use posed by the soil remaining on site was acceptable (Geosyntec, August 2013). Therefore, the potential for prior waste on the site to create a significant hazard through the release of hazardous materials would be **less than significant**.

Construction and Operation

During construction activities, the use of equipment and vehicles containing petroleum products would occur on the site. Some construction equipment would be refueled onsite and some construction equipment would be refueled off-site. Mineral oil would be transported to the site in sealed equipment or containers. This oil is used to cool transformers. Substation battery backup systems contain liquid sulfuric acid. However, battery systems would be transported to the site in sealed cases. The potential for rupture of the battery is negligible.

During construction, minor spills of fuel or oils/lubricants from ruptured fuel and/or hydraulic lines on construction equipment may occur. However, the risk of hazardous material spills is low due to the small volume of materials used during construction and the relatively short construction period.

During substation operation, transformers and switchgear equipment contain substances considered to be hazardous. However, the substances are enclosed within the equipment. In the event of equipment structure or system malfunction, the transformer and switchgear dielectric fluids are kept from leaving the site by a spill containment system consisting of a berm, curb or sump. The substation would have a SCADA system (supervisory control and data acquisition system) that would send alarms to SMUD's dispatch center if malfunctions occur.

Routine maintenance of the substation would occur from 2 to 4 times per month for internal inspections and 4 times per year for perimeter maintenance. Major maintenance would occur approximately every 3 years. The substation would include three 40MVA 115kV/21kV power transformers with each power transformer containing 6,500 gallons of insulating oil. Typically, mineral oil is used in the transformers. Each transformer would have a secondary containment system to collect and hold any oil leaks from the transformer. The transformer oil would require filtering after extended use. During this process, impurities would be removed and recycled or disposed of in accordance with federal, state, and local hazardous waste disposal requirements.

The 115kV power circuit breakers would use SF_6, a nontoxic gas. Approximately 9 pounds of this gas currently escape on an annual basis from the circuit breakers at the existing substation. With substation replacement, the volume of gas that would escape from the site would be reduced due to the use of new circuit breakers that are better designed to contain the SF_6. Because this gas is nontoxic, it would not represent a hazard to the public or the environment.

The substation would also include battery systems using lead acid. These would be required to be located inside the control building or in an enclosure in the substation.

The project would be designed to minimize the potential for hazardous materials release and would be required to comply with federal and state hazardous waste handling and disposal requirements. However, the potential exists for hazardous materials to be released into the environment during their transportation to and from the project site (see the Hydrology and Water Quality section of this IS/MND for a detailed discussion of the regulatory requirements applicable to hazardous materials use on the site during project construction). The accidental release of hazardous materials during transport to and from the project site is considered a **potentially significant** impact due to its potential to affect people and the environment along transportation routes, and Mitigation Measure HAZ-1 is proposed to reduce this impact to **less than significant**.

Mitigation Measure HAZ-1

A hazardous materials transportation and handling safety plan shall be developed that identifies specific protocols for the transport of hazardous materials to and from the project site, and the handling of these materials once they arrive on the project site. These protocols shall include the identification of appropriate transportation routes that avoid sensitive land uses such as the Courtyard Elementary School. These protocols shall also identify how materials will be used and stored on the project site during both construction and operations. The transport and handling of hazardous materials shall be consistent with the requirements of State law. The identified protocols shall be implemented by SMUD and its contractors during project construction and operations.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment — Less than Significant with Mitigation

The accidental release of hazardous materials into the environment during transport to and from the project site is considered a **potentially significant** impact due to its potential to affect people and the environment along transportation routes. The implementation of Mitigation Measure HAZ-1 would reduce this impact to a **less than**

significant level. No other potentially significant hazards to the public or the environment would be anticipated through reasonably foreseeable upset and accident conditions with project implementation. For a detailed discussion of the potential impacts associated with the release of hazardous materials, please see the response to criteria a) above.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school — Less than Significant with Mitigation

The Proposed Project site is approximately 350 feet from the Courtyard School, a private elementary school located at the terminus of 24th Street. The Proposed Project site is separated from the school by the existing UPRR berm. The Proposed Project would not emit hazardous emissions or include the handling of hazardous or acutely hazardous materials, substances, or waste that would adversely affect the Courtyard School. The Proposed Project would include use of synthetic oil in capacitors and mineral oil in transformers and underground pipes containing the 115kV transmission lines. After the Proposed Project has been in operation for an extended period of time, the transformer oil would require filtering. Impurities in the filtrate would either be removed and recycled or disposed of in accordance with federal, state, and local hazardous waste disposal requirements.

As described in the Removal Action Completion Report (Geosyntec, August 2013), hazardous materials were identified on the site and were removed in accordance with applicable regulations. Therefore, the project would not create a hazard for the Courtyard School related to the handling of hazardous emissions or hazardous materials. The accidental release of hazardous materials into the environment during transport to and from the project site is considered a **potentially significant** impact due to its potential to affect people and the environment along transportation routes. The Courtyard School is accessed from 24th and C streets, and C Street could be used as an access route by vehicles transporting hazardous materials to the project site. The implementation of Mitigation Measure HAZ-1 would reduce this impact to a **less-than-significant** level.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment — Less Than Significant Impact

As described in the Removal Action Completion Report (Geosyntec, August 2013), hazardous materials were identified on the site and were removed in accordance with applicable regulations. Therefore, the project would not create a hazard to the public or the environment related to a designated hazardous materials site and a **less than significant** impact would occur.

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

The project site is not located within an airport land use plan and is not located within 2 miles of a public use airport. The nearest airports include Natomas Field, which is approximately 4 miles northwest of the project site, and the California Highway Patrol Academy Airport, which is approximately 4.5 miles west of the Proposed Project site. Therefore, the Proposed Project would not result in a safety hazard for people residing or working in the project area and **no impact** would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? — No Impact

No private airstrips are located near the Proposed Project site. Thus, the Proposed Project would have **no impact** on people residing or working in the project area related to private airstrips.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? — No Impact

The Proposed Project site is not in an area that would impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan (City of Sacramento 2005). The Proposed Project site is generally isolated from the surrounding residential and industrial community and adjacent Blue Diamond plant by the UPRR berms to the west and south. The American River to the north forms a barrier to evacuations. Development of the Proposed Project would not interfere with the emergency evacuation routes identified for the downtown area in the City of Sacramento Emergency Operations Plan. These routes include the following streets: 15th (south), 16th (north), H (west), I (west), P (west), Q (east), Capitol (east), and Capitol Mall (west) (City of Sacramento 2005). Therefore, the Proposed Project site would not be used as an evacuation route in the event of an emergency. The Proposed Project would have **no impact** on an adopted emergency response plan or emergency evacuation plan.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? — No Impact

The Proposed Project site is not located within any state or local wildland fire hazard severity zones (California Department of Forestry and Fire Protection 2007, 2008). Therefore, exposure of people or structures to the risk of loss, injury or death involving wildland fires would be considered **no impact**.

The Proposed Project site is in an area that was historically used for industrial and waste disposal. The majority of site construction activities would occur within paved areas. Portions of the site and surrounding properties do contain annual grasses, which could pose a wildland fire risk. However, existing natural fire breaks are provided by the UPRR tracks to the west and south, the denuded area of the former landfill to the east, and the American River to the north. Also, municipal water service is provided to the site by the City of Sacramento Department of Utilities, which could be used for fire suppression purposes.

3.9 Hydrology and Water Quality

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

Environmental Setting

The Proposed Project site is in the American River watershed. The climate is temperate and characterized by wet winters and dry summers. Precipitation in Sacramento averaged 17.12 inches during a 10-year period (1998 to 2008) and primarily occurred from October through May (Western Regional Climate Center, 2013).

The American River watershed covers 1,900 square miles and extends from the Sierra Nevada mountain range to the City of Sacramento. It is a tributary to the Sacramento River. Pipelines, canals, and dams, including Folsom Dam, control American River flows for a variety of purposes (City of Sacramento, 2009). Folsom Dam is on the American River approximately 27 miles upstream of the Proposed Project site. The project site is approximately 1,150 feet south of the American River. The Proposed Project site is in an area that is protected from the 100-year floodplain by a flood control levee along the American River (Federal Emergency Management Agency, 2013).

Water quality of the American River in the vicinity of the Proposed Project site is generally good though it has a few identified impairments (City of Sacramento, 2009). The lower American River is impaired for mercury, polychlorinated biphenyls, and unknown toxicity (State Water Resources Control Board, 2010).

The Proposed Project site overlies the South American groundwater subbasin, which is bounded by the Sierra Nevada, Sacramento River, American River, and the Cosumnes and Mokelumne rivers. The South American groundwater subbasin is in the Sacramento Valley groundwater basin. This groundwater subbasin has a surface area of 248,000 acres (California Department of Water Resources, 2003).

Approximately half of the 15.42-acre Proposed Project site is covered with impermeable surfaces that include asphaltic concrete, building pads, and a steel storage shed. The remainder of the site contains ruderal vegetation, non-native annual grasslands, and poorly vegetated areas. Soils on the site generally consist of loose sand and soft, medium- to high-plasticity silt/clay overlain by fill. The fill is shallow (less than 5 feet deep) in the eastern portion of the Proposed Project site, and consists of soil mixed with construction debris (Brown and Caldwell, March 2011). These soil characteristics result in relatively rapid storm water infiltration during storm events.

Storm water appears to flow in a west to east direction away from the previously developed portion of the site. Storm water flows east over the paved area of the Proposed Project site and into the undeveloped areas to the south and east. An open storm culvert on the south side of the remaining structure on the site appears to channel water from the west side of the building to the open paved area. No municipal storm drains are observable on the site (Tetra Tech EM Inc., November 2009).

No water bodies are located on the Proposed Project site. Because the site is surrounded on the west and south by the UPRR berm, on the north by the American River levees, and on the east by elevated land, storm water does not appear to discharge from the site other than potentially onto portions of the property to the north.

Onsite elevations generally range from approximately 20 to 35 feet above mean sea level. The depth to groundwater ranges between 21.5 feet below the ground surface in the center of the site to 32.1 feet below the ground surface directly west of the site entrance. Based on the groundwater elevations, groundwater flowed to the south-southeast under a net hydraulic gradient of 0.005 feet per foot (Brown and Caldwell, March 2011).

Regulatory Setting

Federal

Clean Water Act (CWA)

The CWA is the common name for the Federal Water Pollution Control Act of 1972 (33 USC), as amended, which established the basic structure for regulating pollutant discharges to navigable waters of the United States. The CWA provides two general types of pollution control standards:

- Effluent standards, which are technology-derived standards that limit the quantity of pollutants discharged from a point source such as a pipe, ditch, tunnel, etc., into a navigable water body (i.e., a non-point source pollution is subject to state control).
- Ambient water quality standards, which are based on beneficial uses and limit the concentrations of pollutants in navigable waters.

NPDES (Section 402)

Section 402 of the CWA established the NPDES program, which controls direct discharges into navigable waters. Direct discharges or "point source" discharges are from sources such as pipes and sewers. NPDES permits, issued by either the EPA or an authorized state contain industry-specific, technology-based and/or water-quality-based limits, and establish pollutant monitoring and reporting requirements. As described further below, the EPA has authorized the State Water Resources Control Board (SWRCB) and the RWQCBs to administer the NPDES program.

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is the regulatory agency responsible for ensuring flood-prone communities implement comprehensive floodplain management measures so that the communities may qualify for the National Flood Insurance Program's (NFIP's) federal flood insurance coverage. FEMA maintains and updates NFIP maps (also called flood insurance rate maps (FIRMs)).

Floodplain Management (Executive Order 11988)

Executive Order 11988 requires that federal agency construction, permitting, or funding of a project must avoid incompatible floodplain development, be consistent with the standards and criteria of the NFIP, and restore and preserve natural and beneficial floodplain values.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act establishes the SWRCB and the RWQCBs as the principal state agencies having primary responsibility for coordinating and controlling water quality in California. The Porter-Cologne Act establishes the responsibility of the RWQCBs for adopting, implementing, and enforcing water quality control plans (basin plans), which set forth the state's water quality standards (i.e., beneficial uses of surface waters and groundwater) and the objectives or criteria necessary to protect those beneficial uses. The Proposed Project site is within the Central Valley RWQCB's jurisdiction.

NPDES Permit

In California, the SWRCB and the RWQCBs administer regulations governed by the EPA requiring the permitting of storm water-generated pollution under the NPDES program. The SWRCB and/or the RWQCBs have established NPDES permits for storm water discharges related to construction activities, dewatering, industrial processes, and municipal separate storm sewer systems (MS4s). Under these federal regulations, construction activities on one acre or more are subject to the permitting requirements of the *NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAS000002).

NPDES Municipal Permit

EPA adopted rules in 1990 and 1999, respectively, which established Phase I and Phase II of the NPDES storm water program. These programs require NPDES permits to be adopted for cities and other institutions because storm water discharges from these urbanized areas are considered sources of pollution. MS4 permits require dischargers to develop and implement a Storm Water Management Plan or Program to reduce pollutant discharges to the maximum extent practicable. Each program includes BMPs intended to reduce the quantity and improve the quality of storm water discharged to the storm water system. Discharges to storm sewer systems must comply with the storm water management program requirements.

Local

The City of Sacramento has a joint MS4 NPDES permit with Sacramento County, and the cities of Citrus Heights, Elk Grove, Folsom, Galt, and Rancho Cordova. As part of permit compliance activities to control pollutants in urban storm water runoff discharges, these entities have developed a storm water quality design manual and implement a Stormwater Quality Improvement Plan (SQIP). In addition, the City of Sacramento has prepared a draft Administrative and Technical Procedures Manual for Grading and Erosion and Sediment Control (May 2013) to support compliance with the City's Grading and Erosion and Sediment Control ordinance. The City has two ordinances related to storm water control and quality: Stormwater Management and Discharge Control (Chapter 13.16), and Grading, Erosion and Sediment Control (Chapter 15.88) (City of Sacramento 2013).

Impacts and Mitigation Measures

a) Violate any water quality standards or waste discharge requirements? — Less than significant with mitigation

Grading, demolition, and excavation activities for the Proposed Project would disturb soils and remove vegetation. These activities would increase the potential for the site's soils to erode and be transported via storm water runoff onto adjacent properties. The use and maintenance of construction equipment for the project would require the onsite use and storage of hazardous materials (fuels, lubricating oil, grease, and/or hydraulic fluid). Accidental spills or improper use, storage, or disposal of these hazardous materials onsite could result in the transport, particularly during storm events, of hazardous materials onto adjacent properties. Storm water flows from the project's impervious surfaces could transport vehicle-related pollutants (e.g., oil and fuel) to the project's retention basin. This is considered a **potentially significant** impact, and Mitigation Measure GEO-2 is proposed to reduce this impact to **less than significant**.

The Proposed Project's operation would include regular filtering of the transformer oil and the use of battery systems containing lead acid. Impurities in the filtrate would either be required to be removed and recycled or disposed of in accordance with federal, state, and local hazardous waste disposal requirements. The lead acid would be required to be stored inside the control building or in an enclosure in the substation. Potential impacts associated with accidental spills of these materials are considered potentially significant, and Mitigation Measure HYD-1 is proposed to reduce this impact to **less than significant**.

Mitigation Measure HYD-1

Implement Mitigation Measure GEO-2.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? — Less than significant

A portion of the existing Proposed Project area is covered with impermeable surfaces that do not allow for groundwater recharge. Although the Proposed Project would increase the acreage of impervious surfaces, stormwater runoff would be directed to a proposed retention basin that would be designed to include drainage storage, dry wells for infiltration, and evaporation. The storm water infiltration through the dry wells would recharge groundwater supplies.

The Proposed Project would not use the site's groundwater resources to meet construction or operational water demands. Water for construction and operations would be provided to the site by the City of Sacramento from existing water facilities located on the southern property line. For these reasons, the Proposed Project would have a **less than significant** impact on groundwater recharge and groundwater levels.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? — Less than significant

The Proposed Project would result in minor changes to the existing drainage patterns within the site. No streams or rivers occur on or directly adjacent to the Proposed Project site, and erosion or sedimentation onto or off of the site during project construction would be negligible due to the site's relatively flat topography. The Proposed Project would remove vegetation and level portions of the site to accommodate the substation facilities. Storm water flows would be directed to a new

0.88-acre retention basin. The site's drainage plan would also include the construction of dry wells for infiltration, drainage storage, and evaporation. The retention basin would capture peak storm water flows and direct them to the dry wells for infiltration after the storm event. Storm water would not be discharged from the project site and the project would not exceed the capacity of existing or planned storm water drainage systems and would not generate substantial additional sources of polluted runoff. For these reasons, the project would not substantially alter the existing drainage pattern of the area in a manner that would result in substantial onsite or offsite erosion or sedimentation, and a **less than significant** impact would occur, and no mitigation is required.

d) Substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? — Less than significant

The Proposed Project would result in minor changes to the existing drainage patterns within the site. No streams or rivers occur on or directly adjacent to the Proposed Project site. The Proposed Project would remove vegetation and level portions of the site to accommodate the substation facilities. Storm water flows would be directed to a new 0.88-acre retention basin. Drainage also includes the construction of dry wells for infiltration, drainage storage, and evaporation. The retention basin would capture peak storm water flows and direct them to the dry wells for infiltration after the storm event. Storm water would not be discharged from the project site and the project would not exceed the capacity of existing or planned storm water drainage systems. For these reasons, the project would not substantially increase the rate or amount of surface runoff and would not result in flooding either on or off of the site. A **less than significant** impact would occur, and no mitigation is required.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? — Less than significant

The Proposed Project would result in minor changes to the existing drainage patterns of the site. The Proposed Project would remove vegetation and level portions of the site to accommodate the substation facilities. Storm water flows would be directed to a new 0.88-acre retention basin. The site's drainage plan would also include the construction of dry wells for infiltration, drainage storage, and evaporation. The retention basin would capture peak storm water flows and direct them to the dry wells for infiltration after the storm event. Storm water would not be discharged from the project site and the project would not exceed the capacity of existing or planned storm water drainage systems and would not generate substantial additional sources of polluted runoff. Therefore, stormwater runoff and

drainage pattern impacts of the Proposed Project would be **less than significant**, and no mitigation is required.

f) Otherwise substantially degrade water quality? — Less than significant

The Proposed Project includes replacing an electrical substation. The project would not include uses that would contribute to the degradation of water quality. Due to the flat character and lower elevation of the site in relation to surrounding properties, soil erosion and offsite transport during site construction activities are expected to be negligible. Soils exposed during construction would be stabilized with asphalt, concrete, aggregate base, crushed rock, and erosion control measures prior to initiation of site operations. During both construction and operations, the project would be required to comply with the City of Sacramento's stormwater ordinances (13.16 and 15.88), and the City's NPDES Permit (i.e., SQIP). In addition, the Proposed Project would be required to comply with extensive federal, state, and local hazardous materials-related regulations that would ensure implementation of plans and measures to prevent, control, and clean-up any accidental hazardous materials releases. Compliance with these measures would minimize the potential for leaks from construction equipment or accidental spills to adversely affect surface or groundwater quality or violate applicable water quality standards. Therefore, this impact would be **less than significant**, and no mitigation is required.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? — No Impact

The Proposed Project does not propose the development of residential housing. In addition, the Proposed Project site is in an area mapped on federal Flood Hazard Boundary and Flood Insurance Rate Maps as protected by a certified flood control levee along the American River (Federal Emergency Management Agency, 2013). Therefore, the Proposed Project's structures would not impede or redirect flood flows within a 100-year flood hazard area, and there would be **no impact**.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows? — No Impact

The Proposed Project site is in an area mapped on federal Flood Hazard Boundary and Flood Insurance Rate Maps that is protected from the 100-year floodplain by a certified flood control levee along the American River (Federal Emergency Management Agency, 2013). Therefore, the Proposed Project's structures would not impede or redirect flood flows within a 100-year flood hazard area, and there would be **no impact**.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? — Less Than Significant

The Proposed Project would not affect existing flood control systems. The Proposed Project is protected from flooding from the American River by Folsom Dam and a system of levees along the American River. This flood control system has been built by the US Army Corps of Engineers, California Department of Water Resources, and Sacramento Area Flood Control Agency. The levees are maintained by American River Flood Control District. This flood control system has been certified by FEMA, and the Proposed Project site is considered outside of the 100-year flood zone. The Proposed Project site would be exposed to flooding in the event of a catastrophic failure of the flood control dam and levee system during flood stage. This is considered a very low probability event, and the Proposed Project would have a **less than significant** impact on exposure of people or structures to flooding, and no mitigation is required.

j) Inundation by seiche, tsunami, or mudflow? — No Impact

The Proposed Project site is at an inland location that is outside of any Pacific Ocean-related tsunami zones. The site is 1,150 feet away from the American River, and is separated by a flood control levee from the river. This area would not be at risk of inundation by a seiche. Mudflows are associated with hilly terrain, and the project area is flat; there are no impacts associated with mudflows. Thus, the Proposed Project would not be at risk of inundation by seiche, tsunamis, or mudflows. Therefore, **no impact** would occur.

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.10 Land Use and Planning					
Would the project:					
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Environmental Setting

The Proposed Project is in an urban setting on the northern edge of Sacramento's midtown neighborhood. The surrounding land uses are characterized by existing and former industrial uses with a mix of commercial/residential/park uses to the south and the American River Parkway to the north. The Courtyard Elementary School is directly south of the UPRR berm at the terminus of 24th Street.

Regulatory Setting

Federal

No federal land use or planning regulations are applicable to the Proposed Project.

State

The state's land use and planning regulations are incorporated into the City of Sacramento's 2030 General Plan, as described below.

Local

The Proposed Project site is located in the Central City Community Plan area of the Sacramento 2030 General Plan (City of Sacramento 2009a). The Proposed Project site's land use designation in the Community Plan is "Employment Center Low Rise." The site is zoned Heavy Industrial M-2. This zoning permits the manufacture or treatment of goods from raw materials. The Proposed Project site is also within the River District Opportunity Area (City of Sacramento 2009a).

Impacts and Mitigation Measures

a) Physically divide an established community? — No Impact

The Proposed Project would not include any components that would physically divide an established community. The Proposed Project includes construction of an electrical substation directly adjacent to the existing substation proposed to be replaced. The Proposed Project is on a previously developed site and is separated from the established midtown residential community by the UPRR berm. Therefore, an established community would not be divided with project implementation, and **no impact** would occur.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? — No Impact

Implementation of the Proposed Project would not conflict with the Central City Community Plan of the Sacramento 2030 General Plan (City of Sacramento 2009a). The Central City Community Plan identifies the land use designation for the site as Employment Center Low Rise. This designation allows for the development of compatible public, quasi-public and special uses. The proposed substation would be considered a public use, which would be compatible with employment center uses. The zoning designation for the site is Heavy Industrial M-2, which is intended for the manufacture or treatment of goods from raw materials. Although the Proposed Project would not include the manufacture or treatment of goods, its public utility would be consistent with the land use designation for the site and it would be compatible with industrial manufacturing uses. Therefore, the Proposed Project would not conflict with existing land use plans, policies, or ordinances, and **no impact** would occur.

c) Conflict with any applicable HCP or NCCP? — No Impact

The Proposed Project is not within the boundaries of an existing HCP or NCCP. Therefore, it would not conflict with an HCP or NCCP, and **no impact** would occur.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.11 Mineral Resources				
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Environmental Setting

Historical mineral production in the region has included construction aggregate, kaolin clay, common clay, pumice, and gold. Construction aggregate consists of sand, gravel, and crushed stone. Existing mineral extraction activities in and around Sacramento primarily consist of fine (sand) and coarse (gravel) construction aggregates, as well as clay. Additional mineral resources include gold. Construction aggregates come from two different sources: hard bedrock sources and river channel (alluvial) sources. Generally, sand, gravel, and clay are used as fill and for construction of highways and roads, streets, urban and suburban developments, canals, aqueducts, and pond linings (City of Sacramento, 2009a).

Regulatory Setting

Federal

No federal mineral resource regulations are applicable to the Proposed Project.

State

Under the State Mining and Reclamation Act, areas containing economically significant mineral deposits are classified and mapped. These mineral resource zones (MRZs) are used in land use planning to show the likelihood of the occurrence of mineral resources in a particular area. Areas classified as MRZ-2 under State Mining and Reclamation Act are considered to have the likelihood of significant mineral deposits that could be economically beneficial to society. Areas classified as MRZ-1 or MRZ-3 within the City of Sacramento are not considered to contain significant mineral deposits. The Proposed

Project site is along the boundary between areas designated as MRZ-1 and MRZ-3 (PBS&J, 2009).

Local

No local mineral resource regulations are applicable to the Proposed Project.

Impacts and Mitigation Measures

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? — No Impact

The Proposed Project is in an area that has been disturbed by previous development and waste disposal activities. The site is not classified as an area containing significant mineral deposits and would not be expected to result in the loss of known mineral resources that would be of value to the region or residents of the State (PBS&J, 2009). Therefore, the loss of known mineral resources would not be expected with project implementation and **no impact** on mineral resources would occur.

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan? — No Impact

The Proposed Project is in an area that has been disturbed by previous development and waste disposal activities. The Proposed Project site does not include a locally-important mineral resource recovery site (PBS&J, 2009) and would not result in the loss of such a site. Therefore, the loss of a locally-important mineral resource recovery site would not be expected with project implementation and **no impact** on mineral resources would occur.

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

Environmental Setting

The following overview of the existing noise environment and applicable noise-related laws and regulations in the Proposed Project area and vicinity is summarized from the Noise Technical Report, Station E Substation Project, Sacramento, California (URS, 2013). The Noise Technical Report is included as Appendix D to this IS/MND.

The Proposed Project site is surrounded by a mix of commercial, industrial and residential land uses. Railroad tracks are immediately adjacent to the Proposed Project site to the south and west. The railroad tracks are elevated and block the line of sight from the noise-sensitive receivers and the Proposed Project site. The new substation will be located in the northeast quadrant of the Proposed Project site and north of the nearest sensitive residential receivers. The noise-sensitive receivers near long-term ambient measurement location LT-1 are a community of single-family, private property residences along the west side of 21st Street west of Grant Park. Long-term ambient measurement location LT-1 was approximately 300 feet south of the boundary of the Proposed Project site. The noise-sensitive receivers near long-term ambient

measurement location LT-2 are a community of single-family, private property residences located on the east side of 24th Street in between C Street, B Street, and the C Street Alley. In addition, Courtyard Elementary School is at the northern end of 24th Street. Long-term ambient measurement location LT-2 was approximately 500 feet southeast of the Proposed Project site boundary. The noise-sensitive receivers near long-term ambient measurement location LT-3 are a community of single-family, private property residences located on the west side of 18th Street in between Dreher Street and Basler Street. Long-term ambient measurement location LT-3 is approximately 1,000 feet northwest of the existing substation boundary and 1,250 feet northwest of the Proposed Project site boundary. The locations of the ambient noise measurements can be found in Figure 3-13.

Noise levels in California are typically measured in A-weighted decibels (dBA). This scale gives greater weight to frequencies of sound to which the human ear is most sensitive. Decibels are a unit of measurement indicating the relative amplitude or intensity of a sound. Sounds in the environment can vary over a short period of time, so environmental sounds are typically described in terms of L_{eq}, which is an average level that has the same acoustical energy as the summation of the time-varying events.

The day-night average sound level (L_{dn} or DNL) is a cumulative noise metric and represents the average sound level for a 24 hour day. L_{dn} is calculated from the L_{eq} by adding a 10 dB penalty to sounds that occur during the night period (10:00 p.m. to 7:00 a.m.). L_{dn} is the descriptor of choice used by federal, state, and local agencies throughout the United States to define acceptable land use compatibility with respect to noise.

In California, the community noise equivalent level (CNEL) is sometimes used instead of L_{dn}. CNEL is very similar to L_{dn}, except that an additional 5 decibel (dB) penalty is applied to sounds that occur during the evening hours (7:00 p.m. to 10:00 p.m.). Because of the time-of-day penalties associated with the L_{dn} and CNEL descriptors, the L_{dn} or CNEL dBA value for a continuously operating sound source during a 24-hour period will be numerically greater than the dBA value of the 24-hour L_{eq}. Thus, for a continuously operating noise source producing a constant noise level operating for periods of 24 hours or more, the L_{dn} value will be 6 dB higher than the L_{eq} value. To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{10}, L_{50}, and L_{90} may be used. These are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of the measured time interval. L_{50} represents the median sound level during the measurement interval. Levels will be above and below this value exactly one-half of the measurement time.

Figure 3-13 Project Site Boundary and Ambient Noise Measurement Locations

The intensity of a sound and its subjective noisiness or loudness are related, as is the intensity of a sound and a sensitive receptor's distance to that sound. A 10 dB increase in sound is an approximate doubling of a sound's perceived loudness. Noise from construction activities and stationary sources is considered a "point source" of noise. Sound from this type of source radiates uniformly outward in a spherical pattern. The rate at which noise dissipates from a point source is 6 to 7.5 dBA for each doubling of the distance, depending on the ground absorption, atmospheric conditions, and other shielding factors. Traffic noise appears to be from a line rather than a point, because the vehicles are moving and the noise spreads cylindrically rather than spherically. The rate at which traffic noise dissipates is 3 to 4.5 dBA for each doubling of the distance, depending on other shielding factors.

Regulatory Setting

Federal

There are no federal noise laws and regulations applicable to the Proposed Project.

State

The state's environmental noise regulations are incorporated into the City of Sacramento's 2030 General Plan, as described below.

Local

City of Sacramento Noise Element

For community planning purposes, the Noise Element of the City of Sacramento 2030 General Plan (City of Sacramento, 2009a) establishes exterior noise compatibility standards for various land uses and these noise levels are expressed in the L_{dn} and CNEL metrics. Table EC 1 of the Noise Element (see Noise Element Appendix C) illustrates the exterior noise standards. Policy EC 3.1.1 (Exterior Noise Standards) states the following in regards to new noise-sensitive areas:

> *The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table EC 1, to the extent feasible.*

Table EC 2 of the Noise Element (see Noise Element Appendix C) is used as a guideline for determining the allowable incremental noise increases at residences and buildings where people normally sleep in addition to institutional land uses with primarily daytime and evening uses. The L_{dn} noise metric applies to residences and buildings where people normally sleep and the peak hour L_{eq} noise metric applies to institutional land uses. The allowable increases found in Table EC 2 originate from the Federal Transit Administration and only apply to transportation-related projects. Institutional land uses

are land uses with primarily daytime and evening use and typically include schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration. Policy EC 3.1.2 (Exterior Incremental Noise Standards) of the Noise Element states the following:

> *The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table EC 2, to the extent feasible.*

In terms of interior noise level standards, Policy EC 3.1.3 (Interior Noise Standards) of the Noise Element states the following:

> *The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dBA L_{dn} for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dBA L_{eq} (peak hour) for office buildings and similar uses.*

City of Sacramento Noise Control Ordinance

Section 8.68.060 of the City of Sacramento's Noise Control Ordinance establishes construction noise exempt hours:

> *Noise sources due to the erection (including excavation), demolition, alteration or repair of any building or structure between the hours of seven a.m. and six p.m., on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, and between nine a.m. and six p.m. on Sunday; provided, however, that the operation of an internal combustion engine shall not be exempt pursuant to this subsection if such engine is not equipped with suitable exhaust and intake silencers which are in good working order. The director of building inspections, may permit work to be done during the hours not exempt by this subsection in the case of urgent necessity and in the interest of public health and welfare for a period not to exceed three days. Application for this exemption may be made in conjunction with the application for the work permit or during progress of the work.*

The City's ordinance also establishes exterior noise level standards for noise-sensitive land uses. These can be found in Table 3-7. Section 8.68.060 states the following:

> *If the ambient noise level exceeds that permitted by any of the first four noise-limit categories listed in (Table 3-9), the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds (the allowable L_{max}), the maximum ambient noise level shall be the noise level limit for that category.*

Table 3-7 City of Sacramento Exterior Noise Level Standards

Maximum Time of Exposure	Noise Metric	7:00 a.m. to 10:00 p.m. (Daytime)	10:00 p.m. to 7:00 a.m. (Nighttime)
30 Minutes/Hour	L_{50}	55 dBA	50 dBA
15 Minutes/Hour	L_{25}	60 dBA	55 dBA
5 Minutes/Hour	$L_{8.3}$	65 dBA	60 dBA
1 Minute/Hour	$L_{1.7}$	70 dBA	65 dBA
Any Period of Time	L_{max}	75 dBA	70 dBA
Source: City of Sacramento Noise Control Ordinance, 2013			

Threshold of Significance

Per the City's Noise Control Ordinance, construction activities during the construction exempt hours would not be required to comply with the noise standards in the City's municipal code. Therefore, a significance threshold is not identified in this Initial Study for construction activities that occur during the construction noise exempt period identified by the City of Sacramento. The Proposed Project would have a potentially significant noise impact if construction activities occur outside of the identified construction noise hours or operational activities cause:

- the ambient noise level measured at the property line of affected uses to increase by 3 dBA or greater during operation of the Proposed Project, or cause
- the operational noise level to exceed the 55 dBA L50 or 50 dBA L50 daytime and nighttime exterior noise thresholds.

Impacts and Mitigation Measures

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? — Less than Significant

A range of construction activities would be anticipated with the construction of the Proposed Project. Estimates of construction-related noise associated with these

activities were developed based on manufacturer's specifications and standard noise modeling software. A more detailed description of the analytical methods used to develop these noise estimates is provided in the Noise Technical Report (Appendix D). Noise levels generated by each of these construction activities are shown in Table 3-8 below. Table 3-9 lists the calculated L_{eq} at the nearest noise-sensitive receivers based on the nearest distance from the Proposed Project site boundary, where construction activities would occur, or the existing substation site boundary, where demolition activities would occur. The nearest distance to potential construction activities for LT-1 and LT-2 originate from the Proposed Project site boundary, and the nearest distance to potential construction activities for LT-3 originate from the existing substation boundary (where demolition activities would occur). Assuming that construction activities would be conducted at the existing substation's and the Proposed Project's boundaries provides a worst-case scenario for construction noise at the nearest noise-sensitive receivers.

Temporary, short-term construction noise would range from approximately 66.2 to 69.5 dBA at long-term ambient measurement location LT-1, 61.8 to 65.1 dBA at long-term ambient measurement location LT-2, and 55.8 to 59.1 dBA at long-term ambient measurement location LT-3 (Table 3-9). Construction would occur during the exempt hours listed in the City of Sacramento's Noise Control Ordinance and therefore would be exempt from the municipal code noise standards, including the L_{50} standard (listed in Table 3-7). The Proposed Project's construction activities would not result in a significant impact because construction activities are exempt from these standards and the City has not identified an applicable significance threshold. Therefore, this impact is considered **less than significant** and no mitigation would be required.

Table 3-8 Noise Levels Generated by Construction Activities

Construction Activity	Two Loudest Pieces of Equipment	Usage Factor (%)	Individual L_{max} for Equipment at 50 feet (dBA)	Individual L_{eq} for Equipment at 50 feet (dBA)	Total L_{eq} for Construction Activity at 50 feet (dBA)
Demolition (cogen, metal buildings, etc.), clearing and grubbing	Pavement grinder	20	90	83.0	85.1
	49 hp Air Compressor (250 cfm)	40	85	81.0	
Grading, drainage and access road	Grader	40	85	81.0	83.6
	Scraper	40	84	80.0	
Fencing, perimeter grounding, and retaining wall	Semi flatbed material delivery	40	84	80.0	81.8
	Concrete truck	40	81	77.0	
Civil construction (water, drain pipe, foundations, cable trough, etc.)	Truck mounted drill rig	40	84	80.0	83.0
	Track mounted drill rig	40	84	80.0	
Grounding, conduit and encasement	Conduit delivery - 5 ton 20' semi flat bed	40	84	80.0	81.8
	Concrete trucks	40	81	77.0	
Steel erection	Steel delivery - semi flat bed	40	84	80.0	82.1
	20 hp generator	50	81	78.0	
Electrical equipment (new substation, new transmission line and cutover)	Equipment delivery - 5 ton 20-foot semi flat bed	40	84	80.0	83.0
	9-axle semi flat bed (off haul equip)	40	84	80.0	
Dismantling of North City Substation	Semi flat bed	40	84	80.0	83.0
	9-axle semi flat bed (off haul equipment and structures only, no soil)	40	84	80.0	

Source: Noise Technical Report (Appendix D), URS 2013.

Table 3-9 Noise Levels (Total L_{eq} dBA) Generated at Noise-Sensitive Receptors due to Construction Activities at Existing Substation or Proposed Project Site Boundaries

Construction Activity	LT-1	LT-2	LT-3
Distance from nearest potential construction activity (i.e., existing substation or Proposed Project site boundary)	300 feet	500 feet	1,000 feet
Demolition (cogen, metal buildings, etc.), clearing and grubbing	69.5	65.1	59.1
Grading, drainage and access road	68.0	63.6	57.6
Fencing, perimeter grounding, and retaining wall	66.2	61.8	55.8
Civil construction (water, drain pipe, foundations, cable trough, etc.)	67.4	63.0	57.0
Grounding, conduit and encasement	66.2	61.8	55.8
Steel erection	66.5	62.1	56.1
Electrical equipment (new substation, re-routed transmission line and cutover)	67.4	63.0	57.0
Dismantling of North City Substation	67.4	63.0	57.0
Source: Noise Technical Report (Appendix D), URS 2013.			

As part of proposed substation construction, transformer oil may require processing by an oil processor and generator (oil processing unit) depending on the moisture content of the delivered transformer oil. This analysis assumes that three oil processing units would be operating simultaneously with one unit at each transformer. The oil processing units would be set up inside the proposed substation and operated for up to 40 continuous hours. Oil processing activities would result in minor increases in noise levels during daytime and nighttime hours at the nearest noise-sensitive receptors (Table 3-10 and Table 3-11). Therefore, oil processing activities would have a **less-than-significant** impact on noise, and no mitigation would be required.

Table 3-10 Change in Noise Levels during Daytime Hours for Oil Processing Activities

Noise Measurement Location	Station E Substation Oil Processing Units Noise (dBA L_{50})	Existing Measured Lowest Hourly Daytime Noise Level (dBA L_{50})	Modeled Plus Existing Daytime Noise Level (dBA L_{50})	Change in Noise Level at Receiver with Oil Processing Unit (dBA L_{50})
LT-1	44	48	49	1
LT-2	43	47	48	1
LT-3	36	46	46	0

Source: Noise Technical Report (Appendix D), URS 2013.

Table 3-11 Change in Noise Levels during Nighttime Hours for Oil Processing Activities

Noise Measurement Location	Station E Substation Oil Processing Units Noise (dBA L_{50})	Existing Measured Lowest Hourly Nighttime Noise Level (dBA L_{50})	Modeled Plus Existing Nighttime Noise Level (dBA L_{50})	Change in Noise Level at Receiver with Oil Processing Unit (dBA L_{50})
LT-1	44	49	50	1
LT-2	43	47	48	1
LT-3	36	48	48	0

Source: Noise Technical Report (Appendix D), URS 2013.

Construction-related traffic would temporarily increase noise levels at noise-sensitive receivers along traffic routes during the construction period. Traffic would consist of construction staff vehicles, and trucks delivering equipment and hauling materials to and from the Proposed Project site. Construction traffic trips are assumed to be occurring daytime hours and within the City of Sacramento's construction noise exempt hours.

A worst-case scenario for noise generated by construction traffic was modeled. Under a worst-case scenario, it was assumed that the construction staff vehicles and construction equipment delivery and haul truck trips associated with construction activities would be going to and from the Proposed Project site during the same daytime period. To estimate the change in noise levels from existing traffic conditions to construction traffic conditions, and as a worst case, the average daily traffic (ADT) volumes from construction activities were added to the existing ADT volumes along the roadways that utilized for construction-related traffic going to and from the Proposed Project site. This analysis assumes that construction traffic would originate from Business 80, travel west on SR 160, north on 16th Street, east on C Street, and then north on 20th Street to the Proposed Project site. Table 3-12 lists the roadways, speed limits, existing and existing plus project construction ADT volumes, the CNELs for both traffic conditions, and the change in CNEL due to the introduction of

construction traffic. The change in CNEL is greater than 3 dBA during construction along C Street and 16th Street. Construction traffic would occur during daytime and construction noise exempt hours. Therefore, increases in noise related to construction traffic are **less than significant** and no mitigation is required.

Table 3-12 Changes in Noise Levels due to Construction Traffic

Roadway	Speed Limit (MPH)	Existing		Existing Plus Project Construction		Change in CNEL (dBA)
		ADT Volume	CNEL (dBA) at 50 feet (feet)	ADT Volume	CNEL (dBA) at 50 feet (feet)	
Business 80 North of Junction with US 50	65	163,000	84.7	163,770	84.8	0.1
SR 160	55	44,500	77.4	45,270	77.6	0.2
16th Street	25	16,500	66.0	17,270	67.4	1.4
C Street	25	5,000	60.8	5,770	64.3	3.5
20th Street, North of H Street	25	5,500	61.2	6,270	64.5	3.3

Source: Noise Technical Report (Appendix D), URS 2013.

Operational noise generated by the proposed substation would primarily consist of three 115kV/21kV transformers and cooling fans. The noise levels generated by these transformers and cooling fans are projected to be substantially below the existing ambient noise levels at the nearest noise-sensitive receptors. Substation operation would not increase noise levels during daytime and nighttime hours at the nearest noise-sensitive receptors (Table 3-13 and Table 3-14). Therefore, operation of the proposed substation would have **no impact** on noise and no mitigation would be required.

Table 3-13 Change in Daytime Noise Levels Due to Operational Station E Substation

Noise Measurement Location	Modeled Operational Noise (dBA L_{50})	Existing Measured Lowest Hourly Daytime Noise Level (dBA L_{50})	Modeled Plus Existing Daytime Noise Level (dBA L_{50})	Change in Noise Level (dBA L_{50})
LT-1	31	48	48	0
LT-2	30	47	47	0
LT-3	17	46	46	0

Source: Noise Technical Report (Appendix D), URS 2013.

Table 3-14 Change in Nighttime Noise Levels Due to Operational Station E Substation

Noise Measurement Location	Modeled Operational Noise (dBA L_{50})	Existing Measured Lowest Hourly Nighttime Noise Level (dBA L_{50})	Modeled Plus Existing Nighttime Noise Level (dBA L_{50})	Change in Noise Level (dBA L_{50})
LT-1	31	49	49	0
LT-2	30	47	47	0
LT-3	17	48	48	0

Source: Noise Technical Report (Appendix D), URS 2013.

b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels? — No Impact

Operational activities associated with the Proposed Project would not generate groundborne vibration or groundborne noise that would be detectable by humans. Construction may generate temporary groundborne vibration. Construction equipment that would be used includes: a crane, a backhoe, a grader, a compactor, and construction trucks. Any groundborne vibration generated from construction activities using this equipment is expected to be below a detectable level. Therefore, the Proposed Project is expected to have **no impact** to groundborne vibration or noise, and no mitigation would be required.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? — Less than Significant

Operational noise would be generated by transformers, cooling fans and supporting equipment (e.g. switch gear, circuit breaker, capacitor, and wiring). As described in detail in the Noise Technical Report (Appendix D), the Proposed Project would not increase noise levels at the nearest noise-sensitive receptors. Table 3-13 and Table 3-14, above, illustrate that there would be no increase in the noise levels at long-term ambient measurement locations LT-1, LT-2 and LT-3 due to the implementation of the Proposed Project. Substation operation is expected to have a minor, **less-than-significant** impact on noise, and no mitigation would be required.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? — Less than Significant

Construction would result in a short-term temporary increase in the ambient noise levels near construction activities due to the operation of construction equipment and construction traffic along the haul routes. Construction noise levels at noise-sensitive receptors are shown in Table 3-9. Construction activities would occur during

Sacramento's noise exempt hours for construction activities, from 7 a.m. to 6 p.m. Monday through Saturday, and 9 a.m. to 6 p.m. on Sundays. Oil processing activities would occur outside the City's noise exempt hours, but would result in a minor noise increase as shown in Table 3-10. Therefore, this impact is considered **less than significant** and no mitigation would be required.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? — No Impact

Natomas Field is approximately 4 miles northwest of the Proposed Project site and the California Highway Patrol Academy Airport is approximately 4.5 miles west of the Proposed Project site. The Proposed Project would not expose people residing or working in the Proposed Project area to excessive noise levels associated with nearby airports. Therefore, the Proposed Project would have **no impact** and no mitigation would be required.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? — No Impact

No private airstrips occur in the Proposed Project area or vicinity. The Proposed Project would not expose people residing or working in the area to excessive noise levels associated with nearby airstrips. Therefore, the Proposed Project would have **no impact**, and no mitigation would be required.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact

3.13 Population and Housing

Would the project:				
a) Induce substantial population growth in an area either directly (*e.g.*, by proposing new homes and businesses) or indirectly (*e.g.*, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

The Proposed Project area is in an urban setting on the northern edge Sacramento's midtown neighborhood. The surrounding land uses are characterized by existing and former industrial uses with a mix of commercial/residential/park uses to the south and the American River Parkway to the north.

Regulatory Setting

Federal

No federal housing regulations are applicable to the Proposed Project.

State

State law (Government Code Sections 65580-65589.8) requires cities to adopt a Housing Element, subject to state approval, as part of its General Plan.

Local

The Housing Element is part of the City's General Plan and sets forth the policies and programs to address the housing needs of all households in Sacramento. The 2008-2013 Housing Element was adopted by City Council on November 18, 2008 (EDAW 2008).

Impacts and Mitigation Measures

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? — No Impact

The Proposed Project involves replacing the existing North City Substation that generally serves SMUD customers in parts of the downtown and midtown areas of Sacramento. The proposed replacement of this electrical substation would result in short-term construction employment. However, a sufficient labor pool exists within the Sacramento region to meet the Proposed Project's construction worker requirements, and no change in the local population base would be anticipated. The limited maintenance required for the substation during operations would also have no effect on local population growth rates. Therefore, the Proposed Project would not induce substantial population growth. The Proposed Project would accommodate growth within the service area but would not be growth inducing, and would have **no impact** on population and housing.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? — No Impact

The Proposed Project site is a vacant parcel of land in the City of Sacramento. No houses would be directly displaced by the Proposed Project. Therefore, the Proposed Project would not require the construction of any replacement housing and **no impact** would occur.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? — No Impact

The Proposed Project site is a vacant parcel of land in the City of Sacramento. No people would be directly displaced by the Proposed Project. Therefore, the Proposed Project would not require the construction of any replacement housing and **no impact** would occur.

	Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.14 Public Services				
Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service rations, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

Environmental Setting

The Proposed Project is within the Sacramento Police Department, Sacramento Fire Department, Sacramento City Unified School District, and City of Sacramento Department of Parks and Recreation service areas.

Regulatory Setting

Federal

No federal public service regulations are applicable to the Proposed Project.

State

In accordance with California Code of Regulations, Title 8 Sections 1270 “Fire Prevention” and 6773 “Fire Protection and Fire Equipment,” the California Occupational Safety and Health Administration has established minimum standards for fire suppression and emergency medical services. The Uniform Fire Code contains regulations relating to construction, maintenance, and use of buildings.

CCR Title 5, Education Code governs all aspects of education within the state.

Local

The City's 2030 General Plan contains policies and implementation measures relevant to the provision of police services. For law enforcement resources, some of the policies relevant to this issue include provision of high quality facilities and services, police department review of subdivision proposals and assisting with traffic matters, and working cooperatively with the community regarding crime prevention (City of Sacramento 2009a).

Impacts and Mitigation Measures

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 other performance objectives for any of the public services:

i) Fire protection? — No Impact

ii) Police protection? — No Impact

iii) Schools? — No Impact

iv) Parks? — No Impact

v) Other public facilities? — No Impact

The Proposed Project is expected to have no effect on existing demand for public services or facilities. The Proposed Project would not increase the City's population base. The Proposed Project would not be expected to increase the demands for police protection, fire protection, school services, or park services. Therefore, the Proposed Project would not result in substantial adverse physical impacts associated with public services or facilities and **no impact** would occur.

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.15 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?	☐	☐	☐	☒

Environmental Setting

The recreational facilities within the Proposed Project vicinity include the City of Sacramento's Grant Park, Sutter's Landing Regional Park, and the Sacramento Northern Bike Trail, and the County of Sacramento's American River Parkway, which includes the American River Bike Trail (also known as the Jedediah Smith Memorial Bicycle Trail). The lower American River is classified as a recreational river under the federal Wild and Scenic Rivers Act. The Proposed Project site is approximately 1,150 feet south of the American River Parkway, and impacts to the American River or American River Parkway are not discussed further in this section.

Grant Park is south of the Proposed Project site and is bordered by UPRR tracks to the north, 21st Street to the west, C Street to the south, and 22nd Street to the east. The park includes a lighted baseball field, a soccer field, and a small, fenced-in children's play area. Sutter's Landing Regional Park is to the east of the Proposed Project site at the terminus of 28th Street. The site includes a dog park, an enclosed skateboarding facility, basketball courts, bocce courts, and pedestrian access to the American River. The Sacramento Northern Bike Trail is to the west of the Proposed Project site and extends north from C Street between 19th and 20th streets to the American River Bike Trail, which extends from Old Sacramento to Beale's Point on Folsom Reservoir. The American River Parkway extends from Discovery Park at the confluence of the American and Sacramento rivers to Lake Natoma.

No recreational facilities exist in the Proposed Project site. The Proposed Project site would be visible from portions of Grant Park, Sutter's Landing Regional Park, and the American River Parkway. Please see Section 3.1 above for a discussion of the visual impacts of the Proposed Project.

Regulatory Setting

Federal

No federal recreation laws or regulations are applicable to the Proposed Project.

State

The state's recreation regulations are incorporated into the City of Sacramento's 2030 General Plan, as described below.

Local

The Sacramento 2030 General Plan (City of Sacramento 2009a) includes policies that encourage an integrated system of parks, open space areas, and recreational facilities that are safe, provide positive recreational experiences and enjoyment of nature, and connect the diverse communities of the City. To carry out the recreational goals and policies of the General Plan, the City has adopted a Parks and Recreation Master Plan (City of Sacramento 2009b). In addition, the City's municipal code includes regulations applicable to park development and use.

Impacts and Mitigation Measures

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? — No Impact

The Proposed Project does not include any uses that would attract additional users to the existing neighborhood or regional parks in the project vicinity. Similarly, the Proposed Project is not expected to obstruct, modify, or discourage existing recreational uses in the vicinity. Therefore, the Proposed Project would not contribute to the physical deterioration of existing neighborhood or regional parks or other recreational facilities and **no impact** would occur with project implementation.

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment? — No Impact

The Proposed Project does not include any recreational facilities and does not require the construction or expansion of recreational facilities. Therefore, the Proposed Project would have **no impact** on recreational facilities.

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

Environmental Setting

The Proposed Project is in the central core area of the City of Sacramento, which is characterized by mixed land uses including governmental buildings, residential and commercial development, historic neighborhoods, parks and recreational areas, schools, and industrial and manufacturing complexes.

Terminology

The following are definitions of key traffic and transportation terms used in this section, based on materials published by the Transportation Research Board (Transportation Research Board 2000).

- Level of service (LOS) is a category used by transportation planners to evaluate traffic flow through intersections. LOS is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Roadway LOS is defined according to methodologies presented in the Highway Capacity Manual (Transportation Research Board, 2000). Using Highway Capacity Manual procedures, the quality of traffic operation is graded as one of six LOS designations: A, B, C, D, E, or F. LOS A and B represent the best traffic operations, LOS C and D represent intermediate operations, and LOS E and F represent high levels of congestion and unstable traffic flow.
- Delay: The additional travel time experienced by a vehicle or traveler that results from the inability to travel at optimal speed, and stops due to congestion or traffic control.
- State Routes: These roads provide for high-speed, through-traffic movement on continuous routes with full access control. State routes connect points in the county and link the county to other parts of the state. State routes in Sacramento County have multiple lanes (four to six in rural areas) and are divided.
- Major Arterial: Provides mobility for high traffic volumes between various parts of the City and the region. Access to parcels is a secondary function and should be limited to the extent feasible. The City transportation network includes both suburban and urban arterials. Suburban arterials have higher speeds and have the greatest access control. Urban arterials have generally lower speeds and less access control due to the intensity of the development in the urban environment.

State Routes and major regional thoroughfares in the project vicinity include Interstate 5 (I-5), Business 80, US Highway 50 (US 50), and State Route 160. I-5 is an important north/south route serving downtown Sacramento, North Natomas, and South Sacramento. It provides access to the Sacramento International Airport. I-5 is a major truck route in the state and varies from six to eight lanes in Sacramento. Business 80, also known as the Capitol City Freeway, extends northeast from downtown Sacramento through Sacramento County and connects to Interstate 80 just east of Watt Avenue. Business 80 provides access to regional destinations including Cal Expo and the Arden Fair Mall. Business 80 is a six-lane freeway in Sacramento. US 50 is a major east/west route in Sacramento, extending east from downtown Sacramento toward the Tahoe Basin. US 50 is an eight-lane freeway in Sacramento. State Route 160 is a four-lane surface street through downtown Sacramento and divided highway north and east of downtown.

The major roadways in the Proposed Project vicinity include: L Street, C Street, I Street, and J Street. L Street is a major arterial in the City's downtown core. I Street and J Street connect to I-5 and Business 80. North-south arterial streets near the Proposed Project include 12th Street, 15th Street, 16th Street (State Route 160), and 29th Street.

Existing LOS, volume to capacity (V/C) ratios, and traffic volumes for roadway segments near the Proposed Project are shown in Table 3-15. All except two roadway segments for which daily and peak hour traffic volume information is available meet the City of Sacramento's goal of minimum LOS threshold of D based on peak hour traffic volumes. The segment of I Street between 3rd Street and 21st Street, and Business 80 between Arden Way and El Camino Road, have a peak hour LOS of F.

The Proposed Project is accessed from the northern terminus of 20th Street, which rises up to two UPRR rail lines that run parallel to C Street on an elevated earthen berm. The Proposed Project's access road extends across these rail lines, turns east and then north as it crosses an additional UPRR rail line before entering the Proposed Project site. The dual rail line includes lighted crossing arms in both directions while no crossing arms are present at the single rail line crossing.

Existing Transit Service

The Sacramento Regional Transit District operates approximately 67 bus routes and 38.6 miles of light rail covering a 418-square-mile service area. Buses and light rail operate 365 days a year using 76 light rail vehicles and 182 buses powered by compressed natural gas and 11 shuttle vans. Near the Proposed Project, regular bus routes operate daily from 5:00 a.m. to 11:00 p.m. along F, J, and L Streets in the east-west direction, and along 15th, 16th, 19th, 21st, and 29th streets in the north-south direction. Light rail trains near the Proposed Project operate in the rail alignment along R Street in the east-west direction and along 7th, 8th and 12th Streets in the north-south direction (City/County of Sacramento, 2009).

Existing Bicycle and Pedestrian Facilities

The 2010 Sacramento City/County Bikeway Master Plan was developed to serve the recreational and transportation needs of the public. Sacramento County consists of 997 square miles and 3,887 miles of public roads. The goal of the 2010 City/County Bikeway Master Plan is to develop a comprehensive bikeway network that meets the needs of bicyclists. Near the Proposed Project Class II bikeways are along D Street between 17th and 19th streets, and are along E, 20th, and 29th Streets (City of Sacramento 2009a and Sacramento County General Plan of 2005 - 2030, 2009). Class II bikeways are defined as striped bicycle lanes for one-way travel on existing roadways. The City of Sacramento downtown core area provides extensive pedestrian facilities including well-connected sidewalks and crosswalks.

Table 3-15 Existing Annual Average Daily Traffic (AADT) and Peak-Hour Roadway Segment Conditions in the Project Vicinity

Roadway Segment	Lanes	Daily Traffic Volumes (AADT)	Peak-Hour Traffic Volumes	Peak-Hour Capacity	Peak-Hour LOS	Peak-Hour V/C	Minimum LOS Required
Surface Streets							
H Street, West of Business 80	3	17,000	1,200	1,330	C	0.90	D
I Street, 3rd Street to 21st Street	2	12,700	1,100	970	F	1.13	D
J Street, I-5 to 21st Street	4	16,400	1,500	2,550	C	0.59	D
L Street, 3rd Street to 19th Street	3	14,400	1,400	2,330	C	0.60	D
12th Street, I Street to L Street	3	19,100	1,200	2,330	C(0.52)	0.52	D
C Street, Alhambra Boulevard to Elvas Street	2	5,000	550	970	C(0.57)	0.57	D
15th Street, I Street to L Street	3	17,500	1.400	2,330	C	0.60	D
16th Street, I Street to L Street	3	16,500	1,600	2,330	C	0.69	D
Freeways							
Business 80, E Street to Exposition Blvd	6	171,000	8,200	11,220	C	0.73	D
Business 80, Arden Way to El Camino Avenue	9	183,000	18,300	16,080	F	1.14	D
State Route 160, Tribute to Business 80	4	44,500	3,300	7,420	B	0.44	D

Source: City of Sacramento 2030 General Plan (City of Sacramento 2009a)

Regulatory Setting

State

California Government Code Section 65080

The State of California requires each transportation planning agency to prepare and adopt a regional transportation plan directed at achieving a coordinated and balanced regional transportation system.

California Streets and Highways Code (Section 1 et seq.)

The code provides the standards for administering the statewide streets and highways system. Designated state route and interstate highway facilities are under the jurisdiction of Caltrans, except where facility management has been delegated to the county transportation authority.

Local

City of Sacramento 2030 General Plan, 2009

The City of Sacramento 2030 General Plan (City of Sacramento, 2009a) includes a Mobility Element that provides the City policy guidance on transportation issues. The element addresses circulation improvements needed to provide adequate capacity for future land uses, and establishes transportation routes with typical development standards. Policy M 1.2.2 states that the City shall plan and design its roadway system in a manner that strives to meet LOS F on roadways within the Core Downtown Area of the City of Sacramento and LOS D on all other roadways in the City (City of Sacramento, 2009a).

Sacramento Area Council of Governments (SACOG) 2035 Metropolitan Transportation Plan, 2012

SACOG is the metropolitan planning organization responsible for developing the state and federally required Metropolitan Transportation Plan (MTP) every 4 years in coordination with the 22 cities and six counties in the greater Sacramento region. MTP 2035 is the first MTP for the Sacramento region to proactively link land use, air quality, and transportation needs. MTP 2035 (SACOG, 2012) comprehensively assesses transportation available in Sacramento County and the needs for travel and goods movement projected into the future until the year 2035. The plan's analysis includes:

- Providing goals, objectives, and policies to serve as the foundation for both short- and long-term planning regarding multiple modes of transportation (public transit, bicycles, pedestrians).
- Specifying those projects and programs that can be funded throughout the life of the plan, and evaluating those projects and programs to determine their impacts on air quality.
- Advocating for a stable and equitable approach to statewide funding, so that the entire metropolitan area can respond appropriately to the needs of a growing population, environmental quality, and the continuing needs of both maintenance and innovation in transportation systems.

SACOG Regional Bicycle, Pedestrian and Trails Master Plan, 2013

The Sacramento County Department of Public Works and Planning, through coordinated efforts with SACOG and various government and non-profit agencies, prepared and adopted the SACOG Regional Bicycle, Pedestrian and Trails Master Plan, 2013 (Regional Bicycle Plan) to be eligible to receive funding from the State of California bicycle transportation account (BTA) funds. The Regional Bicycle Plan is a coordinated plan for the continued development of a bikeway system that is regionally connected in Sacramento County and adjoining counties. In addition, the Regional Bicycle Plan includes non-motorized transportation route planning in conjunction with transportation planning on streets, roads, highways, and public transit, and serves as the basis for the Bicycle Facilities Element of the Mobility Element of the (Sacramento 2030 General Plan, 2009 and Sacramento County General Plan, 2011).

City of Sacramento Pedestrian Master Plan, 2006

The Pedestrian Master Plan provides a comprehensive vision for improving pedestrian conditions in the City of Sacramento. It includes a framework for creating an improved pedestrian environment. The Pedestrian Master Plan includes pedestrian safety goals to improve safety at intersections and mid-block locations.

Methodology

A traffic assessment was conducted of the Proposed Project's construction vehicle trips to determine if the LOS on the local roadway network would exceed the City's applicable significance thresholds, as identified below. The traffic assessment is integrated into the response to the traffic questions below.

Thresholds

Impacts resulting from changes in transportation or circulation are considered significant if the Proposed Project would result in the following:

Roadway Segments

- Traffic generated by a project degrades peak period LOS from A, B, C, or D (without the project) to E or F (with the project).
- LOS (without the project) is E or F, and project-generated traffic increases the volume to capacity ratio (V/C ratio) by 0.02 or more.

Intersections

- LOS (without the project) is E or F, and project-generated traffic increases the peak period average vehicle delay by 5 seconds or more.

Transit

- Adversely affects public transit operations.
- Fails to adequately provide for access to public transit.

Bicycle Facilities

- Adversely affects bicycle travel or bicycle paths.
- Fails to adequately provide for access by bicycle.

Pedestrian Circulation

- Adversely affects pedestrian travel, or pedestrian paths.

Impacts and Mitigation Measures

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? — No Impact

Construction would include: grading; importing fill material, concrete, aggregate base, steel, asphalt, and equipment; exporting debris; and construction of an access road along the southern property line to the eastern property. No changes in offsite roadways are anticipated with project implementation.

Worker vehicles and/or haul trucks associated with construction could contribute to traffic delays on 16th Street (State Route 160), Business 80, and other local roadways such as C, E, H, J, and L streets, particularly during peak morning or evening hours. The second phase of construction (grading, drainage, and access road construction) would involve the most intensive construction traffic generated by worker vehicles and material delivery and hauling. This phase would generate up to a maximum of 264 vehicle trips per day, with up to 27 trips occurring during peak hours. The anticipated primary access routes used for ingress/egress to the Proposed Project's construction site would be 20th Street; C, E, H, J, and L streets; and State Route 160.

The estimated 27 peak hour construction trips added to the surrounding roadway network would result in V/C ratio increases of less than 0.02, or less than a 2 percent increase, during the peak hour for roadway segments shown in Table 3-16 and the routes potentially used during construction. Thus, the addition of the Proposed Project's construction traffic to the existing roadway network would not significantly

increase vehicle traffic. The addition of the Proposed Project's construction traffic would not change the peak-period LOS for any of the studied roadways and the City's significance thresholds would not be exceeded. Construction traffic would therefore not conflict with applicable plans, ordinances or policies establishing measures of effectiveness for the performance of the circulation system. This impact would be considered **less than significant**, and no mitigation is required.

Operation and maintenance of the Proposed Project would generate a negligible level of traffic associated with regular inspections and maintenance that is similar to existing levels, and no change to operation-related traffic is expected. Therefore, no conflict with applicable plans, ordinances, or policies establishing measures of effectiveness for the performance of the circulation system would occur and **no impact** on traffic would occur with project operations

Table 3-16. Comparison of LOS and V/C Ratios of Roadway Segments With and Without Project Traffic

Roadway Segment	Lanes	Peak Hour Roadway Capacity	Peak-Hour Condition without Project			Peak-Hour Condition with Project			Minimum LOS Required
			Volumes	LOS	V/C	Volumes	LOS	V/C	
Surface Street									
H Street, West of Business 80	3	2,330	1,200	C	0.52	1,227	C	0.53	D
I Street, 3rd Street to 21st Street	4	2,550	2,900	F	1.14	2,927	F	1.15	D
J Street, I-5 to 21st Street	4	2,550	1,500	C	0.59	1,527	C	0.60	D
L Street, 3rd Street to 19th Street	3	2,330	1,400	C	0.60	1,427	C	0.61	D
C Street, Alhambra Blvd to Elvas	2	970	550	C	0.57	577	C	0.59	D
12th Street, I Street to L Street	3	2,330	1,200	C	0.52	1,227	C	0.53	D
15th Street, I Street to L Street	3	2,330	1400	C	0.60	1,427	C	0.61	D
16th Street, I Street to L Street	3	2,330	1,600	C	0.69	1,627	C	0.70	D
Freeways									
Business 80, E Street to Exposition Blvd	6	11,220	8,200	C	0.73	8,227	C	0.73	D
Business 80, Arden Way to El Camino Avenue	9	16,080	18,300	F	1.14	18,327	F	1.14	D
State Route 160, Tribute to Business 80	4	7,420	3,300	B	0.44	3,327	B	0.45	D

Source: City of Sacramento 2030 General Plan (City of Sacramento 2009a)

b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? — Less than significant

Local roadways providing access to the Proposed Project site generally have existing LOS designations of C or better, with the exception of a segment of I Street in the core area of Sacramento. The Proposed Project's haul trucks may use this segment of I Street.

The number of vehicle/truck trips generated during project construction would be relatively low and of a short duration. The estimated maximum of 27 peak hour construction trips added to existing traffic of the surrounding roadway network would result in V/C ratio increases of less than 0.02 during the peak hour for local roadway segments listed in Table 3-16. Facility operation would generate a negligible level of traffic associated with regular inspections and maintenance. Therefore, the Proposed Project would result in a minor decrease LOS and this impact would be considered **less than significant**, and no mitigation is required.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? — No Impact

The Proposed Project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. Natomas Field is approximately 4 miles northwest of the Proposed Project site and the California Highway Patrol Academy Airport is approximately 4.5 miles west. The Proposed Project would have **no impact** on air traffic patterns, and no mitigation is required.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment) ? — Less than significant

The Proposed Project would not include construction activities on any roadways outside of the Proposed Project site. The Proposed Project would include the use of large semi-trailer trucks to deliver construction and facility equipment and import and export of materials. C Street and 16th Street/State Route 160 would be the most likely truck haul routes to access the Proposed Project site. These routes are designated truck routes by the City of Sacramento (City of Sacramento 2009a), and are considered adequate to accommodate temporary construction activities that include semi-truck trips to the Proposed Project site. Construction traffic for the Proposed Project is considered a **less than significant impact** to traffic hazards, and no mitigation is required.

The Proposed Project would increase vehicle travel across the UPRR rail lines at the site entrance. The dual rail lines at the end of 20th Street have lighted crossing arms, which would minimize the potential for any conflicts between trains and construction vehicles. The single line adjacent to the Proposed Project does not include crossing arms. However, the crossing at the single line occurs at a turn in the site access road, so vehicles would be traveling slowly when crossing this line and there is a long and clear line of sight in both directions. Also, trains on this single line would be traveling slowly due to the curve in the rail line at this crossing. In addition, the construction contractor would be required to install feasible measures to minimize conflicts between vehicles accessing the site and train cross traffic. These measures could include signage, use of a flag person, etc. For these reasons, the potential for an accident involving a train and construction vehicle during the relatively short construction period would be negligible. This impact would be considered **less than significant** and no mitigation is required.

e) Result in inadequate emergency access? — No Impact

Emergency access would be available to the Proposed Project site via 20th Street. The site can be accessed by emergency vehicles by way of an unpaved road that parallels the south bank of the American River and extends to Highway 160. The site can also be accessed by way of an unpaved road that parallels the UPRR rail line to the south and extends east to 28th Street. Therefore, adequate emergency vehicle access would be provided to the project site and **no impact** would occur, and no mitigation is required.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? — Less than significant

The Proposed Project would not adversely affect alternative transportation facilities, such as bus turnouts or bicycle racks, or require the installation of such facilities. The temporary increase in construction vehicle trips on local roads in the vicinity could affect bicyclists using the Class II bikeways on 20th, 29th, D and E streets.

Due to the temporary nature of these activities, the Proposed Project's construction activities would not significantly conflict with the City of Sacramento adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the LOS performance or safety of such facilities. Therefore, this impact would be **less than significant**, and no mitigation is required.

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.17 Utilities and Service Systems					
Would the project:					
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☒	☐
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental impacts?	☐	☐	☐	☒
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e)	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?	☐	☐	☐	☒
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental Setting

The Proposed Project is in the City of Sacramento's Department of Utilities service area, which provides municipal water service, wastewater collection, storm drainage, and solid waste disposal services to the City.

Regulatory Setting

Federal

The U.S. Environmental Protection Agency established primary drinking water standards in Clean Water Act (CWA) Section 304 and states are required to ensure that potable water for the public meets these standards.

State

California Water Code Section 10610 (et seq.) requires that public water systems providing water for municipal purposes to more than 3,000 customers must prepare an Urban Water Management Plan.

With regard to wastewater, the CWA and regulations set forth by the California Department of Health Services and State Water Resources Control Board are applicable to discharges of effluent to surface waters. Under the CWA, the RWQCB issues both general and individual permits for discharges to surface waters, including for both point-source and non-point-source discharges. The CWA mandates permits for municipal storm water discharges.

Regulation affecting solid waste disposal in California is embodied in Public Resources Code Title 14, known as the Integrated Waste Management Act, originally adopted in 1989. The Integrated Waste Management Act was designed to increase landfill life by diverting solid waste from landfills within the state and conserving other resources through increasing recycling programs and incentives.

Local

The City adopted an Urban Water Management Plan on November 14, 2006 (PBS&J 2009).

Impacts and Mitigation Measures

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? — No Impact

The Proposed Project would include installing a sanitary sewer septic tank and leach line system for a single onsite restroom. The Sacramento County Environmental Management Department is responsible for regulating septic tank and leach line systems. The Proposed Project would not be subject to the Central Valley RWQCB's wastewater treatment requirements. Therefore, **no impact** would be anticipated.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? — Less than significant

The Proposed Project would include installing a sanitary sewer septic tank and leach line system for a single onsite restroom. The restroom would be used by SMUD workers when they visit the site monthly or when they perform occasional maintenance. The system would be expected to have low use and would be required to be installed consistent with Sacramento County Environmental Management Department regulations. No other septic systems occur on the Proposed Project site

or vicinity. The installation of a single onsite septic system to current regulations would have a less than significant environmental effect, and no mitigation is required.

Water for the restroom would be provided to the site by the City of Sacramento from existing water facilities on the southern property line. The single restroom facility would result in a minor increase in water demand. The Proposed Project does not include landscaping, and no irrigation water would be required. Therefore, construction of new wastewater or water facilities would result in **less than significant** environmental effects and no mitigation is required.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? — No Impact

The Proposed Project site would be graded to collect storm water drainage for infiltration into the existing property sub-grade. A 0.88-acre onsite retention basin would collect surface runoff. The Proposed Project's retention basin design includes drainage storage, dry wells for infiltration, and evaporation. Because storm water drainage would be collected on the site, the Proposed Project would not be expected to increase peak storm water discharge. Therefore, construction of the storm water drainage system would not cause significant environmental effects and **no impact** would occur.

d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed? — No Impact

The Proposed Project would have a minor increase in demand for water associated with the single restroom at the site, which would be provided from the City of Sacramento. No new or expanded entitlements would be needed to provide water to the Proposed Project site. The project's water demands would have no effect on the City's available water supply. Therefore, **no impact** would be anticipated.

e) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments? — No Impact

The Proposed Project would not be served by a wastewater treatment provider. Therefore, the Proposed Project would have **no impact** on the treatment capacity of wastewater treatment providers.

f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs? — No Impact

The Proposed Project would require the disposal of construction debris but would not generate solid waste during project operations other than minimal debris during monthly maintenance activities. Therefore, the Proposed Project would have a negligible effect on landfill capacity and **no impact** would be anticipated.

g) Comply with federal, state, and local statutes and regulations related to solid waste? — No Impact

The Proposed Project would comply with federal, state, and local statutes and regulations related to solid waste. Therefore, **no impact** would be anticipated.

		Potentially Significant Impact	Less-Than-Significant with Mitigation Incorporation	Less-Than-Significant Impact	No Impact
3.18 Mandatory Findings of Significance					
Would the project:					
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
c)	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion

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 an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory? — Less Than Significant With Mitigation

The Proposed Project would be located directly adjacent to the existing substation that is being replaced, and would be in a previously-developed area zoned for industrial uses. The Proposed Project would remove ornamental landscape trees and ruderal vegetation dominated by non-native invasive species. The Proposed Project would require the removal of elderberry shrubs, which provide potential habitat for the federally-listed threatened VELB. However, mitigation measures have been identified to reduce the Proposed Project's impact on the VELB species. Other than the removal of elderberry shrubs, no areas of native vegetation or sensitive

wildlife habitats would be affected. With implementation of the identified mitigation measures, habitat impacts associated with Proposed Project implementation would be reduced to a less-than-significant level. Therefore, the Proposed Project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of rare or endangered plants or animals. This would be considered a **less than significant impact with mitigation**.

No cultural or historical resources were identified on the Proposed Project site. Therefore, the Proposed Project is not expected to eliminate examples of California history or prehistory. Mitigation measures are provided in the event of the inadvertent discovery of buried resources during construction. With mitigation, the Proposed Project would have **no impact** on these resources.

b) Does the Project have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)? — Less Than Significant

Implementation of the Proposed Project would result in less-than-significant environmental impacts following implementation of identified mitigation measures. Impacts associated with the Proposed Project are anticipated to be localized at the project site and would not be expected to combine with other past, present, or planned projects to cause cumulatively considerable environmental impacts. The Proposed Project is in an area zoned for industrial uses, is directly adjacent to the existing substation proposed to be replaced, and is physically separated from the residential uses to the south by the UPRR berm. Given the limited impacts anticipated with project implementation, the Proposed Project would not be expected to cause cumulatively considerable impacts. This impact is **less than significant**, and no mitigation is required.

c) Does the Project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly? — Less Than Significant

As discussed in this IS, implementation of the Proposed Project would result in less-than-significant environmental impacts following implementation of identified mitigation measures. Therefore, the Proposed Project would not be expected to cause substantial adverse effects on human beings, either directly or indirectly. This is considered a **less than significant** cumulative impact, and no mitigation is required.

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- Doug Brown: Agriculture/Forestry, Geology and Soils, Hazards and Hazardous Materials, Land Use and Planning, Mineral Resources, Public Services, Recreation, Utilities

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APPENDIX A: MITIGATION MONITORING AND REPORTING PROGRAM

INTRODUCTION

This mitigation monitoring and reporting plan summarizes identified mitigation measures, implementation schedule, and responsible parties for the Proposed Project. SMUD will use this mitigation monitoring and reporting plan to ensure that identified mitigation measures, adopted as a condition of project approval, are implemented appropriately. This monitoring plan meets the requirements of CEQA Guidelines Section 14074(d), which mandates preparation of monitoring provisions for the implementation of mitigation assigned as part of project approval or adoption.

Mitigation Implementation and Monitoring

SMUD will be responsible for monitoring the implementation of mitigation measures designed to minimize impacts associated with the Proposed Project. While SMUD has ultimate responsibility for ensuring implementation, others may be assigned the responsibility of actually implementing the mitigation. SMUD will retain the primary responsibility for ensuring that the Proposed Project meets the requirements of this mitigation plan and other permit conditions imposed by participating regulatory agencies.

SMUD will designate specific personnel who will be responsible for monitoring implementation of the mitigation that will occur during project construction. The designated personnel will be responsible for submitting documentation and reports to SMUD on a schedule consistent with the mitigation measure and in a manner necessary for demonstrating compliance with mitigation requirements. SMUD will ensure that the designated personnel have authority to require implementation of mitigation requirements and will be capable of terminating project construction activities found to be inconsistent with mitigation objectives or project approval conditions.

SMUD will be responsible for demonstrating compliance with any agency permit conditions to the appropriate regulatory agency. SMUD will also be responsible for ensuring that its construction personnel understand their responsibilities for adhering to the performance requirements of the mitigation plan and other contractual requirements related to the implementation of mitigation as part of project construction.

In addition to the prescribed mitigation measures, Table A-1 lists each identified environmental resource being affected, the corresponding monitoring and reporting requirement, and the party responsible for ensuring implementation of the mitigation measure and monitoring effort.

Mitigation Enforcement

SMUD will be responsible for enforcing mitigation measures. If alternative measures are identified that would be equally effective in mitigating the identified impacts, implementation of these alternative measures will not occur until agreed upon by SMUD.

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
Air Quality	a.) Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation? — Less than Significant with Mitigation	***Mitigation Measure AIR-1*** *SMUD shall use SMAQMD's Construction Mitigation Calculator to implement a combination of the following measures to reduce construction NOx emissions to below 85 pounds per day. Mitigation would include one or more of the following:* *SMUD shall provide a plan for approval by the SMAQMD demonstrating that onsite heavy-duty (50 hp or more) off-road vehicles will achieve a project wide fleet-average of 20 percent NOx reduction or greater compared to the most recent CARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. The SMAQMD's Construction Mitigation Calculator would be used to identify an equipment fleet that achieves this reduction.* *Contractor shall be required, through contracting language, to ensure that heavy-duty trucks accessing the site shall be equipped with model year 2010 or newer engines, or have equivalent emission reductions using after-market control devices.* *SMUD shall pay a fee into the SMAQMD's Off-Site Mitigation Fee Program to offset Proposed Project NOx emissions prior to obtaining a grading permit. The SMAQMD uses these fees to purchase emission reductions in the Sacramento region. The SMAQMD's mitigation fee calculator would be used to determine the total amount of the mitigation fee.* *If, at the time of construction, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with the SMAQMD prior to construction will be necessary to make this determination.* *Implementation of Mitigation Measure Air-1 will be verified as follows:* *1. SMUD shall submit to the SMAQMD an inventory of off-road construction equipment, equal to or greater than 50 hp, that will*	Construction	Construction	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		be used an aggregate of 40 or more hours during construction. The inventory shall include the horsepower rating, engine model year, and projected hours of use. The inventory shall be updated and submitted monthly during construction. No inventory shall be required for any 30-day period in which no construction activity occurs. 2. *At least 48 hours prior to the use of heavy-duty off-road equipment, SMUD shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. The SMAQMD's Model Equipment List can be used to submit this information.* 3. *SMUD shall ensure that emissions from off-road diesel powered equipment used on the Proposed Project site do not exceed 40 percent opacity for more than 3 minutes in any 1 hour based on a visual survey conducted at least weekly. The inspections shall occur 1 hour per week by a CARB certified inspector. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Non-compliant equipment will be documented and a summary provided to the SMAQMD monthly. A monthly summary of the visual survey results shall be submitted during construction. No monthly summary shall be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles and the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this verification section shall supersede other SMAQMD, state, or federal rules or regulations.* 4. *With implementation of Mitigation Measure AIR-1, NOx emissions from construction vehicle operations would be reduced through the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available. If NOx emissions still exceed the 85 pounds per day threshold, the fee under SMAQMD's Off-Site Mitigation Fee Program would be used by SMAQMD to purchase emission reductions in the Sacramento region sufficient to achieve the*				

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		*identified threshold. Therefore, with implementation of these measures, the Proposed Project's NOx emissions would be reduced to below SMAQMD's significance threshold and would be considered a **less than significant** impact. No additional mitigation measures are required.*				
Biological Resources	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 CDFW or USFWS? — Less Than Significant with Mitigation	***Mitigation Measure BIO-1*** *SMUD shall implement the following measures to avoid incidental take of VELB habitat during construction.* *1. No grading would occur within 20 feet of the dripline of the remaining shrubs.* *SMUD shall implement the following impact avoidance measures for activities conducted between 20 and 100 feet of elderberry shrubs to avoid incidental take during construction:* *1. The presence of elderberry shrubs in the construction area and vicinity will be documented on work orders and the SMUD Project Manager will be informed.* *2. Construction personnel will receive instruction regarding the presence of elderberry shrubs, VELB, the importance of avoiding impacts to VELB and its habitat, and the possible penalties for not complying with these requirements.* *3. A 20-foot exclusion boundary around elderberry shrubs will be clearly flagged or fenced in the field and marked on construction plans, and signs will be posted with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs shall be clearly readable and must be maintained for the duration of construction.* *4. A biological monitor will be required to supervise construction activities falling between 20 and 100-feet of elderberry shrubs and stop work should personnel be out of compliance with the VELB avoidance measures, or if there is a risk that incidental*	Construction	Construction	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		take may occur. 5. *Disturbance shall be minimized to the extent feasible, and the site will be restored following construction.* Implementation of the above measures shall avoid direct and indirect take of VELB by establishing and maintaining a protective buffer area around mature elderberry shrubs, and no additional mitigation is required.				
Biological Resources	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? — Less Than Significant with Mitigation	***Mitigation Measure BIO-2*** *SMUD would avoid project construction in areas where nesting birds are present to the extent feasible.* *If ground disturbance is initiated during the nesting season, a qualified biologist will conduct a focused survey of the Proposed Project area and out 250 feet from the Proposed Project site to determine if active nests occur within 14 days prior to ground disturbance. If no active nests are identified, no further mitigation is required.* *If active nests are identified, work within 250 feet of the active nest will be postponed until a qualified biologist determines that nesting is complete, such as if the young have fledged from the nest or the nest is abandoned. If it is not feasible to delay construction, then SMUD will consult with the CDFW and/or USFWS as appropriate to identify additional impact avoidance measures. Typical measures may include establishing visual screening between the construction area and the nest, modifying work activities adjacent to the nest, and/or providing an onsite biological monitor to observe bird behavior with authority to stop work if it is determined that construction is adversely affecting nest behavior.* Implementation of Mitigation Measure BIO-2 is expected to avoid impacts to actively nesting birds, and would therefore reduce this impact to **less than significant.**	Construction	Construction	SMUD	SMUD
Biological Resources	e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? — Less Than Significant with Mitigation	***Mitigation Measure BIO-3*** *Prior to tree removal, SMUD will obtain a permit from the City of*	Construction	Construction	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		Sacramento to remove a heritage-sized tree. Payment of the appropriate permit application fee would go to the City's urban forestry programs to plant and maintain other trees within the City of Sacramento. Obtaining the tree removal permit and payment of the appropriate impact fee, with the funds supporting the City's tree program, would mitigate the impact of tree removal to a ***less-than-significant*** *level, and no other mitigation is required.*				
Cultural Resources	a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5? — Less Than Significant with Mitigation	***Mitigation Measure CUL-1*** *If cultural resources are discovered during the Proposed Project's construction activities, they shall be evaluated for eligibility for inclusion in the CRHR. Resource evaluations shall be conducted by individuals who meet the United States Secretary of Interior's professional standards in archaeology and architectural history. If any of the resources meet the eligibility criteria identified in Public Resources Code Section 5024.1, or CEQA Section 21083.2(g), SMUD will develop and implement mitigation measures according to CEQA Guidelines Section 15126.4(b) before construction begins or resumes.* *For resources eligible for listing in the CRHR that would be rendered ineligible by the effects of project construction, mitigation measures will be implemented. Mitigation measures for archaeological resources shall be selected from the following: avoidance; incorporation of sites within parks, greenspace, or other open space; capping the site; deeding the site into a permanent conservation easement; or data recovery excavation. Mitigation measures for archaeological resources shall be developed in consultation with responsible agencies and, as appropriate, interested parties such as Native American tribes. Mitigation measures for historic architectural resources shall consist of treating these resources according to the U.S. Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings. Implementation of the approved mitigation would be required before beginning/resuming any construction activities with potential to affect identified eligible resources at the site.* Implementation of the Mitigation Measure CUL-1 would ensure	Construction	Construction	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		impacts on historical resources discovered during the Proposed Project's construction are reduced to a **less-than-significant** level by avoiding, protecting, or appropriately excavating the resources.				
Cultural Resources	c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? — Less Than Significant with Mitigation	***Mitigation Measure CUL-2*** *If paleontological resources are uncovered during any on-site construction activities, all work must stop immediately within 100 feet of the area and a Professional Paleontologist shall be retained to evaluate the deposits. Work in the area may only resume after authorization is granted by SMUD's project manager in consultation with the Professional Paleontologist.*	Construction	Construction	SMUD	SMUD
Cultural Resources	d) Disturb any human remains, including those interred outside of formal cemeteries? — Less than Significant with Mitigation	***Mitigation Measure CUL-3*** *If human remains are discovered during the project's construction activities, the requirements of California Health and Human Safety Code Section 7050.5 shall be followed. Potentially damaging excavation shall be halted in the area of the remains, with a minimum radius of 50 feet, and the local County Coroner shall be notified. The Coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code Section 7050.5[b]). If the Coroner determines that the remains are those of a Native American, he or she must contact NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). Pursuant to the provisions of California Public Resources Code Section 5097.98, the NAHC shall identify a Most Likely Descendant (MLD). The MLD designated by the NAHC shall have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods.*	Construction	Construction	SMUD	SMUD
Geology and Soils	a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: iii) Seismic-related ground failure, including liquefaction? — Less Than Significant with Mitigation	***Mitigation Measure GEO-1*** *To mitigate potential liquefaction hazards, the Proposed Project shall implement one or more of the geotechnical recommendations, as applicable, in the Geotechnical Engineering Study (Youngdahl, 2011) or as further recommended by Youngdahl. Applicable recommendations are summarized below.* ***1. Surficial Improvements such as pavement and drive areas:***	Prior to and During Construction	Prior to and During Construction	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		Surficial improvements such as pavement and drive areas shall be supported by native soils, and /or engineered fills, when composed of like materials and processed and compacted. 2. ***Shallow Foundations:*** *To provide a uniform support condition for shallow foundations for the west, middle, and east one-thirds of the site, the Proposed Project shall overexcavate and recompact undocumented fills.* 3. ***Structural Improvements:*** *Structural improvements shall be supported by cast-in drilled holes (CIDH) piles, as an alternative to soil over-excavation and shallow foundation construction.* 4. ***Site Design:*** *The site design shall be performed by a structural engineer and shall be reviewed by a geotechnical consultant to ensure consistency with the design recommendations included in the Geotechnical Engineering Study for North City Substation Relocation, Sacramento, California (Youngdahl, 2011).* Implementation of Mitigation Measure GEO-1 would reduce liquefaction potential on the Proposed Project site to a **less-than-significant** level by reducing the exposure of site structures to liquefiable soils and ensuring the facility's foundations are suitable for the site conditions.				
Geology and Soils	b) Result in substantial soil erosion or the loss of topsoil? — Less Than Significant with Mitigation	***Mitigation Measure GEO-2*** *The Proposed Project shall comply with the City of Sacramento's stormwater ordinances (13.16 and 15.88), and the City's NPDES Permit (i.e., SQIP). In addition, the project shall comply with the NPDES General Construction Permit because the Proposed Project's construction activities would disturb more than 1 acre. Compliance with these regulations and permits would require preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP), including spill prevention and control measures, an erosion control plan, a grading plan, and a storm water management plan for the Proposed Project. These plans would collectively require the project to implement best management practices (BMPs) during the construction period to prevent and control the transport of pollutants, including sediments, trash, pathogens, and hazardous materials.*	During Project Construction and Operations	During Project Construction and Operations	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		Typical SWPPP BMPs include: • *Implementing practices to minimize the contact of construction materials, equipment, and maintenance supplies with storm water.* • *Limiting fueling and other activities using hazardous materials to designated areas, providing drip pans under equipment, and daily checks for vehicle condition.* • *Implementing practices to reduce erosion of exposed soil, including stabilization for soil stockpiles, watering for dust control, installing perimeter silt fences, and/or placement of fiber rolls.* • *Implementing practices to maintain water quality including silt fences, stabilized construction entrances, and storm drain inlet protection.* • *Developing spill prevention and emergency response plans to handle potential fuel or other spills.* • *SMUD shall maintain the proposed 0.88-acre retention basin in a manner that protects water quality, including removing trash and/or sediments from the basin, per the requirements of the City's stormwater quality design manual and SQIP. This would maintain the project's construction and operation to comply with water quality standards or waste discharge requirements associated with the City's NPDES Permit and the General Construction Permit.* Implementation of these plans and their BMPs would minimize the potential for the project's construction activities to violate water quality standards or waste discharge requirements.				
Greenhouse Gas Emissions	a) Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? — Less than Significant with Mitigation	***Mitigation Measure GHG-1*** *SMUD shall implement applicable and feasible BPSs to reduce greenhouse gas emissions from construction activities to meet SMAQMD practices as described below.* • *Improve fuel efficiency from construction equipment by implementing the following:* — *Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3*	Construction	Construction	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		minutes (5 minute limit is required by the state airborne toxics control measure [Title13, sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site. — *Train equipment operators in proper use of equipment.* — *Maintain construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.* — *Use the proper size of equipment for the job.* — *Use equipment with new technologies (repowered engines, electric drive trains) to the extent feasible.* — *Perform on-site material hauling with trucks equipped with on-road engines (if determined to be less emissive than the off-road engines).* — *Use alternative fuels for generators at construction sites such as propane or solar, or use electrical power to the extent feasible.* • *Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.* • *Recycle or salvage non-hazardous construction and demolition debris (goal of at least 75% by weight).* • *Develop and implement a plan to efficiently use water for adequate dust control.* Implementation of the above measures would ensure the Proposed Project would be consistent with SMAQMD's Basic Emission Control Practices, and that the Proposed Project's construction-related GHG impacts would be **less than significant**.				
Hazards and Hazardous Materials	a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? — Less than Significant with Mitigation.	***Mitigation Measure HAZ-1*** *A hazardous materials transportation and handling safety plan shall be developed that identifies specific protocols for the transport of hazardous materials to and from the project site, and the handling of these materials once they arrive on the project site. These protocols shall include the identification of appropriate*	Prior to and During Construction	Prior to and During Construction	SMUD	SMUD

Table A-1: Mitigation Measures						
Checklist Section	**Environmental Criteria**	**Mitigation Measure**	**Implementation Duration**	**Monitoring Duration**	**Responsibility**	
					Implementation	**Monitoring**
		transportation routes that avoid sensitive land uses such as the Courtyard Elementary School. These protocols shall also identify how materials will be used and stored on the project site during both construction and operations. The transport and handling of hazardous materials shall be consistent with the requirements of State law. The identified protocols shall be implemented by SMUD and its contractors during project construction and operations.				
Hydrology and Water Quality	a) Violate any water quality standards or waste discharge requirements? — Less Than Significant with Mitigation	***Mitigation Measure HYD-1*** *Implement Mitigation Measure GEO-2.*	Operation	Operation	SMUD	SMUD

APPENDIX B: NOTICE OF INTENT

SMUD™

Notice of Intent
To Adopt a Mitigated Negative Declaration

Re: Sacramento Municipal Utility District Station E Substation Project

To Whom It May Concern:

Sacramento Municipal Utility District (SMUD) has prepared a Draft Initial Study/Mitigated Negative Declaration addressing the potential environmental effects of constructing and operating the Station E Substation Project (Proposed Project), located in the City of Sacramento in Sacramento County, California. The Proposed Project consists of installing a new substation with overhead and underground utility lines, steel structures, and electrical equipment to replace an existing substation. The Proposed Project would replace the existing North City Substation, which was constructed in the 1950s and has reached its planned operational end of life.

SMUD is proposing to replace the existing North City Substation with the new Station E Substation to maintain operational reliability. Replacing the existing substation at an adjacent site allows construction of the new Station E Substation to occur while maintaining electrical service from the existing North City Substation. The Proposed Project would meet SMUD's performance objectives by locating the substation near the load center of the existing service area.

The Proposed Project site (Figure 1) is located northeast of downtown Sacramento at the north end of 20th Street, south of the American River, west of Sutter's Landing Regional Park and the 28th Street Landfill, and east of the Blue Diamond almond processing facility. The south and west sides of the project are separated from adjoining land uses by the Union Pacific Railroad (UPRR) tracks. South of the Proposed Project area is the Boulevard Park neighborhood and Grant Park.

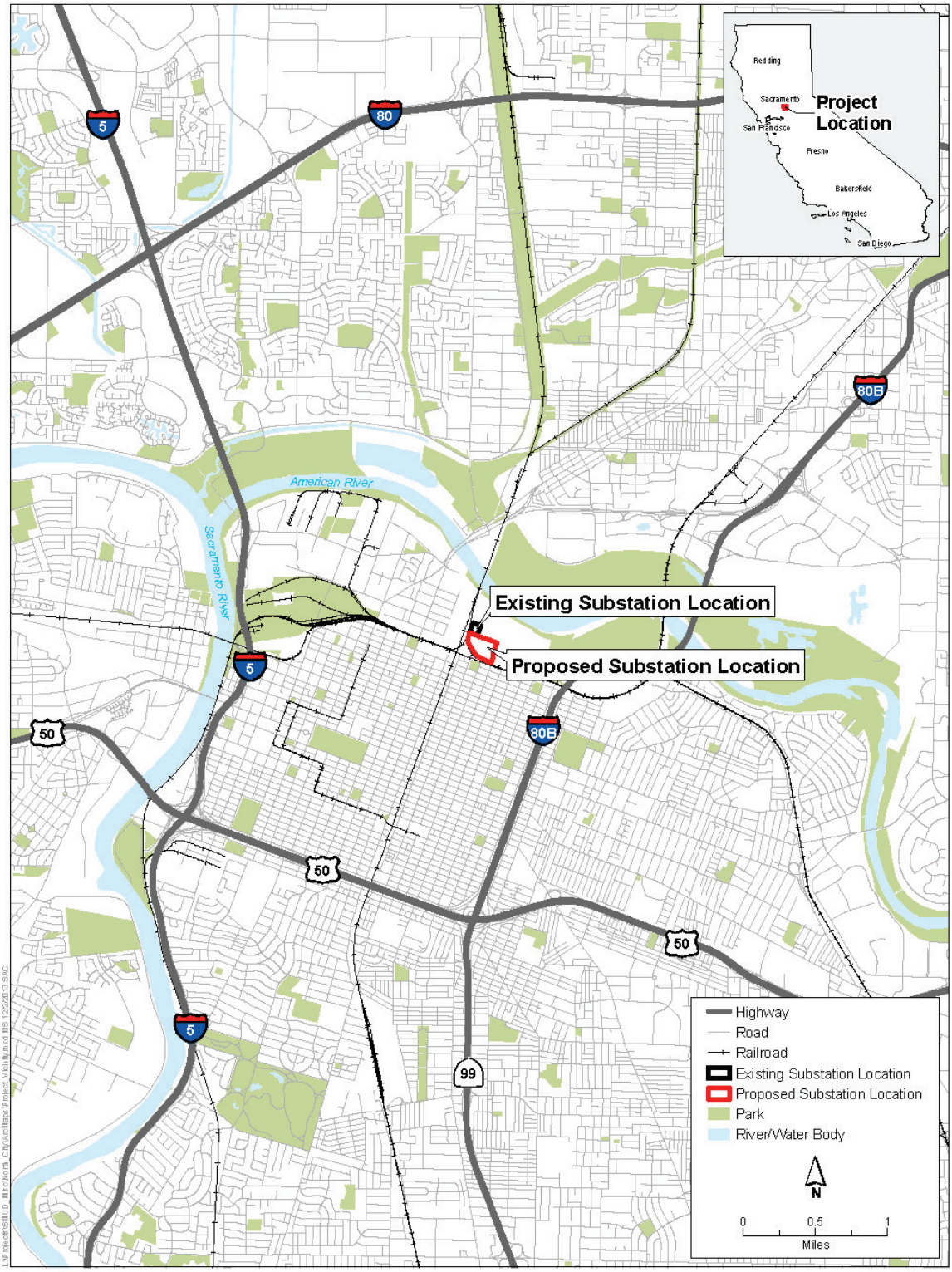

Figure 1. Proposed Project Site.

As lead agency, in accordance with the California Environmental Quality Act (CEQA), SMUD is distributing the Draft Initial Study/Mitigated Negative Declaration to interested public and regulatory authorities for review and comment. SMUD will receive public/agency comments on the Draft Mitigated Negative Declaration for a 30-day period beginning January 3, 2014 and ending February 2, 2014. The Draft Initial Study/Mitigated Negative Declaration is available on SMUD's web page at https://www.smud.org/en/about-smud/company-information/document-library/CEQA-reports.htm and hardcopies may be reviewed at the following locations: Sacramento Central Library, 828 I Street, Sacramento, CA 95814; SMUD Headquarters Building, 6201 S Street, Sacramento, CA 95817; SMUD East Campus Operations Center, 4401 Bradshaw Road, Sacramento, CA 95827; and State Clearinghouse, 1400 Tenth Street, Sacramento, CA 95814.

To present the results of the Initial Study evaluation and to answer questions regarding the proposed project, SMUD will hold a public meeting on January 27, 2014 at 6:30 p.m. at the SMUD Headquarters Building. The public is invited to attend this meeting. Written comments should be submitted to Jose Bodipo-Memba, SMUD, P.O. Box 15830, MS B203, Sacramento, CA, 95852-1830, Jose.Bodipo-Memba@smud.org, fax (916) 732-6890 before 5 p.m., February 2, 2014. If you have questions please contact Jose Bodipo-Memba at (916) 732-6493 or at Jose.Bodipo-Memba@smud.org.

The SMUD Board of Directors will consider adoption of the Mitigated Negative Declaration for this project at two meetings at which the public may make oral comments. The Board will take no action at the Energy Resources and Customer Service Committee meeting. Both public meetings will be held at the SMUD Headquarters Building, 6201 S Street, Sacramento, CA 95817. The Energy Resources and Customer Service Committee Meeting will be held on March 5, 2014 at 5:00 p.m. in Room HCC. The Board meeting will be held on March 6, 2014 at 6:00 p.m. in the Auditorium.

We appreciate your time and effort to review the Draft Initial Study/Mitigated Negative Declaration. Your comments regarding this project will be considered as part of future decisions to be made by SMUD.

Jose Bodipo-Memba, CEQA Project Manager
Sacramento Municipal Utility District

Date
January 3, 2014

APPENDIX C: AIR QUALITY

STATION E SUBSTATION PROJECT
Construction Emissions

Onsite Emissions

Acitivity	Duration (weeks)	Equipment Type	Quantity	Oversized (Y/N)	Duration of Usage: Days	Duration of Usage: Hrs/Day	# of Trips: To Site	# of Trips: From Site	HP	Assumed Equipment Category	Emission Factors (Load Factor Adjusted)							Emission Factors per distance traveled							Emissions per day							Total Emissions						
											g/hp/hr ROG	g/hp/hr CO	g/hp/hr NOX	g/hp/hr SOX	g/hp/hr PM10	g/hp/hr PM2.5	g/hp/hr CO2	g/mi ROG	g/mi CO	g/mi NOX	g/mi SOX	g/mi PM10	g/mi PM2.5	g/mi CO2	lb/dy ROG	lb/dy CO	lb/dy NOX	lb/dy SOX	lb/dy PM10	lb/dy PM2.5	lb/dy CO2	tons ROG	tons CO	tons NOX	tons SOX	tons PM10	tons PM2.5	tons CO2
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	**4**																																					
	4	330 Excavator w/Breakers	2	N	20	8	1	1	162.7	Excavators_175	0.156	0.973	1.779	0.002	0.087	0.080	199.826								0.89	5.58	10.21	0.01	0.50	0.46	1147	0.01	0.06	0.10	0.00	0.01	0.00	11
	4	Semi End Dump - Demo Export (conc, steel, asphalt)	4	N	20	8	4/day	4/day	16	Dumpers/Tenders_25	0.268	0.898	1.685	0.003	0.076	0.070	215.954								0.30	1.01	1.90	0.00	0.09	0.08	244	0.00	0.01	0.02	0.00	0.00	0.00	2
	4	Front Loader	2	N	20	8	1	1	199.7	Rubber Tired Loaders_250	0.154	0.885	1.988	0.002	0.068	0.062	188.323								1.08	6.24	14.01	0.01	0.48	0.44	1327	0.01	0.06	0.14	0.00	0.00	0.00	13
	4	1 Ton Service Truck	2	N	20	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								2.22	8.61	25.26	0.03	0.97	0.89	2844	0.02	0.09	0.25	0.00	0.01	0.01	28
	1	Pavement Grinder	1	N	5	8	1	1	142.3	Crushing/Proc. Equipment_175	0.478	2.540	3.768	0.005	0.208	0.191	443.274								1.20	6.38	9.46	0.01	0.52	0.48	1113	0.00	0.02	0.02	0.00	0.00	0.00	3
	1	30 Ton Crane	1	N	5	8	1	1	226.2	Cranes_250	0.199	0.754	2.265	0.001	0.104	0.095	150.972								0.79	3.01	9.03	0.01	0.41	0.38	602	0.00	0.01	0.02	0.00	0.00	0.00	2
	4	49 HP Air Compressor (250cfm)	2	N	20	8	1	1	49	Air Compressors_50	0.990	2.959	2.600	0.004	0.242	0.223	272.784								1.71	5.11	4.49	0.01	0.42	0.38	471	0.02	0.05	0.04	0.00	0.00	0.00	5
	4	Water Truck	1	N	20	8	1	1			-	-	-	-	-	-	-	0.285	1.263	10.426	-	0.252	0.177	1713.351	0.03	0.11	0.92	0.000	0.02	0.02	151	0.00	0.00	0.01	0.00	0.00	0.00	2
	4	20 HP Generator	1	N	20	8	1	1	20	Generator Sets_25	0.605	2.048	3.695	0.005	0.201	0.185	420.542								0.21	0.72	1.30	0.00	0.07	0.07	148	0.00	0.01	0.01	0.00	0.00	0.00	1
	4	Construction Staff Vehicles	10	N	20	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	Street Sweeper	1	N	20	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.00	0.02	0.04	0.00	0.00	0.00	3
																								TOTAL	**8.90**	**38.35**	**80.15**	**0.08**	**3.79**	**3.48**	**8317**	**0.07**	**0.31**	**0.66**	**0.00**	**0.03**	**0.03**	**70**
Grading, Drainage & Access Road	**10**																																					
	10	Grader	2	N	50	8	1	1	174.7	Graders_175	0.362	1.133	3.557	0.002	0.200	0.184	218.369								2.23	6.98	21.92	0.01	1.23	1.13	1346	0.06	0.17	0.55	0.00	0.03	0.03	34
	10	Scraper	2	N	50	8	1	1	361.6	Scrapers_500	0.242	1.140	3.007	0.002	0.121	0.112	252.633								3.08	14.54	38.35	0.03	1.55	1.42	3222	0.08	0.36	0.96	0.00	0.04	0.04	81
	10	Sheeps Foot Compactor	2	N	50	8	1	1	8	Plate Compactors_15	0.284	1.492	1.781	0.004	0.069	0.064	244.369								0.08	0.42	0.50	0.00	0.02	0.02	69	0.00	0.01	0.01	0.00	0.00	0.00	2
	10	1 Ton Service Truck	2	N	50	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								2.22	8.61	25.26	0.03	0.97	0.89	2844	0.06	0.22	0.63	0.00	0.02	0.02	71
	10	Water Truck	1	N	50	8	1	1			-	-	-	-	-	-	-	0.285	1.263	10.426	-	0.252	0.177	1713.351	0.03	0.11	0.92	0.000	0.02	0.02	151	0.00	0.00	0.02	0.00	0.00	0.00	4
	10	20 Ton Tandem Haul Truck - Import (4,700 trips, 47,000 cyds)	25	N	50	8	4/day	4/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10	Construction Staff Vehicles	15	N	50	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	Rubber Tire Drill Rig	1	N	5	8	1	1	205.8	Bore/Drill Rigs_250	0.114	1.047	1.771	0.002	0.053	0.048	260.604								0.41	3.80	6.43	0.01	0.19	0.18	946	0.00	0.01	0.02	0.00	0.00	0.00	2
	1 day	Casing Delivery - 5 ton 20' Semi Flat Bed	1	N	1	8	1	1			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	Front Loader	1	N	5	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.579	0.002	0.224	0.206	186.783								1.16	3.09	9.08	0.01	0.79	0.73	658	0.00	0.01	0.02	0.00	0.00	0.00	2
	1	Semi-End Dump - Import (AB/AC)	1	N	5	8	2/day	2/day	16	Dumpers/Tenders_25	0.268	0.898	1.685	0.003	0.076	0.070	215.954								0.08	0.25	0.48	0.00	0.02	0.02	61	0.00	0.00	0.00	0.00	0.00	0.00	0
	1	30 Ton Crane	1	N	5	8	1	1	226.2	Cranes_250	0.199	0.754	2.265	0.001	0.104	0.095	150.972								0.79	3.01	9.03	0.01	0.41	0.38	602	0.00	0.01	0.02	0.00	0.00	0.00	2
	1	20 HP Generator	1	N	5	8	1	1	20	Generator Sets_25	0.605	2.048	3.695	0.005	0.201	0.185	420.542								0.21	0.72	1.30	0.00	0.07	0.07	148	0.00	0.00	0.00	0.00	0.00	0.00	0
	10	Street Sweeper	1	N	50	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.01	0.04	0.09	0.00	0.01	0.01	7
																								TOTAL	**10.74**	**43.11**	**116.84**	**0.10**	**5.59**	**5.14**	**10317**	**0.21**	**0.83**	**2.33**	**0.00**	**0.11**	**0.10**	**204**
Fencing, Perimeter Grounding, & Retaining Wall	**4**																																					
	4	2 Ton Truck	2	N	20	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								2.22	8.61	25.26	0.03	0.97	0.89	2844	0.02	0.09	0.25	0.00	0.01	0.01	28
	4	Skid Steer w/Drill	3	N	20	8	1	1	65	Skid Steer Loaders_120	0.117	1.234	1.479	0.002	0.086	0.080	192.872								0.40	4.24	5.09	0.01	0.30	0.27	663	0.00	0.04	0.05	0.00	0.00	0.00	7
	6 days	Semi Flatbed Material Delivery	1	N	6	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	Backhoe	1	N	20	8	1	1	97.9	Tractors/Loaders/Backhoes_120	0.225	0.914	2.057	0.002	0.162	0.149	195.093								0.39	1.58	3.55	0.00	0.28	0.26	337	0.00	0.02	0.04	0.00	0.00	0.00	3
	4	Construction Staff Vehicles	6	N	20	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	Concrete Truck	3	N	10	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	3-5 Ton Roller	1	N	20	8	1	1	80.5	Rollers_120	0.273	1.064	2.398	0.002	0.179	0.164	197.034								0.39	1.51	3.40	0.00	0.25	0.23	280	0.00	0.02	0.03	0.00	0.00	0.00	3
	4	Street Sweeper	1	N	20	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.00	0.02	0.04	0.00	0.00	0.00	3
																								TOTAL	**3.85**	**17.51**	**40.87**	**0.04**	**2.11**	**1.94**	**4394**	**0.04**	**0.18**	**0.41**	**0.00**	**0.02**	**0.02**	**44**
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	**8**																																					
	6	Truck Mounted Drill Rig	1	N	30	8	1	1	205.8	Bore/Drill Rigs_250	0.114	1.047	1.771	0.002	0.053	0.048	260.604								0.41	3.80	6.43	0.01	0.19	0.18	946	0.01	0.06	0.10	0.00	0.00	0.00	14
	2	Track Mounted Drill Rig	1	N	10	8	1	1	205.8	Bore/Drill Rigs_250	0.114	1.047	1.771	0.002	0.053	0.048	260.604								0.41	3.80	6.43	0.01	0.19	0.18	946	0.00	0.02	0.03	0.00	0.00	0.00	5
	6	1 Ton Service Truck	1	N	30	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								1.11	4.30	12.63	0.01	0.48	0.45	1422	0.02	0.06	0.19	0.00	0.01	0.01	21
	2	1 Ton Service Truck	1	N	10	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								1.11	4.30	12.63	0.01	0.48	0.45	1422	0.01	0.02	0.06	0.00	0.00	0.00	7
	4	Front Loader	1	N	20	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.579	0.002	0.224	0.206	186.783								1.16	3.09	9.08	0.01	0.79	0.73	658	0.01	0.03	0.09	0.00	0.01	0.01	7
	8	1 Ton Service Truck	1	N	40	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								1.11	4.30	12.63	0.01	0.48	0.45	1422	0.02	0.09	0.25	0.00	0.01	0.01	28
	2	Semi End Dump - Export (Foundation Soil) - *May keep on site*	4	N	10	8	4/day	4/day	16	Dumpers/Tenders_25	0.268	0.898	1.685	0.003	0.076	0.070	215.954								0.30	1.01	1.90	0.00	0.09	0.08	244	0.00	0.01	0.01	0.00	0.00	0.00	1
	2	AB + Rebar Material Delivery - 5 Ton 20' Semi Flat Bed	1	N	10	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	16 HP Welder	1	N	20	8	1	1	16	Welders_25	0.429	1.245	2.247	0.003	0.131	0.120	255.735								0.12	0.35	0.63	0.00	0.04	0.03	72	0.00	0.00	0.01	0.00	0.00	0.00	1
	1	Forms (Lumber) Material Delivey - 5 Ton 20' Semi Flat Bed	1	N	5	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	Concrete Delivery	10	N	15	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	Construction Employee Vehicles	12	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	20 HP Generator	2	N	40	8	1	1	20	Generator Sets_25	0.605	2.048	3.695	0.005	0.201	0.185	420.542								0.43	1.44	2.61	0.00	0.14	0.13	297	0.01	0.03	0.05	0.00	0.00	0.00	6
	8	Street Sweeper	1	N	40	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.01	0.03	0.07	0.00	0.01	0.01	5
																								TOTAL	**6.62**	**27.99**	**68.54**	**0.08**	**3.20**	**2.95**	**7698**	**0.08**	**0.35**	**0.86**	**0.00**	**0.04**	**0.04**	**96**
Grounding, Conduit & Encasement	**8**																																					
	8	Backhoe	2	N	40	8	1	1	97.9	Tractors/Loaders/Backhoes_120	0.225	0.914	2.057	0.002	0.162	0.149	195.093								0.78	3.16	7.10	0.01	0.56	0.51	674	0.02	0.06	0.14	0.00	0.01	0.01	13
	2	Conduit Delivery - 5 Ton 20' Semi Flat Bed	6	N	10	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	Concrete Trucks	1	N	15	8	6/day	6/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	3-5 Ton Roller/Compactor	2	N	40	8	1	1	80.5	Rollers_120	0.273	1.064	2.398	0.002	0.179	0.164	197.034								0.77	3.02	6.81	0.01	0.51	0.47	559	0.02	0.06	0.14	0.00	0.01	0.01	11
	1	Haul Spoils - Front Loader	1	N	5	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.579	0.002	0.224	0.206	186.783								1.16	3.09	9.08	0.01	0.79	0.73	658	0.00	0.01	0.02	0.00	0.00	0.00	2
	1	Semi End Dump - Export (soil) - *May keep on site*	4	N	5	8	4/day	4/day	16	Dumpers/Tenders_25	0.268	0.898	1.685	0.003	0.076	0.070	215.954								0.30	1.01	1.90	0.00	0.09	0.08	244	0.00	0.00	0.00	0.00	0.00	0.00	1
	8	1 Ton Service Truck	4	N	40	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								4.44	17.22	50.52	0.05	1.94	1.78	5687	0.09	0.34	1.01	0.00	0.04	0.04	114
	8	Construction Employee Vehicles	12	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	Street Sweeper	1	N	40	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.01	0.03	0.07	0.00	0.01	0.01	5
																								TOTAL	**7.90**	**29.07**	**78.99**	**0.08**	**4.19**	**3.85**	**8092**	**0.13**	**0.51**	**1.39**	**0.00**	**0.07**	**0.06**	**146**
Steel Erection	**8**																																					
	8	Steel Delivery - Semi Flat Bed	10	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	60 Ton Crane	1	N	40	8	1	1	226.2	Cranes_250	0.199	0.754	2.265	0.001	0.104	0.095	150.972								0.79	3.01	9.03	0.01	0.41	0.38	602	0.02	0.06	0.18	0.00	0.01	0.01	12
	8	60 Ft Manlift	2	N	40	8	1	1	62.9	Aerial Lifts_120	0.065	0.778	1.039	0.002	0.050	0.046	161.199								0.14	1.73	2.31	0.00	0.11	0.10	358	0.00	0.03	0.05	0.00	0.00	0.00	7
	8	10,000 lb Reach Forklift	1	N	40	8	1	1	89.4	Forklifts_120	0.167	0.572	1.377	0.001	0.115	0.106	105.000								0.26	0.90	2.17	0.00	0.18	0.17	166	0.01	0.02	0.04	0.00	0.00	0.00	3
	8	Construction Employee Vehicles	4	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	1 Ton Service Truck	2	N	40	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								2.22	8.61	25.26	0.03	0.97	0.89	2844	0.04	0.17	0.51	0.00	0.02	0.02	57
	8	20 HP Generator	1	N	40	8	1	1	20	Generator Sets_25	0.605	2.048	3.695	0.005	0.201	0.185	420.542								0.21	0.72	1.30	0.00	0.07	0.07	148	0.00	0.01	0.03	0.00	0.00	0.00	3
	8	16 HP Welder	1	N	40	8	1	1	16	Welders_25	0.429	1.245	2.247	0.003	0.131	0.120	255.735								0.12	0.35	0.63	0.00	0.04	0.03	72	0.00	0.01	0.01	0.00	0.00	0.00	1
	8	Street Sweeper	1	N	40	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.01	0.03	0.07	0.00	0.01	0.01	5
																								TOTAL	**4.21**	**16.89**	**44.28**	**0.04**	**2.10**	**1.93**	**4460**	**0.08**	**0.34**	**0.89**	**0.00**	**0.04**	**0.04**	**89**
Electrical Equipment (New Substation, New T/L and Cutover)	**26**																																					
	26	5 SMUD Crew Vehicles	20	N	130	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	SMUD Crew Truck	2	N	130	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	SMUD Foreman Truck	2	N	130	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40 days	Equipment Delivery - 5 Ton 20' Semi Flat Bed	1	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	290 Ton Crane	1	Y	10	8	1	1	226.2	Cranes_250	0.199	0.754	2.265	0.001	0.104	0.095	150.972								0.79	3.01	9.03	0.01	0.41	0.38	602	0.00	0.02	0.05	0.00	0.00	0.00	3
	2 day	9-axle Semi Flat Bed (Off Haul Equip)	3	Y	2	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	20 HP Generator	2	N	130	8	1	1	20	Generator Sets_25	0.605	2.048	3.695	0.005	0.201	0.185	420.542								0.43	1.44	2.61	0.00	0.14	0.13	297	0.03	0.09	0.17	0.00	0.01	0.01	19
	8	1 SMUD Network Crew	4	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	Street Sweeper	1	N	130	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.03	0.10	0.23	0.00	0.02	0.02	18
																								TOTAL	**1.67**	**6.02**	**15.21**	**0.01**	**0.87**	**0.80**	**1169**	**0.06**	**0.21**	**0.45**	**0.00**	**0.03**	**0.03**	**40**
Demolition of Old North City	**12**																																					
	12	330 Excavator	1	N	60	8	1	1	162.7	Excavators_175	0.156	0.973	1.779	0.002	0.087	0.080	199.826								0.45	2.79	5.10	0.01	0.25	0.23	573	0.01	0.08	0.15	0.00	0.01	0.01	17
	3	150 Ton Crane	1	N	15	8	1	1	226.2	Cranes_250	0.199	0.754	2.265	0.001	0.104	0.095	150.972								0.79	3.01	9.03	0.01	0.41	0.38	602	0.01	0.02	0.07	0.00	0.00	0.00	5
	12	30 Ton Crane	1	N	60	8	1	1	226.2	Cranes_250	0.199	0.754	2.265	0.001	0.104	0.095	150.972								0.79	3.01	9.03	0.01	0.41	0.38	602	0.02	0.09	0.27	0.00	0.01	0.01	18
	6	Front Loader	1	N	30	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.579	0.002	0.224	0.206	186.783								1.16	3.09	9.08	0.01	0.79	0.73	658	0.02	0.05	0.14	0.00	0.01	0.01	10
	6	Semi Flat Bed	4	N	30	8	4/day	4/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	1 Ton Service Truck	1	N	15	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								1.11	4.30	12.63	0.01	0.48	0.45	1422	0.01	0.03	0.09	0.00	0.00	0.00	11
	3	290 Ton Crane	1	Y	15	8	1	1	226.2	Cranes_250	0.199	0.754	2.265	0.001	0.104	0.095	150.972								0.79	3.01	9.03	0.01	0.41	0.38	602	0.01	0.02	0.07	0.00	0.00	0.00	5
	18 days	9-axle Semi Flat Bed (Off Haul Equip & Structures only. No soil)	6	Y	18	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	16 HP Welder	1	N	60	8	1	1	16	Welders_25	0.429	1.245	2.247	0.003	0.131	0.120	255.735								0.12	0.35	0.63	0.00	0.04	0.03	72	0.00	0.01	0.02	0.00	0.00	0.00	2
	12	20 HP Generator	1	N	60	8	1	1	20	Generator Sets_25	0.605	2.048	3.695	0.005	0.201	0.185	420.542								0.21	0.72	1.30	0.00	0.07	0.07	148	0.01	0.02	0.04	0.00	0.00	0.00	4
	12	Construction Employee Vehicles	4	N	60	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	1 Ton Service Truck	2	N	60	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.789	0.002	0.069	0.063	201.430								2.22	8.61	25.26	0.03	0.97	0.89	2844	0.07	0.26	0.76	0.00	0.03	0.03	85
	12	Street Sweeper	1	N	60	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	3.159	0.002	0.278	0.256	239.305								0.45	1.57	3.57	0.00	0.31	0.29	270	0.01	0.05	0.11	0.00	0.01	0.01	8
																								TOTAL	**8.10**	**30.47**	**84.69**	**0.08**	**4.16**	**3.82**	**7794**	**0.16**	**0.64**	**1.71**	**0.00**	**0.08**	**0.08**	**165**

Notes:
[1]Delivery and hauling vehicles not anticipated to generate substantial onsite emissions.
[2a]Emission factors and methodology from CARB's emission models for off-road equipment and motor vehicles and consistent with the methodology in SMAQMD Roadway Construction Emissions Model v7.1.4:
[2b]Construction equipment factors updated with ARB's 2011 Inventory Model for In-Use Off-Road Equipment. Categories not yet in OffRoad2011 were updated from OffRoad2007 (Air Compressors, Cement and Mortar Mixers, Concrete/Industrial Saws, Crushing/Proc. Equipment, Dumpers/Tenders, Generator Sets, Plate Compactors, Pressure Washers, Pumps, Signal Boards, Water Trucks, and Welders)
[2c]On-road vehicle emission factors from EMFAC2011: HHDT - Water Truck Commute Emissions (EMFAC2011-HD web, T7 Single Unit Construction Truck) and LDT1, LDT2 - Worker Commute Truck Emissions (Emfac2011-LDV V2.50.57.246,
[3]All vehicle trips assumed to have a trip length of 20 miles.
[4]Construction equipment emission factors assume 92% of PM2.5 in PM10 (from CEIDARS)
[5]Water Truck emissions calculated based on miles traveled on site, per SMAQMD RoadMod methodology (assumed 40 miles of onsite travel per day)

Fugitive Dust Emissions

Phase	Maximum Acres Disturbed per day	PM10 (lbs/day)	PM2.5 (lbs/day)
Grading, Drainage & Access Road	3.00	30.00	6.24

Notes:
[1]Methodology and PM factors from SMAQMD Roadway Construction Emissions Model v7.1.4:
[2]PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
[3]Acreage disturbed per day based on the area that can be covered by each piece of equipment in an 8-hour work day (scrapers = 1 ac/day; crawler/tractor, dozer, grader = 0.5 ac/day)

Onsite Equipment Emissions Summary

Phase	lb/dy ROG	lb/dy CO	lb/dy NOX	lb/dy SOX	lb/dy PM10	lb/dy PM2.5	lb/dy CO2	tons ROG	tons CO	tons NOX	tons SOX	tons PM10	tons PM2.5	tons CO2
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	8.90	38.35	80.15	0.08	3.79	3.48	8317	0.07	0.31	0.66	0.00	0.03	0.03	70
Grading, Drainage & Access Road	10.74	43.11	116.84	0.10	5.59	5.14	10317	0.21	0.83	2.33	0.00	0.11	0.10	204
Fencing, Perimeter Grounding, & Retaining Wall	3.85	17.51	40.87	0.04	2.11	1.94	4394	0.04	0.18	0.41	0.00	0.02	0.02	44
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	6.62	27.99	68.54	0.08	3.20	2.95	7698	0.08	0.35	0.86	0.00	0.04	0.04	96
Grounding, Conduit & Encasement	7.90	29.07	78.99	0.08	4.19	3.85	8092	0.13	0.51	1.39	0.00	0.07	0.06	146
Steel Erection	4.21	16.89	44.28	0.04	2.10	1.93	4460	0.08	0.34	0.89	0.00	0.04	0.04	89
Electrical Equipment (New Substation, New T/L and Cutover)	1.67	6.02	15.21	0.01	0.87	0.80	1169	0.06	0.21	0.45	0.00	0.03	0.03	40
Demolition of Old North City	8.10	30.47	84.69	0.08	4.16	3.82	7794	0.16	0.64	1.71	0.00	0.08	0.08	165
							Total Annual	**0.848**	**3.363**	**8.697**	**0.008**	**0.425**		**853**

Onsite Equipment, Fugitive Dust, and Offsite Vehicles Total

Phase	lb/dy ROG	lb/dy CO	lb/dy NOX	lb/dy SOX	lb/dy PM10	lb/dy PM2.5	lb/dy CO2	tons ROG	tons CO	tons NOX	tons SOX	tons PM10	tons PM2.5	tons CO2	
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	9.54	42.53	96.93	0.08	4.23	3.78	11431	0.08	0.35	0.83	0.00	0.04	0.03	101	
Grading, Drainage & Access Road	13.66	58.07	213.74	0.10	37.98	13.05	26775	0.28	1.20	4.69	0.00	0.16	0.14	605	
Fencing, Perimeter Grounding, & Retaining Wall	4.11	19.49	46.53	0.04	2.27	2.05	5537	0.04	0.19	0.45	0.00	0.02	0.02	52	
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	7.62	34.05	97.33	0.08	3.94	3.45	12856	0.09	0.42	1.06	0.00	0.05	0.04	136	
Grounding, Conduit & Encasement	8.93	35.25	108.69	0.08	4.95	4.38	13401	0.14	0.58	1.57	0.00	0.07	0.07	185	
Steel Erection	4.58	19.10	55.40	0.04	2.38	2.12	6431	0.09	0.38	1.11	0.00	0.05	0.04	129	
Electrical Equipment (New Substation, New T/L and Cutover)	2.30	12.56	19.55	0.01	1.08	0.91	2880	0.09	0.57	0.51	0.00	0.04	0.03	108	
Demolition of Old North City	8.80	34.12	107.77	0.08	4.73	4.22	11729	0.18	0.70	2.05	0.00	0.09	0.08	224	
							Total Annual	**0.997**	**4.407**	**12.255**	**0.008**	**0.521**		**1540**	1396.82
Significance Thresholds	-	-	85	-	-	-	-	-	-	-	-	-	-	-	

Note: Highlighted cells are above the Significance Threshold.

Offsite Emissions

					Running Emission Factors							Emission Factors per trip							Emmisions per day							Total Emissions						
					g/mi	g/mi	g/mi	g/mi	g/mi	g/mi	g/mi	g/trip	g/trip	g/trip	g/trip	g/trip	g/trip	g/trip	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	tons	tons	tons	tons	tons	tons	tons
Assumed Fleet Mix	Quantity	Trips to site	Trips from site	Trip length	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
HHDT	4	4	4	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.40	1.78	14.71	-	0.36	0.25	2417	0.00	0.02	0.15	-	0.00	0.00	24
HHDT	2	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.05	0.22	1.84	-	0.04	0.03	302	0.00	0.00	0.02	-	0.00	0.00	3
LDT1, LDT2	10	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.19	2.18	0.24	-	0.04	0.02	395	0.00	0.02	0.00	-	0.00	0.00	4
																	TOTAL		**0.64**	**4.18**	**16.79**	**0.00**	**0.44**	**0.30**	**3115**	**0.01**	**0.04**	**0.17**	**0.00**	**0.00**	**0.00**	**31**
HHDT	2	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.05	0.22	1.84	-	0.04	0.03	302	0.00	0.01	0.05	-	0.00	0.00	8
HHDT	25	4	4	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	2.51	11.14	91.94	-	2.22	1.57	15109	0.06	0.28	2.30	-	0.06	0.04	378
LDT1, LDT2	15	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.28	3.26	0.36	-	0.06	0.03	593	0.01	0.08	0.01	-	0.00	0.00	15
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.00	-	0.00	0.00	0
HHDT	1	2	2	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.05	0.22	1.84	-	0.04	0.03	302	0.00	0.00	0.00	-	0.00	0.00	1
																	TOTAL		**2.92**	**14.96**	**96.89**	**0.00**	**2.40**	**1.67**	**16457**	**0.07**	**0.37**	**2.36**	**0.00**	**0.06**	**0.04**	**401**
HHDT	2	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.05	0.22	1.84	-	0.04	0.03	302	0.00	0.00	0.02	-	0.00	0.00	3
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.00	-	0.00	0.00	0
LDT1, LDT2	6	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.11	1.31	0.14	-	0.03	0.01	237	0.00	0.01	0.00	-	0.00	0.00	2
HHDT	3	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.08	0.33	2.76	-	0.07	0.05	453	0.00	0.00	0.01	-	0.00	0.00	2
																	TOTAL		**0.26**	**1.97**	**5.66**	**0.00**	**0.16**	**0.10**	**1144**	**0.00**	**0.02**	**0.04**	**0.00**	**0.00**	**0.00**	**8**
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.01	-	0.00	0.00	2
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.00	-	0.00	0.00	1
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.02	-	0.00	0.00	3
HHDT	4	4	4	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.40	1.78	14.71	-	0.36	0.25	2417	0.00	0.01	0.07	-	0.00	0.00	12
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.00	-	0.00	0.00	1
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.00	-	0.00	0.00	0
HHDT	10	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.25	1.11	9.19	-	0.22	0.16	1511	0.00	0.01	0.07	-	0.00	0.00	11
LDT1, LDT2	12	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.23	2.61	0.28	-	0.05	0.02	474	0.00	0.05	0.01	-	0.00	0.00	9
																	TOTAL		**1.00**	**6.06**	**28.79**	**0.00**	**0.74**	**0.51**	**5158**	**0.01**	**0.07**	**0.19**	**0.00**	**0.01**	**0.00**	**40**
HHDT	6	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.15	0.67	5.52	-	0.13	0.09	907	0.00	0.00	0.03	-	0.00	0.00	5
HHDT	1	6	6	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.15	0.67	5.52	-	0.13	0.09	907	0.00	0.01	0.04	-	0.00	0.00	7
HHDT	4	4	4	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.40	1.78	14.71	-	0.36	0.25	2417	0.00	0.00	0.04	-	0.00	0.00	6
HHDT	4	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.10	0.45	3.68	-	0.09	0.06	604	0.00	0.01	0.07	-	0.00	0.00	12
LDT1, LDT2	12	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.23	2.61	0.28	-	0.05	0.02	474	0.00	0.05	0.01	-	0.00	0.00	9
																	TOTAL		**1.03**	**6.17**	**29.71**	**0.00**	**0.76**	**0.52**	**5309**	**0.01**	**0.07**	**0.18**	**0.00**	**0.01**	**0.00**	**39**
HHDT	10	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.25	1.11	9.19	-	0.22	0.16	1511	0.01	0.02	0.18	-	0.00	0.00	30
LDT1, LDT2	4	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.08	0.87	0.09	-	0.02	0.01	158	0.00	0.02	0.00	-	0.00	0.00	3
HHDT	2	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.05	0.22	1.84	-	0.04	0.03	302	0.00	0.00	0.04	-	0.00	0.00	6
																	TOTAL		**0.38**	**2.21**	**11.13**	**0.00**	**0.28**	**0.19**	**1971**	**0.01**	**0.04**	**0.22**	**0.00**	**0.01**	**0.00**	**39**
LDT1, LDT2	20	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.38	4.35	0.47	-	0.08	0.04	790	0.02	0.28	0.03	-	0.01	0.00	51
LDT1, LDT2	2	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.04	0.44	0.05	-	0.01	0.00	79	0.00	0.03	0.00	-	0.00	0.00	5
LDT1, LDT2	2	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.04	0.44	0.05	-	0.01	0.00	79	0.00	0.03	0.00	-	0.00	0.00	5
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.02	-	0.00	0.00	3
HHDT	3	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.08	0.33	2.76	-	0.07	0.05	453	0.00	0.00	0.00	-	0.00	0.00	0
LDT1, LDT2	4	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.08	0.87	0.09	-	0.02	0.01	158	0.00	0.02	0.00	-	0.00	0.00	3
																	TOTAL		**0.63**	**6.54**	**4.34**	**0.00**	**0.21**	**0.11**	**1711**	**0.03**	**0.36**	**0.06**	**0.00**	**0.01**	**0.00**	**68**
HHDT	4	4	4	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.40	1.78	14.71	-	0.36	0.25	2417	0.01	0.03	0.22	-	0.01	0.00	36
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.01	-	0.00	0.00	1
HHDT	6	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.15	0.67	5.52	-	0.13	0.09	907	0.00	0.01	0.05	-	0.00	0.00	8
LDT1, LDT2	4	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.08	0.87	0.09	-	0.02	0.01	158	0.00	0.03	0.00	-	0.00	0.00	5
HHDT	2	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.05	0.22	1.84	-	0.04	0.03	302	0.00	0.01	0.06	-	0.00	0.00	9
																	TOTAL		**0.70**	**3.65**	**23.08**	**0.00**	**0.57**	**0.40**	**3935**	**0.01**	**0.07**	**0.34**	**0.00**	**0.01**	**0.01**	**59**

Offsite Emissions Summary

	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	tons	tons	tons	tons	tons	tons	tons
Phase	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	0.64	4.18	16.79	0.00	0.44	0.30	3115	0.01	0.04	0.17	0.00	0.00	0.00	31
Grading, Drainage & Access Road	2.92	14.96	96.89	0.00	2.40	1.67	16457	0.07	0.37	2.36	0.00	0.06	0.04	401
Fencing, Perimeter Grounding, & Retaining Wall	0.26	1.97	5.66	0.00	0.16	0.10	1144	0.00	0.02	0.04	0.00	0.00	0.00	8
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	1.00	6.06	28.79	0.00	0.74	0.51	5158	0.01	0.07	0.19	0.00	0.01	0.00	40
Grounding, Conduit & Encasement	1.03	6.17	29.71	0.00	0.76	0.52	5309	0.01	0.07	0.18	0.00	0.01	0.00	39
Steel Erection	0.38	2.21	11.13	0.00	0.28	0.19	1971	0.01	0.04	0.22	0.00	0.01	0.00	39
Electrical Equipment (New Substation, New T/L and Cutover)	0.63	6.54	4.34	0.00	0.21	0.11	1711	0.03	0.36	0.06	0.00	0.01	0.00	68
Demolition of Old North City	0.70	3.65	23.08	0.00	0.57	0.40	3935	0.01	0.07	0.34	0.00	0.01	0.01	59
							Total Annual	**0.15**	**1.04**	**3.56**	**0.00**	**0.10**	**0.06**	**686**

STATION E SUBSTATION PROJECT
Construction Emissions - Mitigated

Onsite Emissions

Acitivity	Duration (weeks)	Equipment Type	Quantity	Oversized (Y/N)	Duration of Usage: Days	Duration of Usage: Hrs/Day	# of Trips: To Site	# of Trips: From Site	HP	Assumed Equipment Category	Emission Factors (Load Factor Adjusted) ROG g/hp/hr	CO g/hp/hr	NOX g/hp/hr	SOX g/hp/hr	PM10 g/hp/hr	PM2.5 g/hp/hr	CO2 g/hp/hr	Emission Factors per distance traveled ROG g/mi	CO g/mi	NOX g/mi	SOX g/mi	PM10 g/mi	PM2.5 g/mi	CO2 g/mi	Emissions per day ROG lb/dy	CO lb/dy	NOX lb/dy	SOX lb/dy	PM10 lb/dy	PM2.5 lb/dy	CO2 lb/dy	Total Emissions ROG tons	CO tons	NOX tons	SOX tons	PM10 tons	PM2.5 tons	CO2 tons
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	**4**																																					
	4	330 Excavator w/Breakers	2	N	20	8	1	1	162.7	Excavators_175	0.156	0.973	1.423	0.002	0.087	0.080	199.826								0.89	5.58	8.17	0.01	0.50	0.46	1147	0.01	0.06	0.08	0.00	0.01	0.00	11
	4	Semi End Dump - Demo Export (conc, steel, asphalt)	4	N	20	8	4/day	4/day	16	Dumpers/Tenders_25	0.268	0.898	1.348	0.003	0.076	0.070	215.954								0.30	1.01	1.52	0.00	0.09	0.08	244	0.00	0.01	0.02	0.00	0.00	0.00	2
	4	Front Loader	2	N	20	8	1	1	199.7	Rubber Tired Loaders_250	0.154	0.885	1.591	0.002	0.068	0.062	188.323								1.08	6.24	11.20	0.01	0.48	0.44	1327	0.01	0.06	0.11	0.00	0.00	0.00	13
	4	1 Ton Service Truck	2	N	20	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								2.22	8.61	20.21	0.03	0.97	0.89	2844	0.02	0.09	0.20	0.00	0.01	0.01	28
	1	Pavement Grinder	1	N	5	8	1	1	142.3	Crushing/Proc. Equipment_175	0.478	2.540	3.014	0.005	0.208	0.191	443.274								1.20	6.38	7.56	0.01	0.52	0.48	1113	0.00	0.02	0.02	0.00	0.00	0.00	3
	1	30 Ton Crane	1	N	5	8	1	1	226.2	Cranes_250	0.199	0.754	1.812	0.001	0.104	0.095	150.972								0.79	3.01	7.23	0.01	0.41	0.38	602	0.00	0.01	0.02	0.00	0.00	0.00	2
	4	49 HP Air Compressor (250cfm)	2	N	20	8	1	1	49	Air Compressors_50	0.990	2.959	2.080	0.004	0.242	0.223	272.784								1.71	5.11	3.59	0.01	0.42	0.38	471	0.02	0.05	0.04	0.00	0.00	0.00	5
	4	Water Truck	1	N	20	8	1	1			-	-	-	-	-	-	-	0.285	1.263	8.341	-	0.252	0.177	1713.351	0.03	0.11	0.74	-	0.02	0.02	151	-	-	-	-	-	-	-
	4	20 HP Generator	1	N	20	8	1	1	20	Generator Sets_25	0.605	2.048	2.956	0.005	0.201	0.185	420.542								0.21	0.72	1.04	0.00	0.07	0.07	148	0.00	0.01	0.01	0.00	0.00	0.00	1
	4	Construction Staff Vehicles	10	N	20	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	Street Sweeper	1	N	20	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.00	0.02	0.03	0.00	0.00	0.00	3
																								TOTAL	**8.90**	**38.35**	**64.12**	**0.08**	**3.79**	**3.48**	**8317**	**0.07**	**0.31**	**0.52**	**0.00**	**0.03**	**0.03**	**69**
Grading, Drainage & Access Road	**10**																																					
	10	Grader	2	N	50	8	1	1	174.7	Graders_175	0.362	1.133	2.845	0.002	0.200	0.184	218.369								2.23	6.98	17.53	0.01	1.23	1.13	1346	0.06	0.17	0.44	0.00	0.03	0.03	34
	10	Scraper	2	N	50	8	1	1	361.6	Scrapers_500	0.242	1.140	2.405	0.002	0.121	0.112	252.633								3.08	14.54	30.68	0.03	1.55	1.42	3222	0.08	0.36	0.77	0.00	0.04	0.04	81
	10	Sheeps Foot Compactor	2	N	50	8	1	1	8	Plate Compactors_15	0.284	1.492	1.425	0.004	0.069	0.064	244.369								0.08	0.42	0.40	0.00	0.02	0.02	69	0.00	0.01	0.01	0.00	0.00	0.00	2
	10	1 Ton Service Truck	2	N	50	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								2.22	8.61	20.21	0.03	0.97	0.89	2844	0.06	0.22	0.51	0.00	0.02	0.02	71
	10	Water Truck	1	N	50	8	1	1			-	-	-	-	-	-	-	0.285	1.263	8.341	-	0.252	0.177	1713.351	0.03	0.11	0.74	-	0.02	0.02	151	-	-	-	-	-	-	-
	10	20 Ton Tandem Haul Truck - Import (4,700 trips, 47,000 cyds)	25	N	50	8	4/day	4/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10	Construction Staff Vehicles	15	N	50	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	Rubber Tire Drill Rig	1	N	5	8	1	1	205.8	Bore/Drill Rigs_250	0.114	1.047	1.417	0.002	0.053	0.048	260.604								0.41	3.80	5.14	0.01	0.19	0.18	946	0.00	0.01	0.01	0.00	0.00	0.00	2
	1 day	Casing Delivery - 5 ton 20' Semi Flat Bed	1	N	1	8	1	1			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1	Front Loader	1	N	5	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.064	0.002	0.224	0.206	186.783								1.16	3.09	7.27	0.01	0.79	0.73	658	0.00	0.01	0.02	0.00	0.00	0.00	2
	1	Semi-End Dump - Import (AB/AC)	1	N	5	8	2/day	2/day	16	Dumpers/Tenders_25	0.268	0.898	1.348	0.003	0.076	0.070	215.954								0.08	0.25	0.38	0.00	0.02	0.02	61	0.00	0.00	0.00	0.00	0.00	0.00	0
	1	30 Ton Crane	1	N	5	8	1	1	226.2	Cranes_250	0.199	0.754	1.812	0.001	0.104	0.095	150.972								0.79	3.01	7.23	0.01	0.41	0.38	602	0.00	0.01	0.02	0.00	0.00	0.00	2
	1	20 HP Generator	1	N	5	8	1	1	20	Generator Sets_25	0.605	2.048	2.956	0.005	0.201	0.185	420.542								0.21	0.72	1.04	0.00	0.07	0.07	148	0.00	0.00	0.00	0.00	0.00	0.00	0
	10	Street Sweeper	1	N	50	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.01	0.04	0.07	0.00	0.01	0.01	7
																								TOTAL	**10.74**	**43.11**	**93.48**	**0.10**	**5.59**	**5.14**	**10317**	**0.21**	**0.83**	**1.84**	**0.00**	**0.11**	**0.10**	**200**
Fencing, Perimeter Grounding, & Retaining Wall	**4**																																					
	4	2 Ton Truck	2	N	20	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								2.22	8.61	20.21	0.03	0.97	0.89	2844	0.02	0.09	0.20	0.00	0.01	0.01	28
	4	Skid Steer w/Drill	3	N	20	8	1	1	65	Skid Steer Loaders_120	0.117	1.234	1.183	0.002	0.086	0.080	192.872								0.40	4.24	4.07	0.01	0.30	0.27	663	0.00	0.04	0.04	0.00	0.00	0.00	7
	6 days	Semi Flatbed Material Delivery	1	N	6	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	Backhoe	1	N	20	8	1	1	97.9	Tractors/Loaders/Backhoes_120	0.225	0.914	1.645	0.002	0.162	0.149	195.093								0.39	1.58	2.84	0.00	0.28	0.26	337	0.00	0.02	0.03	0.00	0.00	0.00	3
	4	Construction Staff Vehicles	6	N	20	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	Concrete Truck	3	N	10	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	3-5 Ton Roller	1	N	20	8	1	1	80.5	Rollers_120	0.273	1.064	1.918	0.002	0.179	0.164	197.034								0.39	1.51	2.72	0.00	0.25	0.23	280	0.00	0.02	0.03	0.00	0.00	0.00	3
	4	Street Sweeper	1	N	20	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.00	0.02	0.03	0.00	0.00	0.00	3
																								TOTAL	**3.85**	**17.51**	**32.70**	**0.04**	**2.11**	**1.94**	**4394**	**0.04**	**0.18**	**0.33**	**0.00**	**0.02**	**0.02**	**44**
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	**8**																																					
	6	Truck Mounted Drill Rig	1	N	30	8	1	1	205.8	Bore/Drill Rigs_250	0.114	1.047	1.417	0.002	0.053	0.048	260.604								0.41	3.80	5.14	0.01	0.19	0.18	946	0.01	0.06	0.08	0.00	0.00	0.00	14
	2	Track Mounted Drill Rig	1	N	10	8	1	1	205.8	Bore/Drill Rigs_250	0.114	1.047	1.417	0.002	0.053	0.048	260.604								0.41	3.80	5.14	0.01	0.19	0.18	946	0.00	0.02	0.03	0.00	0.00	0.00	5
	6	1 Ton Service Truck	1	N	30	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								1.11	4.30	10.10	0.01	0.48	0.45	1422	0.02	0.06	0.15	0.00	0.01	0.01	21
	2	1 Ton Service Truck	1	N	10	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								1.11	4.30	10.10	0.01	0.48	0.45	1422	0.01	0.02	0.05	0.00	0.00	0.00	7
	4	Front Loader	1	N	20	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.064	0.002	0.224	0.206	186.783								1.16	3.09	7.27	0.01	0.79	0.73	658	0.01	0.03	0.07	0.00	0.01	0.01	7
	8	1 Ton Service Truck	1	N	40	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								1.11	4.30	10.10	0.01	0.48	0.45	1422	0.02	0.09	0.20	0.00	0.01	0.01	28
	2	Semi End Dump - Export (Foundation Soil) - *May keep on site*	4	N	10	8	4/day	4/day	16	Dumpers/Tenders_25	0.268	0.898	1.348	0.003	0.076	0.070	215.954								0.30	1.01	1.52	0.00	0.09	0.08	244	0.00	0.01	0.01	0.00	0.00	0.00	1
	2	AB + Rebar Material Delivery - 5 Ton 20' Semi Flat Bed	1	N	10	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4	16 HP Welder	1	N	20	8	1	1	16	Welders_25	0.429	1.245	1.797	0.003	0.131	0.120	255.735								0.12	0.35	0.51	0.00	0.04	0.03	72	0.00	0.00	0.01	0.00	0.00	0.00	1
	1	Forms (Lumber) Material Delivey - 5 Ton 20' Semi Flat Bed	1	N	5	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	Concrete Delivery	10	N	15	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	Construction Employee Vehicles	12	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	20 HP Generator	2	N	40	8	1	1	20	Generator Sets_25	0.605	2.048	2.956	0.005	0.201	0.185	420.542								0.43	1.44	2.09	0.00	0.14	0.13	297	0.01	0.03	0.04	0.00	0.00	0.00	6
	8	Street Sweeper	1	N	40	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.01	0.03	0.06	0.00	0.01	0.01	5
																								TOTAL	**6.62**	**27.99**	**54.83**	**0.08**	**3.20**	**2.95**	**7698**	**0.08**	**0.35**	**0.69**	**0.00**	**0.04**	**0.04**	**96**
Grounding, Conduit & Encasement	**8**																																					
	8	Backhoe	2	N	40	8	1	1	97.9	Tractors/Loaders/Backhoes_120	0.225	0.914	1.645	0.002	0.162	0.149	195.093								0.78	3.16	5.68	0.01	0.56	0.51	674	0.02	0.06	0.11	0.00	0.01	0.01	13
	2	Conduit Delivery - 5 Ton 20' Semi Flat Bed	6	N	10	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	Concrete Trucks	1	N	15	8	6/day	6/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	3-5 Ton Roller/Compactor	2	N	40	8	1	1	80.5	Rollers_120	0.273	1.064	1.918	0.002	0.179	0.164	197.034								0.77	3.02	5.45	0.01	0.51	0.47	559	0.02	0.06	0.11	0.00	0.01	0.01	11
	1	Haul Spoils - Front Loader	1	N	5	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.064	0.002	0.224	0.206	186.783								1.16	3.09	7.27	0.01	0.79	0.73	658	0.00	0.01	0.02	0.00	0.00	0.00	2
	1	Semi End Dump - Export (soil) - *May keep on site*	4	N	5	8	4/day	4/day	16	Dumpers/Tenders_25	0.268	0.898	1.348	0.003	0.076	0.070	215.954								0.30	1.01	1.52	0.00	0.09	0.08	244	0.00	0.00	0.00	0.00	0.00	0.00	1
	8	1 Ton Service Truck	4	N	40	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								4.44	17.22	40.42	0.05	1.94	1.78	5687	0.09	0.34	0.81	0.00	0.04	0.04	114
	8	Construction Employee Vehicles	12	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	Street Sweeper	1	N	40	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.01	0.03	0.06	0.00	0.01	0.01	5
																								TOTAL	**7.90**	**29.07**	**63.19**	**0.08**	**4.19**	**3.85**	**8092**	**0.13**	**0.51**	**1.11**	**0.00**	**0.07**	**0.06**	**146**
Steel Erection	**8**																																					
	8	Steel Delivery - Semi Flat Bed	10	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	60 Ton Crane	1	N	40	8	1	1	226.2	Cranes_250	0.199	0.754	1.812	0.001	0.104	0.095	150.972								0.79	3.01	7.23	0.01	0.41	0.38	602	0.02	0.06	0.14	0.00	0.01	0.01	12
	8	60 Ft Manlift	2	N	40	8	1	1	62.9	Aerial Lifts_120	0.065	0.778	0.832	0.002	0.050	0.046	161.199								0.14	1.73	1.85	0.00	0.11	0.10	358	0.00	0.03	0.04	0.00	0.00	0.00	7
	8	10,000 lb Reach Forklift	1	N	40	8	1	1	89.4	Forklifts_120	0.167	0.572	1.101	0.001	0.115	0.106	105.000								0.26	0.90	1.74	0.00	0.18	0.17	166	0.01	0.02	0.03	0.00	0.00	0.00	3
	8	Construction Employee Vehicles	4	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8	1 Ton Service Truck	2	N	40	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								2.22	8.61	20.21	0.03	0.97	0.89	2844	0.04	0.17	0.40	0.00	0.02	0.02	57
	8	20 HP Generator	1	N	40	8	1	1	20	Generator Sets_25	0.605	2.048	2.956	0.005	0.201	0.185	420.542								0.21	0.72	1.04	0.00	0.07	0.07	148	0.00	0.01	0.02	0.00	0.00	0.00	3
	8	16 HP Welder	1	N	40	8	1	1	16	Welders_25	0.429	1.245	1.797	0.003	0.131	0.120	255.735								0.12	0.35	0.51	0.00	0.04	0.03	72	0.00	0.01	0.01	0.00	0.00	0.00	1
	8	Street Sweeper	1	N	40	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.01	0.03	0.06	0.00	0.01	0.01	5
																								TOTAL	**4.21**	**16.89**	**35.42**	**0.04**	**2.10**	**1.93**	**4460**	**0.08**	**0.34**	**0.71**	**0.00**	**0.04**	**0.04**	**89**
Electrical Equipment (New Substation, New T/L and Cutover)	**26**																																					
	26	5 SMUD Crew Vehicles	20	N	130	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	SMUD Crew Truck	2	N	130	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	SMUD Foreman Truck	2	N	130	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	40 days	Equipment Delivery - 5 Ton 20' Semi Flat Bed	1	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	290 Ton Crane	1	Y	10	8	1	1	226.2	Cranes_250	0.199	0.754	1.812	0.001	0.104	0.095	150.972								0.79	3.01	7.23	0.01	0.41	0.38	602	0.00	0.02	0.04	0.00	0.00	0.00	3
	2 day	9-axle Semi Flat Bed (Off Haul Equip)	3	Y	2	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	20 HP Generator	2	N	130	8	1	1	20	Generator Sets_25	0.605	2.048	2.956	0.005	0.201	0.185	420.542								0.43	1.44	2.09	0.00	0.14	0.13	297	0.03	0.09	0.14	0.00	0.01	0.01	19
	8	1 SMUD Network Crew	4	N	40	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26	Street Sweeper	1	N	130	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.03	0.10	0.19	0.00	0.02	0.02	18
																								TOTAL	**1.67**	**6.02**	**12.17**	**0.01**	**0.87**	**0.80**	**1169**	**0.06**	**0.21**	**0.36**	**0.00**	**0.03**	**0.03**	**40**
Demolition of Old North City	**12**																																					
	12	330 Excavator	1	N	60	8	1	1	162.7	Excavators_175	0.156	0.973	1.423	0.002	0.087	0.080	199.826								0.45	2.79	4.08	0.01	0.25	0.23	573	0.01	0.08	0.12	0.00	0.01	0.01	17
	3	150 Ton Crane	1	N	15	8	1	1	226.2	Cranes_250	0.199	0.754	1.812	0.001	0.104	0.095	150.972								0.79	3.01	7.23	0.01	0.41	0.38	602	0.01	0.02	0.05	0.00	0.00	0.00	5
	12	30 Ton Crane	1	N	60	8	1	1	226.2	Cranes_250	0.199	0.754	1.812	0.001	0.104	0.095	150.972								0.79	3.01	7.23	0.01	0.41	0.38	602	0.02	0.09	0.22	0.00	0.01	0.01	18
	6	Front Loader	1	N	30	8	1	1	199.7	Rubber Tired Loaders_120	0.329	0.878	2.064	0.002	0.224	0.206	186.783								1.16	3.09	7.27	0.01	0.79	0.73	658	0.02	0.05	0.11	0.00	0.01	0.01	10
	6	Semi Flat Bed	4	N	30	8	4/day	4/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	1 Ton Service Truck	1	N	15	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								1.11	4.30	10.10	0.01	0.48	0.45	1422	0.01	0.03	0.08	0.00	0.00	0.00	11
	3	290 Ton Crane	1	Y	15	8	1	1	226.2	Cranes_250	0.199	0.754	1.812	0.001	0.104	0.095	150.972								0.79	3.01	7.23	0.01	0.41	0.38	602	0.01	0.02	0.05	0.00	0.00	0.00	5
	18 days	9-axle Semi Flat Bed (Off Haul Equip & Structures only. No soil)	6	Y	18	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	16 HP Welder	1	N	60	8	1	1	16	Welders_25	0.429	1.245	1.797	0.003	0.131	0.120	255.735								0.12	0.35	0.51	0.00	0.04	0.03	72	0.00	0.01	0.02	0.00	0.00	0.00	2
	12	20 HP Generator	1	N	60	8	1	1	20	Generator Sets_25	0.605	2.048	2.956	0.005	0.201	0.185	420.542								0.21	0.72	1.04	0.00	0.07	0.07	148	0.01	0.02	0.03	0.00	0.00	0.00	4
	12	Construction Employee Vehicles	4	N	60	8	1/day	1/day			-	-	-	-	-	-	-								-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12	1 Ton Service Truck	2	N	60	8	1/day	1/day	400.2	Off-Highway Trucks_500	0.157	0.610	1.432	0.002	0.069	0.063	201.430								2.22	8.61	20.21	0.03	0.97	0.89	2844	0.07	0.26	0.61	0.00	0.03	0.03	85
	12	Street Sweeper	1	N	60	8	1	1	64	Sweepers/Scrubbers_120	0.397	1.393	2.527	0.002	0.278	0.256	239.305								0.45	1.57	2.85	0.00	0.31	0.29	270	0.01	0.05	0.09	0.00	0.01	0.01	8
																								TOTAL	**8.10**	**30.47**	**67.75**	**0.08**	**4.16**	**3.82**	**7794**	**0.16**	**0.64**	**1.37**	**0.00**	**0.08**	**0.08**	**165**

Notes:

[1]Delivery and hauling vehicles not anticipated to generate substantial onsite emissions.
[2a]Emission factors and methodology from SMAQMD Roadway Construction Emissions Model v7.1.4:
[2b]Construction equipment factors updated with ARB's 2011 Inventory Model for In-Use Off-Road Equipment. Categories not yet in OffRoad2011 were updated from OffRoad2007 (Air Compressors, Cement and Mortar Mixers, Concrete/Industrial Saws, Crushing/Proc. Equipment, Dumpers/Tenders, Generator Sets, Plate Compactors, Pressure Washers, Pumps, Signal Boards, Water Trucks, and Welders)
[2c]On-road vehicle emission factors from EMFAC2011: HHDT - Water Truck Commute Emissions (EMFAC2011-HD web, T7 Single Unit Construction Truck) and LDT1, LDT2 - Worker Commute Truck Emissions (Emfac2011-LDV V2.50.57.246, LDT1
[3]All vehicle trips assumed to have a trip length of 20 miles.
[4]Construction equipment emission factors assume 92% of PM2.5 in PM10 (from CEIDARS)
[5]Water Truck emissions calculated based on miles traveled on site, per SMAQMD RoadMod methodology (assumed 40 miles of onsite travel per day)

Mitigation:

[6]20% NOx reduction in onsite equipment exhaust
[7]HHDT emission factors assume Model Year 2010 (EMFAC2011-HD web, T7 Single Unit Construction Truck)

Fugitive Dust Emissions

Phase	Maximum Acres Disturbed per day	PM10 (lbs/day)	PM2.5 (lbs/day)
Grading, Drainage & Access Road	3.00	30.00	6.24

Notes:

[1]Methodology and PM factors from SMAQMD Roadway Construction Emissions Model v7.1.4:
[2]PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.
[3]Acreage disturbed per day based on area that can be covered by each piece of equipment in an 8-hour work day (scrapers = 1 ac/day; crawler/tractor, dozer, grader = 0.5 ac/day)

Onsite Equipment Emissions Summary

Phase	ROG lb/dy	CO lb/dy	NOX lb/dy	SOX lb/dy	PM10 lb/dy	PM2.5 lb/dy	CO2 lb/dy	ROG tons	CO tons	NOX tons	SOX tons	PM10 tons	PM2.5 tons	CO2 tons
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	8.90	38.35	64.12	0.08	3.79	3.48	8317	0.07	0.31	0.52	0.00	0.03	0.03	69
Grading, Drainage & Access Road	10.74	43.11	93.48	0.10	5.59	5.14	10317	0.21	0.83	1.84	0.00	0.11	0.10	200
Fencing, Perimeter Grounding, & Retaining Wall	3.85	17.51	32.70	0.04	2.11	1.94	4394	0.04	0.18	0.33	0.00	0.02	0.02	44
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	6.62	27.99	54.83	0.08	3.20	2.95	7698	0.08	0.35	0.69	0.00	0.04	0.04	96
Grounding, Conduit & Encasement	7.90	29.07	63.19	0.08	4.19	3.85	8092	0.13	0.51	1.11	0.00	0.07	0.06	146
Steel Erection	4.21	16.89	35.42	0.04	2.10	1.93	4460	0.08	0.34	0.71	0.00	0.04	0.04	89
Electrical Equipment (New Substation, New T/L and Cutover)	1.67	6.02	12.17	0.01	0.87	0.80	1169	0.06	0.21	0.36	0.00	0.03	0.03	40
Demolition of Old North City	8.10	30.47	67.75	0.08	4.16	3.82	7794	0.16	0.64	1.37	0.00	0.08	0.08	165
							Total Annual	**0.847**	**3.359**	**6.932**	**0.008**	**0.424**		**848**

Onsite (Exhaust and Dust) and Offsite Total

Phase	ROG lb/dy	CO lb/dy	NOX lb/dy	SOX lb/dy	PM10 lb/dy	PM2.5 lb/dy	CO2 lb/dy	ROG tons	CO tons	NOX tons	SOX tons	PM10 tons	PM2.5 tons	CO2 tons
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	9.36	41.81	67.23	0.08	3.92	3.58	11437	0.08	0.35	0.55	0.00	0.03	0.03	100
Grading, Drainage & Access Road	12.66	53.88	110.60	0.10	36.15	11.87	26807	0.26	1.09	2.26	0.00	0.12	0.11	602
Fencing, Perimeter Grounding, & Retaining Wall	4.05	19.25	33.80	0.04	2.17	1.98	5539	0.04	0.19	0.33	0.00	0.02	0.02	52
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	7.32	32.82	60.07	0.08	3.40	3.10	12865	0.09	0.41	0.73	0.00	0.04	0.04	136
Grounding, Conduit & Encasement	8.62	33.97	68.58	0.08	4.39	4.02	13411	0.14	0.58	1.15	0.00	0.07	0.06	185
Steel Erection	4.47	18.62	37.43	0.04	2.17	1.99	6435	0.09	0.37	0.75	0.00	0.04	0.04	129
Electrical Equipment (New Substation, New T/L and Cutover)	2.26	12.40	13.47	0.01	1.01	0.87	2881	0.09	0.57	0.40	0.00	0.04	0.03	108
Demolition of Old North City	8.57	33.13	71.84	0.08	4.29	3.94	11737	0.17	0.69	1.43	0.00	0.09	0.08	224
							Total Annual	**0.960**	**4.252**	**7.606**	**0.008**	**0.454**		**1536**
Significance Thresholds	-	-	85	-	-	-	-	-	-	-	-	-	-	-

Note: Highlighted cells are above the Significance Threshold.

Offsite Emissions

					Running Emission Factors							Emission Factors per trip							Emissions per day							Total Emissions						
					g/mi	g/mi	g/mi	g/mi	g/mi	g/mi	g/mi	g/trip	g/trip	g/trip	g/trip	g/trip	g/trip	g/trip	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	tons	tons	tons	tons	tons	tons	tons
Assumed Fleet Mix	Quantity	Trips to site	Trips from site	Trip length	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
HHDT	4	4	4	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.25	1.14	2.56	-	0.08	0.07	2422	0.00	0.01	0.03	-	0.00	0.00	24
HHDT	2	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.03	0.14	0.32	-	0.01	0.01	303	0.00	0.00	0.00	-	0.00	0.00	3
LDT1, LDT2	10	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.19	2.18	0.24	-	0.04	0.02	395	0.00	0.02	0.00	-	0.00	0.00	4
																	TOTAL		**0.47**	**3.46**	**3.11**	**0.00**	**0.13**	**0.10**	**3120**	**0.00**	**0.03**	**0.03**	**0.00**	**0.00**	**0.00**	**31**
HHDT	2	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.03	0.14	0.32	-	0.01	0.01	303	0.00	0.00	0.01	-	0.00	0.00	8
HHDT	25	4	4	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	1.56	7.15	15.97	-	0.48	0.44	15140	0.04	0.18	0.40	-	0.01	0.01	379
LDT1, LDT2	15	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.28	3.26	0.36	-	0.06	0.03	593	0.01	0.08	0.01	-	0.00	0.00	15
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	0
HHDT	1	2	2	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.03	0.14	0.32	-	0.01	0.01	303	0.00	0.00	0.00	-	0.00	0.00	1
																	TOTAL		**1.92**	**10.77**	**17.13**	**0.00**	**0.57**	**0.49**	**16490**	**0.05**	**0.26**	**0.42**	**0.00**	**0.01**	**0.01**	**402**
HHDT	2	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.03	0.14	0.32	-	0.01	0.01	303	0.00	0.00	0.00	-	0.00	0.00	3
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	0
LDT1, LDT2	6	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.11	1.31	0.14	-	0.03	0.01	237	0.00	0.01	0.00	-	0.00	0.00	2
HHDT	3	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.05	0.21	0.48	-	0.01	0.01	454	0.00	0.00	0.00	-	0.00	0.00	2
																	TOTAL		**0.21**	**1.73**	**1.10**	**0.00**	**0.05**	**0.04**	**1146**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**8**
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	2
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	1
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	3
HHDT	4	4	4	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.25	1.14	2.56	-	0.08	0.07	2422	0.00	0.01	0.01	-	0.00	0.00	12
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	1
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	0
HHDT	10	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.16	0.72	1.60	-	0.05	0.04	1514	0.00	0.01	0.01	-	0.00	0.00	11
LDT1, LDT2	12	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.23	2.61	0.28	-	0.05	0.02	474	0.00	0.05	0.01	-	0.00	0.00	9
																	TOTAL		**0.71**	**4.83**	**5.24**	**0.00**	**0.20**	**0.16**	**5168**	**0.01**	**0.07**	**0.04**	**0.00**	**0.00**	**0.00**	**40**
HHDT	6	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.09	0.43	0.96	-	0.03	0.03	908	0.00	0.00	0.00	-	0.00	0.00	5
HHDT	1	6	6	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.09	0.43	0.96	-	0.03	0.03	908	0.00	0.00	0.01	-	0.00	0.00	7
HHDT	4	4	4	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.25	1.14	2.56	-	0.08	0.07	2422	0.00	0.00	0.01	-	0.00	0.00	6
HHDT	4	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.06	0.29	0.64	-	0.02	0.02	606	0.00	0.01	0.01	-	0.00	0.00	12
LDT1, LDT2	12	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.23	2.61	0.28	-	0.05	0.02	474	0.00	0.05	0.01	-	0.00	0.00	9
																	TOTAL		**0.72**	**4.90**	**5.40**	**0.00**	**0.20**	**0.16**	**5319**	**0.01**	**0.07**	**0.04**	**0.00**	**0.00**	**0.00**	**39**
HHDT	10	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.16	0.72	1.60	-	0.05	0.04	1514	0.00	0.01	0.03	-	0.00	0.00	30
LDT1, LDT2	4	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.08	0.87	0.09	-	0.02	0.01	158	0.00	0.02	0.00	-	0.00	0.00	3
HHDT	2	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.03	0.14	0.32	-	0.01	0.01	303	0.00	0.00	0.01	-	0.00	0.00	6
																	TOTAL		**0.26**	**1.73**	**2.01**	**0.00**	**0.07**	**0.06**	**1975**	**0.01**	**0.03**	**0.04**	**0.00**	**0.00**	**0.00**	**39**
LDT1, LDT2	20	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.38	4.35	0.47	-	0.08	0.04	790	0.02	0.28	0.03	-	0.01	0.00	51
LDT1, LDT2	2	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.04	0.44	0.05	-	0.01	0.00	79	0.00	0.03	0.00	-	0.00	0.00	5
LDT1, LDT2	2	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.04	0.44	0.05	-	0.01	0.00	79	0.00	0.03	0.00	-	0.00	0.00	5
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	3
HHDT	3	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.05	0.21	0.48	-	0.01	0.01	454	0.00	0.00	0.00	-	0.00	0.00	0
LDT1, LDT2	4	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.08	0.87	0.09	-	0.02	0.01	158	0.00	0.02	0.00	-	0.00	0.00	3
																	TOTAL		**0.59**	**6.38**	**1.30**	**0.00**	**0.14**	**0.07**	**1712**	**0.03**	**0.36**	**0.04**	**0.00**	**0.01**	**0.00**	**68**
HHDT	4	4	4	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.25	1.14	2.56	-	0.08	0.07	2422	0.00	0.02	0.04	-	0.00	0.00	36
HHDT	1	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.02	0.07	0.16	-	0.00	0.00	151	0.00	0.00	0.00	-	0.00	0.00	1
HHDT	6	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.09	0.43	0.96	-	0.03	0.03	908	0.00	0.00	0.01	-	0.00	0.00	8
LDT1, LDT2	4	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.08	0.87	0.09	-	0.02	0.01	158	0.00	0.03	0.00	-	0.00	0.00	5
HHDT	2	1	1	20	0.177	0.811	1.811	0.017	0.054	0.050	1716.849	-	-	-	-	-	-	-	0.03	0.14	0.32	-	0.01	0.01	303	0.00	0.00	0.01	-	0.00	0.00	9
																	TOTAL		**0.46**	**2.66**	**4.09**	**0.00**	**0.14**	**0.12**	**3943**	**0.01**	**0.05**	**0.06**	**0.00**	**0.00**	**0.00**	**59**

Offsite Emissions Summary

	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	tons	tons	tons	tons	tons	tons	tons
Phase	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	0.47	3.46	3.11	0.00	0.13	0.10	3120	0.00	0.03	0.03	0.00	0.00	0.00	31
Grading, Drainage & Access Road	1.92	10.77	17.13	0.00	0.57	0.49	16490	0.05	0.26	0.42	0.00	0.01	0.01	402
Fencing, Perimeter Grounding, & Retaining Wall	0.21	1.73	1.10	0.00	0.05	0.04	1146	0.00	0.02	0.01	0.00	0.00	0.00	8
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	0.71	4.83	5.24	0.00	0.20	0.16	5168	0.01	0.07	0.04	0.00	0.00	0.00	40
Grounding, Conduit & Encasement	0.72	4.90	5.40	0.00	0.20	0.16	5319	0.01	0.07	0.04	0.00	0.00	0.00	39
Steel Erection	0.26	1.73	2.01	0.00	0.07	0.06	1975	0.01	0.03	0.04	0.00	0.00	0.00	39
Electrical Equipment (New Substation, New T/L and Cutover)	0.59	6.38	1.30	0.00	0.14	0.07	1712	0.03	0.36	0.04	0.00	0.01	0.00	68
Demolition of Old North City	0.46	2.66	4.09	0.00	0.14	0.12	3943	0.01	0.05	0.06	0.00	0.00	0.00	59
							Total Annual	**0.11**	**0.89**	**0.67**	**0.00**	**0.03**	**0.02**	**687**

NOx Offset Mitigation Fees

		UNMITIGATED					MITIGATED (20% off road emission reduction and MY 2010 Trucks)				
		Maximum NOx Emissions (lbs/day)					Maximum NOx Emissions (lbs/day)				
Phase	**Phase duration (days)**	**Onsite**	**Offsite**	**Total**	**Total significant NOx (tons)**	**Total Fee**	**Onsite**	**Offsite**	**Total**	**Total significant NOx (tons)**	**Total Fee**
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	20	80.15	16.79	96.93	0.12	$ 2,187.92	64.12	3.11	67.23		
Grading, Drainage & Access Road	50										
Subphase 1	*1*	*116.84*	*96.89*	*213.74*	*0.06*	*$ 1,180.07*	*93.48*	*17.13*	*110.60*	*0.01*	*$ 234.68*
Subphase 2	*4*	*116.84*	*95.97*	*212.82*	*0.26*	*$ 4,686.58*	*93.48*	*16.97*	*110.44*	*0.05*	*$ 932.86*
Subphase 3	*45*	*90.52*	*94.13*	*184.65*	*2.24*	*$ 41,106.06*	*72.41*	*16.65*	*89.06*	*0.09*	*$ 1,675.32*
Fencing, Perimeter Grounding, & Retaining Wall	20	40.87	5.66	46.53			32.70	1.10	33.80		
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	40	68.54	28.79	97.33	0.25	$ 4,520.47	54.83	5.24	60.07		
Grounding, Conduit & Encasement	40	78.99	29.71	108.69	0.47	$ 8,686.75	63.19	5.40	68.58		
Steel Erection	40	44.28	11.13	55.40			35.42	2.01	37.43		
Electrical Equipment (New Substation, New T/L and Cutover)	130	15.21	4.34	19.55			12.17	1.30	13.47		
Demolition of Old North City	60	84.69	23.08	107.77	0.68	$ 12,521.63	67.75	4.09	71.84		
				TOTAL	**4.08**	**$ 74,889**			**TOTAL**	**0.16**	**$ 2,843**

Mitigation Fee (per ton)	$17,460
Administrative Fee	5%
Total mitigation cost per ton	$ 18,333

STATION E SUBSTATION PROJECT
Operational Emissions

Acitivity	Duration (weeks)	Equipment Type	Quantity	# of Trips/day To Site	# of Trips/day From Site	Days/yr
Operations	**Indefinitely**					
		Facilities Vehicle	1	1	1	12
		Substation Maintenance/Station Recorder Service Vehicle	1	1	1	12
		Security Vehicle	1	1	1	120

Notes:

Traffic report assumes no change in operation/maintenance traffic. For conservativeness and completeness the emissions are shown, but do not result in a net increase.
- Daily emissions assume all vehicles accessing site on same day.
Facilities Vehicles: 1 round trip/month
Substation Maintenance/Station Recorder Service Vehicles: 1 round trip/month
Security Vehicles: 10 round trips/month
- All vehicle trips assumed to have a trip length of 20 miles.
- Emission factors and methodology from EMFAC2011:
On-road vehicle emission factors from EMFAC2011: HHDT - Heavy Heavy Duty Truck Emissions (EMFAC2011-HD web, T7 Single Unit Construction Truck) and LDT1, LDT2 - Worker Commute Truck Emissions (Emfac2011-LDV V2.50.57.246, LDT1 and LDT2)

Offsite Emissions

					Running Emission Factors							Emission Factors per trip							Emmisions per day							Total Emissions						
					g/mi	g/mi	g/mi	g/mi	g/mi	g/mi	g/mi	g/trip	g/trip	g/trip	g/trip	g/trip	g/trip	g/trip	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	lb/dy	tons	tons	tons	tons	tons	tons	tons
Assumed Fleet Mix	Quantity	Trips to site/day	Trips from site/day	Trip length (mi)	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2	ROG	CO	NOX	SOX	PM10	PM2.5	CO2
LDT1, LDT2	1	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.02	0.22	0.02	-	0.00	0.00	40	0.00	0.00	0.00	-	0.00	0.00	0
HHDT	1	1	1	20	0.285	1.263	10.426	-	0.252	0.177	1713.351	-	-	-	-	-	-	-	0.03	0.11	0.92	-	0.02	0.02	151	0.00	0.00	0.01	-	0.00	0.00	1
LDT1, LDT2	1	1	1	20	0.182	2.208	0.249	-	0.047	0.020	443.370	0.616	5.187	0.407	-	0.004	0.003	95.481	0.02	0.22	0.02	-	0.00	0.00	40	0.00	0.01	0.00	-	0.00	0.00	2
																		Total	**0.06**	**0.55**	**0.97**	**0.00**	**0.03**	**0.02**	**230**	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**4**

Significance Thresholds	65	-	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Highlighted cells are above the Significance Threshold.

Operational GHG Area Emissions

Source	SF6 gas per unit (lbs)	Loss rate	Loss rate per unit (lbs)	# of units	Total system loss rate (lb/yr)	SF6 100-year GWP	CO2e (lbs/yr)	CO2e (tons/yr)
Existing Substation	-	-	9.36	15	140.4	23,900	3,355,560	1677.78
New Substation	88	6.00%	5.28	15	79.2	23,900	1,892,880	946.44
							Percent Change	**-44%**

Notes:
- SF6 GWP from US EPA (2013), Emissions of Fluorinated Gases (http://epa.gov/climatechange/ghgemissions/gases/fgases.html).
- New Substation loss rate conservatively based on the Maximum Allowable SF6 Emission Rate for 2015, as described in Subarticle 3.1, Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, CCR
http://www.arb.ca.gov/cc/sf6elec/finalregulation.pdf

Maximum Annual SF6 Emission Rate	
Calendar Year	Maximum Allowable SF6 Emission Rate
2011	10.00%
2012	9.00%
2013	8.00%
2014	7.00%
2015	6.00%
2016	5.00%
2017	4.00%
2018	3.00%
2019	2.00%
2020, and each calendar year thereafter	1.00%

APPENDIX D: NOISE TECHNICAL REPORT

NOISE TECHNICAL REPORT

STATION E SUBSTATION PROJECT

SACRAMENTO, CALIFORNIA

Prepared for:

Sacramento Municipal Utility District
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Mailstop B203
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Appendices

Appendix A Ambient Noise Level Data Field Measurement Sheet

Appendix B Certification of Calibration for Ambient Noise Survey Equipment

Appendix C Construction Activities and Equipment

Acronyms

ADT	Average Daily Traffic volume
Cadna/A	Computer-Aided Noise Abatement
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted sound pressure level
E.L.	emission level
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
Hz	Hertz
IS/MND	Initial Study/Mitigated Negative Declaration
ISO	International Organization for Standardization
kV	kilovolts
L_{eq}	equivalent sound level
L_{dn}	day-night average sound level
L_{max}	Maximum Sound Level
L_{min}	Minimum Sound Level
LT-X	Long-Term Measurement Site X
LORS	Laws, Ordinances, Regulation or Standards
L_{xx}	Percentile-Exceeded Sound Level
RCNM	Roadway Construction Noise Model
RMS	Root mean square
SLM	Sound level meter
SMUD	Sacramento Municipal Utility District
SPL	Sound pressure level
µPa	micropascals
UPRR	Union Pacific Railroad
U.F.	usage factor

1.0 INTRODUCTION

The Sacramento Municipal Utility District (SMUD) is proposing to replace the existing North City Substation. Currently, the existing North City Substation is located at the end of 20th Street, south of the American River, and just east and north of the Union Pacific Railroad (UPRR) tracks in Sacramento, California. The substation steps down the transmission line voltage of 115,000 volts (115kV) to the distribution voltage of 21kV through power transformers. Due to the age of the existing substation, the replacement of the existing substation has been identified by SMUD as important for maintaining the reliability for serving SMUD customers and for maintaining SMUD's transmission system reliability.

The proposed Station E Substation site is located just south of the existing substation on approximately 16 acres of land that is currently owned by Blue Diamond. The proposed substation would include three 115kV/21kV power transformers and supporting equipment (e.g., switch gear, circuit breakers, capacitors, wiring and cooling fans). It would also step-down the existing transmission line voltage from 115kV to 21kV through power transformers and use the existing overhead and underground transmission lines. Consistent with SMUD substation security standards, the new substation would be enclosed by a chain-link fence with barbed wire and razor ribbon at the top. The hours of construction, including noise maintenance activities, are assumed to be conducted throughout the periods and days permitted by the City of Sacramento Noise Ordinance.

This analysis evaluates the temporary construction and long-term operational environmental noise exposure at nearby noise-sensitive receptors due to the Proposed Project. Expected noise levels are compared to the applicable noise standards and potential noise impacts to noise-sensitive land uses adjacent to the Proposed Project site are identified.

2.0 FUNDAMENTALS OF ACOUSTICS

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise exposure levels is annoyance. The responses of individuals to similar noise events are diverse and influenced by many factors including the type of noise, the perceived importance of the noise, its appropriateness to the setting, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and amplitude. Frequency describes the sound's pitch (tone) and is measured in cycles per second (Hertz [Hz]), while amplitude describes the sound's pressure (loudness). Because the range of sound pressures that occur in the environment is extremely large, it is convenient to express these pressures on a logarithmic scale that compresses the wide range of pressures into a more useful range of numbers. The standard unit of sound pressure measurement is the decibel (dB).

Outdoor sound levels decrease logarithmically as the distance from the source increases. This is due to wave divergence, atmospheric absorption, and ground attenuation. Sound radiating from a

source in a homogeneous and undisturbed manner travels in spherical waves. As the sound waves travel away from the source, the sound energy is dispersed over a greater area decreasing the sound pressure of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of distance.

Atmospheric absorption also influences the sound levels received by an observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances greater than 1,000 feet. The degree of absorption varies depending on the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest (i.e., sound carries further) at high humidity and high temperatures and lower frequencies are less readily absorbed (i.e., sound carries further) than higher frequencies. Over long distances, lower frequencies become dominant as the higher frequencies are more rapidly attenuated. Turbulence, gradients of wind and other atmospheric phenomena also play a significant role in determining the degree of attenuation. Certain conditions, such as temperature inversions can channel or focus the sound waves resulting in higher noise levels than would result from simple spherical spreading.

Hertz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. When the drum skin vibrates 100 times per second it generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived by the ear/brain as a tonal pitch of 100 Hz. Sound frequencies between 20 and 20,000 Hz are within the range of sensitivity of the healthy human ear.

Sound from a tuning fork contains a single frequency (a pure tone), but most sounds one hears in the environment do not consist of a single frequency but rather a broad band of many frequencies differing in sound level. Because of the broad range of audible frequencies, methods have been developed to quantify these values into a single number. The most common method used to quantify environmental sounds consists of evaluating all frequencies of a sound according to a weighting system that is reflective of human hearing. Human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This process of discriminating frequencies based upon human sensitivity is termed “A weighting”, and the resulting dB level is termed the “A weighted” decibel (dBA). “A weighting" is widely used in local noise ordinances and state and federal guidelines. In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve. Unless specifically noted, the use of A weighting is always assumed with respect to environmental sound and community noise even if the notation does not show the “A”. A-weighted sound pressure levels of typical sources of noise are shown in Table 1.

Table 1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at a given distance)	Scale of dBA Sound Levels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 dBs*)
Commercial Jet Take-off (200 ft.)	120		Threshold of pain *32 times as loud
Pile Driver (50 ft.)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft.) Newspaper Press (5 ft.) Power Lawn Mower (3 ft.)	100		Very loud *8 times as loud
Motorcycle (25 ft.) Propeller Plane Flyover (1000 ft.) Diesel Truck, 40 mph (50 ft.)	90	Boiler Room Printing Press Plant	*4 times as loud
Garbage Disposal (3 ft.)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 ft.) Vacuum Cleaner (10 ft.)	70		Moderately loud *70 decibels (Reference loudness)
Normal Conversation (5 ft.) Air Conditioning Unit (100 ft.)	60	Data Processing Center Department Store	*1/2 as loud
Light Traffic (100 ft.)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban Ambient Sound	Quiet *1/8 as loud
Soft. Whisper (5 ft.)	30	Quiet Bedroom	
	20	Recording Studio	Very quiet
	10		
	0		Threshold of hearing

Source: Compiled by URS Corporation (2007).

Because of the logarithmic nature of the dB unit, sound levels cannot be added or subtracted linearly and are somewhat cumbersome to handle mathematically; however, there are common rules useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example: 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB. Second, noise levels from point sources, such as a substation, decrease by approximately 6 dB per doubling of distance.

Although dBA may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most ambient environmental noise includes a mixture of noise from nearby and distant sources that creates an ebb and flow of sound including some identifiable sources plus a relatively steady background noise in which no particular source is identifiable. A single descriptor called the equivalent sound level (L_{eq}) is used to describe sound that is constant or changing in level. L_{eq} is the energy-mean dBA during a measured time interval. It is the "equivalent" constant sound level that would have to be produced by a given constant source to equal the acoustic energy contained in the fluctuating sound level measured during the interval. The L_{eq} is the "base" metric used to establish other measures of environmental noise, such as the Day-Night Average Sound Level (L_{dn} or DNL) or the Community Noise Equivalent Level (CNEL).

In addition to L_{eq}, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum L_{eq} (L_{max}) and minimum L_{eq} (L_{min}). These values represent the root-mean-square (RMS) maximum and minimum noise levels measured during the monitoring interval. The L_{min} value obtained for a particular monitoring location is often called the acoustic floor for that location.

To describe the time-varying character of environmental noise, the statistical or percentile noise descriptors L_{10}, L_{50}, and L_{90} may be used. These are the noise levels equaled or exceeded during 10 percent, 50 percent, and 90 percent of the measured time interval. Sound levels associated with L_{10} typically describe transient or short-term events, such as car and truck pass-bys. Sound levels are higher than this value only 10 percent of the measurement time. L_{50} represents the median sound level during the measurement interval. Levels will be above and below this value exactly one-half of the measurement time. L_{90} is the sound level exceeded 90 percent of the time and is often used to describe background noise conditions. Ninety percent of the time, measured levels are higher than this value, and therefore the L_{90} represents the environment at its quietest periods.

The DNL is a cumulative noise metric and represents the average sound level for a 24-hour day. DNL is calculated from the L_{eq} by adding a 10 dB penalty to sounds that occur during the night period (10:00 p.m. to 7:00 a.m.). The DNL is the descriptor of choice used by federal, state, and local agencies throughout the United States to define acceptable land use compatibility with respect to noise.

Within the State of California, the CNEL is sometimes used instead of DNL. CNEL is very similar to DNL, except that an additional 5 dB penalty is applied to sounds that occur during the evening hours (7:00 p.m. to 10:00 p.m.). Because of the time-of-day penalties associated with the DNL and CNEL descriptors, the DNL or CNEL dBA value for a continuously operating sound source during a 24-hour period will be numerically greater than the dBA value of the 24-hour L_{eq}. Thus, for a continuously operating noise source producing a constant noise level operating for periods of 24 hours or more, the DNL will be 6 dB higher than the L_{eq} value.

Humans are better able to perceive changes in noise level than absolute noise levels. Potential responses of persons to changes in the noise environment are usually assessed by evaluating differences between the existing and total predicted future noise environments. The following relationships of perception and response to quantifiable noise changes are used as a basis for assessing potential effects of these changes in environmental noise level:

- Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.
- In the outside environment, a 3 dBA change is considered just perceptible.
- An increase of 5 dBA is considered readily perceptible and would generally result in a change in community response.
- A 10 dBA increase is perceived as a doubling in loudness and would likely result in a widespread community response.

3.0 LAWS, ORDINANCES, REGULATIONS AND STANDARDS

The applicable laws, ordinances, regulations or standards (LORS) and noise guidelines used at the local level for planning purposes are presented in the following paragraphs. Local noise guidelines are often based on the broader guidelines of state and federal agencies and many are implemented as enforceable noise ordinances.

City of Sacramento

For community planning purposes, the Noise Element of the City of Sacramento 2030 General Plan establishes exterior noise compatibility standards for various land uses and these noise levels are expressed in the L_{dn} and CNEL metrics and are used for transportation noise sources. Table 2 originates from the Table EC 1 of the City of Sacramento 2030 General Plan. Policy EC 3.1.1 (Exterior Noise Standards) states the following in regards to new noise-sensitive areas:

> *The City shall require noise mitigation for all development where the projected exterior noise levels exceed those shown in Table EC 1, to the extent feasible.*

Table 2. City of Sacramento Exterior Noise Compatibility Standards for Various Land Uses

Table EC 1 Exterior Noise Compatibility Standards for Various Land Uses	
Land Use Type	*Highest Level of Noise Exposure That Is Regarded as "Normally Acceptable"[a] (L_{dn}[b] or CNEL[c])*
Residential—Low Density Single Family, Duplex, Mobile Homes	60 dBA[d,e]
Residential—Multi-family	65 dBA
Urban Residential Infill[f] and Mixed-Use Projects[g]	70 dBA
Transient Lodging—Motels, Hotels	65 dBA
Schools, Libraries, Churches, Hospitals, Nursing Homes	70 dBA
Auditoriums, Concert Halls, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70 dBA
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75 dBA
Office Buildings—Business, Commercial and Professional	70 dBA
Industrial, Manufacturing, Utilities, Agriculture	75 dBA

SOURCE: Governor's Office of Planning and Research, *State of California General Plan Guidelines 2003*, October 2003

a. As defined in the *Guidelines*, "Normally Acceptable" means that the "specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements."

b. L_{dn} or Day Night Average Level is an average 24-hour noise measurement that factors in day and night noise levels.

c. CNEL or Community Noise Equivalent Level measurements are a weighted average of sound levels gathered throughout a 24-hour period.

d. dBA or A-weighted decibel scale is a measurement of noise levels.

e. The exterior noise standard for the residential area west of McClellan Airport known as McClellan Heights/Parker Homes is 65 dBA.

f. With land use designations of Central Business District, Urban Neighborhood (Low, Medium, or High) Urban Center (Low or High), Urban Corridor (Low or High).

g. All mixed-use projects located anywhere in the City of Sacramento.

Table 3 originates from Table EC 2 of the City of Sacramento 2030 General Plan Noise Element and it is used as a guideline for determining the allowable incremental noise increases at residences and buildings where people normally sleep in addition to institutional land uses with primarily daytime and evening uses. The L_{dn} noise metric applies to residences and buildings where people normally sleep and the peak hour L_{eq} noise metric applies to institutional land uses. The allowable increases found in Table EC 2 originate from the Federal Transit Administration and only apply to transportation-related projects. Institutional land uses are land uses with primarily daytime and evening use and typically include schools, libraries, and churches, where it is important to avoid interference with activities such as speech, meditation, and concentration. Policy EC 3.1.2 (Exterior Incremental Noise Standards) of the Noise Element states the following:

The City shall require noise mitigation for all development that increases existing noise levels by more than the allowable increment shown in Table EC 2, to the extent feasible.

Table 3 City of Sacramento Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dBA)

Table EC 2 Exterior Incremental Noise Impact Standards for Noise-Sensitive Uses (dBA)			
Residences and buildings where people normally sleep[a]		*Institutional land uses with primarily daytime and evening uses[b]*	
Existing L_{dn}	*Allowable Noise Increment*	*Existing Peak Hour L_{eq}*	*Allowable Noise Increment*
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

SOURCE: Federal Transit Administration, *Transit Noise Impact and Vibration Assessment*, May 2006

a. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

b. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material.

In terms of interior noise level standards, Policy EC 3.1.3 (Interior Noise Standards) of the Noise Element states the following:

> *The City shall require new development to include noise mitigation to assure acceptable interior noise levels appropriate to the land use type: 45 dBA L_{dn} for residential, transient lodgings, hospitals, nursing homes and other uses where people normally sleep; and 45 dBA L_{eq} (peak hour) for office buildings and similar uses.*

Section 8.68.060 of the City of Sacramento's Noise Control Ordinance establishes exterior noise level standards for noise-sensitive land uses. These can be found in Table 4. Section 8.68.060 states the following:

> *If the ambient noise level exceeds that permitted by any of the first four noise-limit categories listed in (Table 4), the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds (the allowable L_{max}), the maximum ambient noise level shall be the noise level limit for that category.*

Table 4. City of Sacramento Exterior Noise Level Standards

Maximum Time of Exposure	Noise Metric	7:00 a.m. to 10:00 p.m. (Daytime)	10:00 p.m. to 7:00 a.m. (Nighttime)
30 Minutes / Hour	L_{50}	55 dBA	50 dBA
15 Minutes / Hour	L_{25}	60 dBA	55 dBA
5 Minutes / Hour	$L_{8.3}$	65 dBA	60 dBA
1 Minute / Hour	$L_{1.7}$	70 dBA	65 dBA
Any Period of Time	L_{max}	75 dBA	70 dBA

Source: City of Sacramento Noise Control Ordinance, 2013

Temporary construction noise is also addressed in the City of Sacramento Noise Control Ordinance. The City of Sacramento Noise Control Ordinance also establishes construction noise exempt hours by stating the following exemption:

> *Noise sources due to the erection (including excavation), demolition, alteration or repair of any building or structure between the hours of seven a.m. and six p.m., on Monday, Tuesday, Wednesday, Thursday, Friday and Saturday, and between nine a.m. and six p.m. on Sunday; provided, however, that the operation of an internal combustion engine shall not be exempt pursuant to this subsection if such engine is not equipped with suitable exhaust and intake silencers which are in good working order. The director of building inspections, may permit work to be done during the hours not exempt by this subsection in the case of urgent necessity and in the interest of public health and welfare for a period not to exceed three days. Application for this exemption may be made in conjunction with the application for the work permit or during progress of the work*

4.0 SIGNIFICANCE CRITERIA

Appendix G of the California Environmental Quality Act (CEQA) guidelines is provided to assist in evaluation of the significance of new noise sources or noise-sensitive development. Appendix G indicates that a noise impact is normally considered significant if it would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinances, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- Exposure of people residing or working in the project area to excessive noise levels 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, or for a project within the vicinity of a private airstrip.

  Per the City's Noise Control Ordinance, construction activities during the construction exempt hours would not be required to comply with the noise standards in the City's municipal code. Therefore, a significance threshold is not identified in this document for construction activities that occur during the construction noise exempt period identified by the City of Sacramento. Based on the CEQA Appendix G guidelines and relevant local, state, and federal standards, the following thresholds of significance for CEQA will be used: A noise impact is considered significant if construction activities occur outside of the identified construction noise hours or operational activities cause:

  • the ambient noise level measured at the property line of affected uses to increase by 3 dBA or greater during operation of the Proposed Project, or cause

  • the operational noise level to exceed the City of Sacramento's 55 dBA L_{50} or 50 dBA L_{50} daytime and nighttime exterior noise thresholds.

5.0 ENVIRONMENTAL SETTING

The Proposed Project site is surrounded by a mix of commercial, industrial, and residential land uses. Railroad tracks are located immediately adjacent to the Proposed Project site to the south and west. The railroad tracks are elevated and block line of sight from the noise-sensitive receivers and the Proposed Project site. An ambient noise survey was conducted July 11 and 12, 2013. Three 24-hour long-term measurements were conducted in order to quantify noise exposure in the site environs in the vicinity of noise-sensitive receivers that may be impacted by noise generated by operation of the proposed Station E Substation. A map depicting the noise

measurement locations and surrounding environs is shown in Figure 1. Two locations were located south of the proposed Station E Substation site and the third noise measurement location was northwest of the Proposed Project site.

During the noise measurement, the temperature ranged from 60º to 90º Fahrenheit with an average relative humidity of 56 percent. Winds ranged from calm to light and were rarely at speeds over 8 miles per hour. The sky ranged from clear to partly cloudy throughout the entire noise measurement period. The sound level meters (SLMs) were set to measure dBA noise levels at the slow meter response setting in accordance with standard practice for environmental noise measurements. The SLMs were located in key locations that represented the ambient noise level at the noise-sensitive receptors surrounding the Proposed Project site. Two of the SLMs were mounted to fence posts and one of the SLMs was mounted to a tree. SLMs were approximately five feet above ground level. Each SLM was calibrated before and after the measurement period. Existing noise levels for the noise measurement locations are presented below. The field measurement data sheets can be found in Appendix A. Certificates of calibration for the equipment used during the ambient noise level survey can be found in Appendix B.

LT-1: The noise-sensitive receivers located near LT-1 are a community of single-family, private property residences located along the west side of 21st Street and immediately west of, and adjacent to, Grant Park. The address of the northernmost residence is 204 21st Street. The SLM was mounted to a wooden post at the northern end of 21st Street. Vehicular traffic along C Street, train pass-bys, and train horn events were the predominant noise sources throughout the entire measurement period. Table 5 lists the results of the long-term measurement survey conducted at measurement site LT-1. The daytime L_{eq} was 66.3 dBA and the lowest hourly daytime L_{eq} was 51.6 dBA. The lowest hourly daytime L_{50} was 47.9 dBA. The nighttime L_{eq} was 72.5 dBA and the lowest hourly nighttime L_{eq} was 49.4 dBA. The lowest hourly nighttime L_{50} was 48.9 dBA. The nighttime L_{eq} was higher than the daytime L_{eq} due to a higher number of train pass-bys and horn events during the nighttime hours.

Figure 1. Ambient Noise Level Measurement Locations and Project Site

Table 5. 24-hour Sound Level Measurement at LT-1 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{min}
7/11/2013 10:00	51.6	69.9	53.1	49.9	48.4	46.8
7/11/2013 11:00	55.8	80.8	52.9	49.5	47.8	46.4
7/11/2013 12:00	63.8	94.0	54.8	49.3	47.4	45.8
7/11/2013 13:00	67.3	91.9	63.1	47.9	45.8	44.1
7/11/2013 14:00	68.3	100.0	55.1	48.2	46.4	44.5
7/11/2013 15:00	61.3	85.5	52.6	48.4	46.8	45.0
7/11/2013 16:00	67.7	98.1	62.3	48.8	46.9	44.3
7/11/2013 17:00	56.7	77.3	60.3	49.2	47.4	46.0
7/11/2013 18:00	53.3	69.9	55.9	50.5	48.4	46.3
7/11/2013 19:00	56.1	71.0	58.6	52.7	50.0	47.8
7/11/2013 20:00	63.8	90.0	63.6	54.5	51.4	48.8
7/11/2013 21:00	61.6	86.1	62.1	54.9	51.9	50.0
7/11/2013 22:00	59.6	78.1	62.0	54.6	50.9	48.7
7/11/2013 23:00	72.1	99.7	67.5	50.2	48.9	47.5
7/12/2013 0:00	49.4	60.7	50.5	48.9	47.6	46.0
7/12/2013 1:00	63.7	93.8	51.3	49.2	47.5	46.3
7/12/2013 2:00	73.7	101.5	55.6	50.0	48.8	47.2
7/12/2013 3:00	78.7	109.1	51.6	50.1	49.1	47.8
7/12/2013 4:00	65.6	89.2	53.7	52.2	50.7	49.3
7/12/2013 5:00	75.7	106.7	56.1	54.4	52.4	51.2
7/12/2013 6:00	59.9	83.5	57.0	55.0	54.2	53.1
7/12/2013 7:00	57.9	87.6	54.4	52.1	50.5	49.3
7/12/2013 8:00	75.6	103.4	53.4	50.6	49.2	47.8
7/12/2013 9:00	51.8	62.2	53.5	50.8	49.1	47.5

Source: URS Corporation, 2013.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on July 11 and 12, 2013.
Measurement Location: N 38° 35' 05.8", W 121° 28' 29.3."
24-hour L_{eq} = 69.7 dBA
Daytime L_{eq} = 66.3 dBA
Nighttime L_{eq} = 72.5 dBA
L_{dn} = 78.4
CNEL = 78.4

LT-2: The noise-sensitive receivers located near LT-2 are a community of single-family, private property residences located on the east side of 24th Street in between C Street and B Street C Street Alley. In addition, Courtyard Elementary School is located at the northern end of 24th Street. The nearest residence is located at the southeast corner of 24th Street and B Street C Street Alley. The SLM was mounted to a wooden pole at the northern end of 24th Street on the south side of Courtyard School. The address of the nearest residence is 217 24st Street and the address of the school is 205 24th Street.

Vehicular traffic along C Street, train pass-bys, and train horn events were the predominant noise sources throughout the entire measurement period. Table 6 lists the results of the long-term measurement conducted at measurement site LT-2. The daytime L_{eq} was 60.9 dBA and the

lowest hourly daytime L_{eq} was 50.7 dBA. The lowest hourly daytime L_{50} was 47.4 dBA. The nighttime L_{eq} was 59.7 dBA and the lowest hourly nighttime L_{eq} was 48 dBA. The lowest hourly nighttime L_{50} was 48.9 dBA.

Table 6. 24-hour Sound Level Measurement at LT-2 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{min}
7/11/2013 10:00	62.5	84.1	65.4	59.3	51.1	47.7
7/11/2013 11:00	56.9	84.2	55.9	51.7	48.8	47.1
7/11/2013 12:00	65.1	81.5	69.0	61.7	47.8	46.6
7/11/2013 13:00	62.0	82.9	61.1	50.7	47.1	45.8
7/11/2013 14:00	56.5	77.6	57.2	51.0	47.6	46.7
7/11/2013 15:00	67.2	90.0	69.3	61.7	54.9	50.1
7/11/2013 16:00	62.9	81.3	65.5	53.3	50.4	47.5
7/11/2013 17:00	56.2	77.4	57.6	51.8	48.2	46.6
7/11/2013 18:00	50.7	71.8	52.5	47.4	45.7	44.3
7/11/2013 19:00	53.2	70.4	56.7	50.7	46.2	44.4
7/11/2013 20:00	60.3	86.5	55.6	49.3	47.6	46.4
7/11/2013 21:00	53.4	75.0	53.4	49.2	48.0	46.8
7/11/2013 22:00	50.6	65.0	51.9	49.7	48.6	46.9
7/11/2013 23:00	65.0	85.0	66.5	49.3	47.6	46.4
7/12/2013 0:00	48.0	62.6	48.9	47.1	45.9	44.8
7/12/2013 1:00	52.8	72.8	49.8	47.1	45.5	44.0
7/12/2013 2:00	60.1	82.3	57.6	48.4	47.0	45.6
7/12/2013 3:00	58.7	84.5	52.2	50.1	48.1	46.2
7/12/2013 4:00	62.0	82.2	53.7	51.6	50.0	48.3
7/12/2013 5:00	57.4	76.8	57.4	54.4	51.9	50.7
7/12/2013 6:00	59.4	77.3	58.8	55.6	54.5	53.3
7/12/2013 7:00	54.3	66.1	56.1	53.4	51.0	49.3
7/12/2013 8:00	61.0	77.4	65.1	56.9	50.0	48.2
7/12/2013 9:00	53.6	63.4	55.7	52.4	49.4	47.3

Source: URS Corporation, 2013.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on July 11 and 12, 2013.
Measurement Location: N 38° 35' 01.1", W 121° 28' 15.2."
24-hour L_{eq} = 60.4 dBA
Daytime L_{eq} = 60.9 dBA
Nighttime L_{eq} = 59.7 dBA
L_{dn} = 66.3
CNEL = 66.4

LT-3: The noise-sensitive receivers located near LT-3 are a community of single-family, private property residences located on the west side of 18th Street in between Dreher Street and Basler Street. The nearest residence is located at the northwest corner of 18th Street and Dreher Street. The address of the residence is 1633 Dreher Street. Due to nearby barking dogs, the SLM was mounted on a tree east of the homes and west of the Sacramento Northern Bike Trail. The SLM was approximately 5 feet above ground level.

Light industrial work (including back-up alarms) generated at the Blue Diamond facility located south of LT-3, train pass-bys, and train horn events were the predominant noise sources throughout the entire measurement period. Table 7 lists the results of the long-term measurement conducted at measurement site LT-3. The daytime L_{eq} was 59.1 dBA and the lowest hourly daytime L_{eq} was 50.3 dBA. The lowest hourly daytime L_{50} was 45.9 dBA. The nighttime L_{eq} was 57.5 dBA and the lowest hourly nighttime L_{eq} was 50 dBA. The lowest hourly nighttime L_{50} was 47.6 dBA.

Existing hourly nighttime L_{50} noise levels at all locations periodically exceed the City standard of 50 dBA. The nighttime noise standard applicable to the Project is 50 dBA L_{50}. This is the most restrictive noise level applicable to the Proposed Project.

Table 7. 24-hour Sound Level Measurement at LT-3 (dBA)

Date and Time (Hour-Starting)	L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}	L_{min}
7/11/2013 10:00	64.4	90.6	52.6	48.4	47.3	46.1
7/11/2013 11:00	50.6	68.5	52.5	47.5	45.3	43.5
7/11/2013 12:00	52.7	77.3	53.9	45.9	44.2	42.6
7/11/2013 13:00	62.6	90.7	55.2	47.5	44.4	42.4
7/11/2013 14:00	60.8	88.2	54.4	46.3	44.3	42.3
7/11/2013 15:00	64.3	91.5	57.3	46.3	44.5	42.8
7/11/2013 16:00	60.6	89.3	57.1	48.2	45.7	43.1
7/11/2013 17:00	54.7	73.9	55.0	47.4	45.5	43.9
7/11/2013 18:00	51.7	70.6	53.0	47.4	45.7	44.0
7/11/2013 19:00	50.3	67.9	51.6	47.7	46.4	45.0
7/11/2013 20:00	51.1	68.6	53.6	48.4	47.0	45.7
7/11/2013 21:00	52.2	72.0	53.5	48.5	47.5	46.1
7/11/2013 22:00	50.2	62.2	51.4	48.9	48.0	47.3
7/11/2013 23:00	55.1	76.9	56.4	49.5	47.9	47.0
7/12/2013 0:00	50.0	63.4	51.6	47.6	46.4	45.3
7/12/2013 1:00	57.8	81.7	52.5	48.4	46.8	45.4
7/12/2013 2:00	60.9	90.2	55.2	48.4	46.9	45.9
7/12/2013 3:00	51.7	74.5	51.4	49.5	47.7	45.6
7/12/2013 4:00	52.0	72.3	52.9	50.9	49.7	48.0
7/12/2013 5:00	54.6	76.3	54.6	53.3	50.7	49.0
7/12/2013 6:00	63.1	90.4	62.6	54.4	53.5	52.5
7/12/2013 7:00	52.7	71.2	54.0	51.4	50.1	49.0
7/12/2013 8:00	52.7	76.6	54.1	49.9	48.3	47.1
7/12/2013 9:00	59.5	86.7	57.4	49.3	47.5	46.1

Source: URS Corporation, 2013.
Notes:
dBA = A-weighted decibel
L_{eq} = equivalent sound level
Measurements conducted on July 11 and 12, 2013.
Measurement Location: N 38° 35’ 27.6”, W 121° 28’ 34.4.”
24-hour L_{eq} = 58.5 dBA
Daytime L_{eq} = 59.1 dBA
Nighttime L_{eq} = 57.5 dBA
L_{dn} = 64.1
CNEL = 64.2

6.0 CONSTRUCTION NOISE

Project construction would result in short-term temporary increases in noise levels resulting from the operation of construction equipment (including on-site oil processing activities) and off-site construction-related vehicular traffic. For construction activities, increased noise levels would be primarily experienced close to the noise source (in the vicinity of the Proposed Project site). The magnitude of the impact would depend on the type of construction activity, the noise level generated by various pieces of construction equipment, the duration of the construction phase, and the distance between the noise source and receptor. Off-site increases in noise would result due to increases in traffic along the off-site delivery and haul truck construction traffic routes.

The City of Sacramento has established hours within which noise from construction activities are exempt, and these hour are from 7:00 a.m. to 6:00 p.m. Monday through Saturday, and from 9:00 a.m. to 6:00 p.m. on Sunday. Construction activities are anticipated to be conducted within these time frames.

New Substation Construction and Old Substation Removal

Table 8 lists typical construction noise levels for various pieces of construction equipment at a distance of 50 feet. The sound levels from construction equipment will be attenuated with distance from the source by a variety of mechanisms; the most significant of these mechanisms is the diversion of sound waves with distance from the source (attenuation by divergence). In general, this mechanism results in a 6 dBA decrease in the sound level with every doubling of distance from the source. Therefore, at a distance of 100 feet, the noise levels would be about 6 dBA lower than at the 50-foot reference distance. Similarly, at a distance of 200 feet, the noise levels would be approximately 12 dBA lower than at the 50-foot reference distance. The distance to the City of Sacramento's 50 dBA L_{50} nighttime noise criterion for each piece of equipment is also listed in Table 8. Impact devices are also identified in Table 8. Impact devices include equipment that generates short duration noises where an object is striking another object, examples of which include jackhammers, pile drivers, etc.

Noise levels from the FHWA Roadway Construction Noise Model (RCNM) and usage factors for each piece of construction equipment were used in order to calculate an L_{eq} for each of the construction activities. If the specific equipment is not found in the RCNM, then the emission level and an assumed usage factor is estimated based on similar equipment. The Federal Transit Administration's (FTA's) General Assessment for construction noise was used to determine noise impacts and the FTA's General Assessment assumes that the two loudest pieces of equipment are operating simultaneously for each construction activity.

The following equation was used to calculate the resulting L_{eq} at a sensitive receiver for an individual piece of construction equipment. This formula is used to adjust the noise level generated by the individual piece of construction equipment based on the estimated time that it is planned to be used during an hour.

$$L_{eq}(equip) = E.L. + 10\log(U.F.)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period

$E.L.$ = noise emission level of the particular piece of equipment at a reference distance of 50 feet (found in Table 9)

$U.F.$ = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time

The associated noise level, in terms of L_{eq}, is calculated at a reference distance of 50 feet for each type of construction activity, and these noise levels are listed in Table 9. The L_{eq} for each construction activity is calculated based on the assumption that the two loudest pieces of equipment are operating simultaneously. The primary construction activities and the two loudest pieces of equipment operating during that activity are also listed in Table 9. The equipment associated with each activity, including the quantity of each equipment type, duration of construction activity, duration of equipment usage by days and number of hours per day, and number of trips to and from the Proposed Project site is included in Appendix C.

Assuming that construction activities would be conducted at the existing substation and Proposed Project boundaries provides a worst-case scenario for construction noise at noise-sensitive receivers. Table 10 lists the calculated L_{eq} due to construction activities at the nearest noise-sensitive receivers. The nearest distances to potential construction activities for LT-1 and LT-2 originate from the Proposed Project site boundary and the nearest distance to potential construction activities for LT-3 originates from the existing substation boundary (for demolition activities). The Proposed Project's construction activities would not result in a significant impact because construction activities are exempt from the City of Sacramento's municipal code noise standards and the City has not identified an applicable significance threshold. Therefore, construction noise generated by the Proposed Project would be considered less than significant.

Table 8. Noise Levels for Typical Construction Equipment

Equipment Description	Usage Factor (%)	Impact Device?	Reference L_{max} @ 50ft (dBA, slow)	Distance At Which Noise Level = 50 dBA* (ft.)
All Other Equipment > 5 HP	50	No	85	2,812
Auger Drill Rig	20	No	84	2,506
Backhoe	40	No	78	1,256
Bar Bender	20	No	80	1,581
Boring Jack Power Unit	50	No	83	2,233
Chain Saw	20	No	84	2,506
Clam Shovel (dropping)	20	Yes	87	6,295
Compactor (ground)	20	No	78	1,256
Compressor (air)	40	No	85	2,812
Concrete Batch Plant	15	No	83	2,233
Concrete Mixer Truck	40	No	79	1,409
Concrete Pump Truck	40	No	81	1,774
Concrete Saw	20	No	90	5,000
Crane	16	No	81	1,774

Table 8. Noise Levels for Typical Construction Equipment

Equipment Description	Usage Factor (%)	Impact Device?	Reference L_{max} @ 50ft (dBA, slow)	Distance At Which Noise Level = 50 dBA* (ft.)
Dozer	40	No	82	1,991
Drill Rig Truck	20	No	79	1,409
Drum Mixer	50	No	80	1,581
Dump Truck	40	No	76	998
Excavator	40	No	81	1,774
Flat Bed Truck	40	No	84	2,506
Front End Loader	40	No	79	1,409
Generator	50	No	81	1,774
Generator (<25KVA, VMS Signs)	50	No	85	2,812
Gradall	40	No	83	2,233
Grader	40	No	85	2,812
Grapple (on backhoe)	40	No	82	1,991
Horizontal Boring Hydraulic Jack	25	No	85	2,812
Hydra Break Ram	10	Yes	90	8,891
Jackhammer	20	Yes	89	7,924
Man Lift	20	No	75	889
Mounted Impact Hammer (hoe ram)	20	Yes	90	8,891
Pavement Scarifier	20	No	90	5,000
Paver	50	No	77	1,119
Pickup Truck	40	No	75	889
Pile Driver /Vib	20	No	95	8,891
Pile Driver/Impact	20	Yes	95	15,811
Pneumatic Tools	50	No	85	2,812
Pumps	50	No	81	1,774
Refrigerator Unit	100	No	73	706
Rivet Buster/Chipping Gun	20	Yes	79	2,506
Rock Drill	20	No	81	1,774
Roller	20	No	80	1,581
Sand Blasting (single nozzle)	20	No	96	9,418
Scraper	40	No	84	2,506
Sheers (on backhoe)	40	No	96	9,976
Slurry Plant	100	No	78	1,256
Slurry Trenching Machine	50	No	80	1,581
Soil Mix Drill Rig	50	No	80	1,581
Tractor	40	No	84	2,506
Vacuum Excavator (Vac-Truck)	40	No	85	2,812
Vacuum Street Sweeper	10	No	82	1,991
Ventilation Fan	100	No	79	1,409
Vibrating Hopper	50	No	87	3,540
Vibratory Concrete Mixer	20	No	80	1,581
Warning Horn	5	No	83	2,233
Welder/Torch	40	No	74	792

*Impact devices are penalized by an additional 5 dBA

Source: U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division, Cambridge, MA. Federal Highway Administration Roadway Construction Noise Model DOT-VNTSC-FHWA-05-01, (2006). URS Corporation calculations (2013).

Table 9. Noise Levels Generated by Construction Activities

Construction Activity	Two Loudest Pieces of Equipment	Usage Factor (%)	Individual L_{max} for Equipment at 50 feet (dBA)	Individual L_{eq} for Equipment at 50 feet (dBA)	Total L_{eq} for Construction Activity at 50 feet (dBA)
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	Pavement Grinder	20	90	83.0	**85.1**
	49 HP Air Compressor (250cfm)	40	85	81.0	
Grading, Drainage & Access Road	Grader	40	85	81.0	**83.6**
	Scraper	40	84	80.0	
Fencing, Perimeter Grounding, & Retaining Wall	Semi Flatbed Material Delivery	40	84	80.0	**81.8**
	Concrete Truck	40	81	77.0	
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	Truck Mounted Drill Rig	40	84	80.0	**83.0**
	Track Mounted Drill Rig	40	84	80.0	
Grounding, Conduit & Encasement	Conduit Delivery - 5 Ton 20' Semi Flat Bed	40	84	80.0	**81.8**
	Concrete Trucks	40	81	77.0	
Steel Erection	Steel Delivery - Semi Flat Bed	40	84	80.0	**82.1**
	20 HP Generator	50	81	78.0	
Electrical Equipment (New Substation, New T/L and Cutover)	Equipment Delivery - 5 Ton 20' Semi Flat Bed	40	84	80.0	**83.0**
	9-axle Semi Flat Bed (Off Haul Equip)	40	84	80.0	
Dismantling of North City Substation	Semi Flat Bed	40	84	80.0	**83.0**
	9-axle Semi Flat Bed (Off Haul Equip & Structures only. No soil)	40	84	80.0	

URS Corporation calculations (2013).

Table 10. Noise Levels Generated at Noise-Sensitive Receptors due to Construction Activities at Existing Substation or Proposed Project Site Boundaries

Construction Activity	Total L_{eq} for Construction Activity at LT-1 (dBA) (Distance from Proposed Project Site Boundary = 300 feet)	Total L_{eq} for Construction Activity at LT-2 (dBA) (Distance from Proposed Project Site Boundary = 500 feet)	Total L_{eq} for Construction Activity at LT-3 (dBA) (Distance from Existing Substation Site Boundary = 1,000 feet)
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	69.5	65.1	59.1
Grading, Drainage & Access Road	68.0	63.6	57.6
Fencing, Perimeter Grounding, & Retaining Wall	66.2	61.8	55.8
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	67.4	63.0	57.0
Grounding, Conduit & Encasement	66.2	61.8	55.8
Steel Erection	66.5	62.1	56.1
Electrical Equipment (New Substation, New T/L and Cutover)	67.4	63.0	57.0
Dismantling of North City Substation	67.4	63.0	57.0

URS Corporation calculations (2013).

Oil Processing Activities

As part of substation construction, transformer oil may require processing by an oil processor and generator (oil processing unit) depending on the moisture content of the delivered transformer oil. If required, it is unknown at this time if the oil processing would be conducted offsite or at the new Station E Substation location.

If on-site oil processing is required, the oil processing units would be set up inside the new substation Project site and operated for up to 40 continuous hours, one unit for each of the three transformers. The anticipated noise levels generated by the operation of the oil processing units at nearby noise-sensitive receivers are compared to existing ambient noise levels near the Proposed Project site as well as to the applicable City of Sacramento exterior noise level standards.

Cadna/A® was used to create a virtual model of the proposed substation and the surrounding communities in order to accurately estimate the noise levels generated by oil processing activities. Cadna/A® is a three dimensional software program that is utilized for prediction and assessment of noise levels in the vicinity of industrial noise sources. The program uses internationally recognized algorithms (ISO 9613-2) for the propagation of sound outdoors to calculate noise levels, and presents the resultant noise levels in an easy to understand, graphically-oriented or tabular format. The program allows for input of pertinent features (such as terrain, structures and other barriers) that affect noise. Digital Terrain Modeling was used to account for elevation and terrain features. Cadna/A® accounts for topography, barrier effects, intervening structures, atmospheric attenuation, and attenuation due to sound wave divergence.

The result is a highly accurate estimate of predicted noise levels.

Based on noise measurements conducted at similar facilities, the oil processing unit generates noise levels of 69.5 dBA at a distance of 50 feet. Using this information, noise sources for the oil processing units were input into the Cadna/A® noise model in order to generate noise contours that reflect oil processing activities at the new substation location. As a worst case, all three oil processing units were assumed to be operating simultaneously in the noise model. The locations of the three long-term measurement locations were input into the Cadna/A® noise model in order to quantify the noise generated by oil processing at nearby noise-sensitive receivers. The location of the long-term measurement sites and the noise contours generated by the oil processing activities are presented in Figure 2. The noise contours shown in Figure 2 are in terms of L_{eq}. It is assumed that the noise levels generated by the proposed substation would be steady-state noise levels and the resulting L_{eq} and L_{50} values would be equal.

Tables 11 and 12 include the results of the analysis of the predicted noise levels generated by the oil processing units at the noise-sensitive receivers, for daytime and nighttime hours, respectively. These tables include the measured daytime (or nighttime) lowest hourly L_{50}, the modeled operational noise plus existing daytime (or nighttime) L_{50}, and the change in noise levels due to the implementation of oil processing activities at the new proposed substation location.

According to the City of Sacramento Noise Control Ordinance, construction noise is exempt from local standards from 7:00 a.m. to 6:00 p.m. Monday through Saturday and from 9:00 a.m. to 6:00 p.m. on Sunday. The oil processing units would potentially be in operation for up to 40 continuous hours for each transformer. Construction noise generated by the oil processing units is exempt from local exterior noise standards during construction noise exempt hours, but would be subject to the noise standards outside of these hours.

As shown in Table 11, noise generated by oil processing activities would not exceed the daytime exterior noise standard of 55 dBA L_{50} at any of the nearby noise-sensitive receivers. As shown in Table 12, nighttime operations related to oil processing activities would not exceed the nighttime exterior noise standard of 50 dBA L_{50} at any of the nearby noise-sensitive receivers. Therefore, noise generated by oil processing activities would be considered less than significant.

Table 11. Change in Daytime Noise Levels at Modeled Receivers with On-Site Temporary Oil Processing Activities

Noise Measurement Location	Station E Substation Oil Processing Units Noise (dBA L_{50})	Existing Measured Lowest Hourly Daytime Noise Level (dBA L_{50})	Modeled Plus Existing Daytime Noise Level (dBA L_{50})	Change in Noise Level at Receiver with Oil Processing Unit (dBA L_{50})
LT-1	44	48	49	1
LT-2	43	47	48	1
LT-3	36	46	46	0

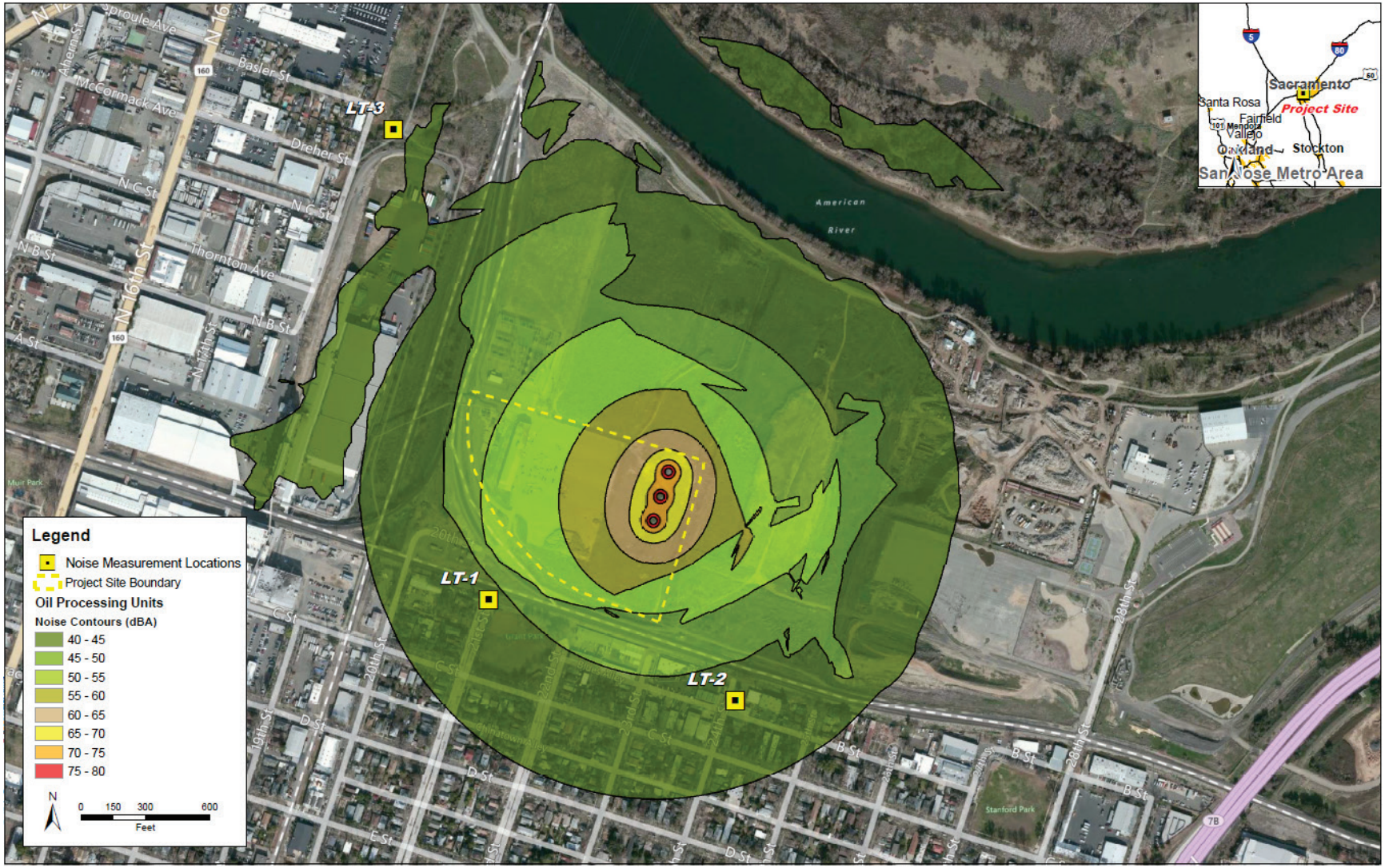
URS Corporation calculations (2013).

Table 12. Change in Nighttime Noise Levels at Modeled Receivers with On-Site Temporary Oil Processing Activities

Noise Measurement Location	Station E Substation Oil Processing Units Noise (dBA L_{50})	Existing Measured Lowest Hourly Nighttime Noise Level (dBA L_{50})	Modeled Plus Existing Nighttime Noise Level (dBA L_{50})	Change in Noise Level at Receiver with Oil Processing Unit (dBA L_{50})
LT-1	44	49	50	1
LT-2	43	47	48	1
LT-3	36	48	48	0

URS Corporation calculations (2013).

Figure 2. Temporary Noise Levels Generated by Oil Processing Activities at Station E Substation



Off-Site Construction Traffic

Construction-related traffic would temporarily increase noise levels at noise-sensitive receivers located along the proposed traffic routes during the construction period. Construction related traffic would consist of construction staff vehicles and trucks delivering equipment and hauling materials to and from the project site. The construction activities, number of Average Daily Traffic (ADT) volumes associated with each activity, and the total number of ADT volumes for construction staff vehicles and construction equipment delivery and haul trucks are presented in Table 13. Construction traffic trips are assumed to be occurring during daytime hours and within the City of Sacramento's construction noise exempt hours.

Table 13. Off-Site Construction Traffic Volumes per Construction Activity

Construction Activity	Construction Staff Vehicles (ADT)	Construction Equipment Delivery and Haul Trucks (ADT)	Total ADT
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	20	58	78
Grading, Drainage & Access Road	30	234	264
Fencing, Perimeter Grounding, & Retaining Wall	12	24	36
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	24	76	100
Grounding, Conduit & Encasement	24	76	100
Steel Erection	8	38	46
Electrical Equipment (New Substation, New T/L and Cutover)	56	16	72
Dismantling of North City Substation	12	62	74
Worst Case	**186**	**584**	**770**

A traffic noise prediction model (FHWA-RD-77-108) developed for the Federal Highway Administration (FHWA) was used to model noise impacts due to off-site construction traffic changes. This model uses the speed limit, the traffic volume and mix, and the distance to receiver to calculate the change in CNEL. Due to the lack of a definitive construction schedule, a worst-case scenario for noise generated by construction traffic was modeled. Under a worst-case scenario, it was assumed that the construction staff vehicles and construction equipment delivery and haul truck trips associated with construction activities would be going to and from the Proposed Project site during the same daytime period. In order to estimate the change in noise levels from existing traffic conditions to with Project construction traffic conditions, the ADTs from construction activities were added to the existing ADTs along the roadways that would be utilized for construction-related traffic going to and from the Proposed Project site. It was assumed that construction-related traffic would be originating from Business 80 North, traveling west along SR 160, north on 16th Street, east on C Street, and then north on 20th Street to the Proposed Project site. The results of the construction traffic noise analysis are presented in Table 14. This table lists the roadways, speed limits, existing and existing plus Project construction ADTs, the CNELs for both traffic conditions, and the change in CNEL due to the introduction of construction-related traffic along each roadway. The change in CNEL is greater than 3 dBA along C Street and 20th Street. It is assumed that construction related traffic going to and from the Proposed Project site, would be occurring during daytime hours and within the City of

Sacramento's construction noise exempt hours. Therefore, increases in noise related to off-site construction traffic are less than significant.

Table 14. Changes in Noise Levels due to Construction-Related Traffic along Existing Roadways

Road Segments	Speed Limit (MPH)	Existing Conditions		Existing + Project		Change in CNEL (dBA)
		ADT	CNEL (dBA) at 50 feet (feet)	ADT	CNEL (dBA) at 50 feet (feet)	
Business 80 North of Jct. U.S. 50	65	163,000	84.7	163,770	84.8	0.1
SR 160	55	44,500	77.4	45,270	77.6	0.2
16th Street	25	16,500	66.0	17,270	67.4	1.4
C Street	25	5,000	60.8	5,770	64.3	3.5
20th Street, North of H Street	25	5,500	61.2	6,270	64.5	3.3

URS Corporation calculations (2013).

7.0 OPERATIONAL NOISE

After construction of the Proposed Project is completed, on-site operational noise will be generated by the new substation. The proposed substation site would contain three 115kV/21kV transformers and supporting equipment (e.g., switch gear, circuit breakers, capacitors, wiring and cooling fans).

On-Site Operational Noise

The predominant on-site operational noise sources at the new substation site would be composed of transformers and cooling fans. Additional equipment such as disconnect switches and circuit breakers generate infrequent noise levels that do not significantly contribute to the overall noise level generated by equipment at the substation. SMUD noise specifications have indicated that each transformer and its cooling fans would generate noise levels of 80 dBA L_{eq} at a distance of 3 feet.

Cadna/A® was also used to model noise generated by on-site operations at the new substation. Noise sources for the three 115kV/21kV transformers and their respective cooling fans were input into the noise model in order to generate operational noise contours. The transformers would be approximately 24 feet tall and the cooling fans would range from 12 to 15 feet in height. For the purpose of noise modeling, and as a worst-case for noise generated by the Station E Substation, the transformers and fans were modeled conservatively at 24 feet above ground level. Figure 3 depicts the operational noise levels generated by the Station E Substation.

The noise contours shown in Figure 3 are in terms of dBA L_{50}. The City of Sacramento's daytime and nighttime noise standards are based on L-percentile noise metrics and the baseline noise metric is in terms of dBA L_{50}. The operational noise generated by the three transformers and cooling fans at the proposed Station E Substation site is compared with the lowest daytime and nighttime hourly L_{50} noise levels in order to determine if there would be noise impacts generated by the Proposed Project. The measured noise levels at LT-1, LT-2, and LT-3 are representative of the ambient noise levels at noise-sensitive receptors in the vicinity

measurement location. Noise impacts are determined by comparing the lowest measured daytime and nighttime hourly L_{50}s at LT-1, LT-2, and LT-3 with the modeled noise levels (in terms of L_{50}) at the nearest noise-sensitive receptors.

Tables 15 and 16 list the modeled operational noise generated by the transformers and fans at the residences near LT-1, LT-2 and LT-3 in addition to the measured daytime (or nighttime) lowest hourly L_{50}, modeled operational noise plus existing daytime (or nighttime) L_{50}, and the change in noise level at three locations due to the introduction of an operational Station E Substation. Table 15 lists the results of the noise model during daytime hours and Table 16 lists the results of the noise model during nighttime hours.

There are no anticipated changes in noise levels at LT-1, LT-2, and LT-3 or at any of the surrounding noise-sensitive receptors due to the implementation of the new substation. Therefore, operational noise generated by the Proposed Project would be considered less than significant.

Table 15. Change in Daytime Noise Levels Due to Operational Station E Substation

Noise Measurement Location	Station E Substation Modeled Operational Noise (dBA L_{50})	Existing Measured Lowest Hourly Daytime Noise Level (dBA L_{50})	Modeled Plus Existing Daytime Noise Level (dBA L_{50})	Change in Noise Level due to Implementation of Proposed Project (dBA L_{50})
LT-1	31	48	48	0
LT-2	30	47	47	0
LT-3	17	46	46	0

Source: URS Corporation calculations (2013).

Table 16. Change in Nighttime Noise Levels Due to Operational Station E Substation

Noise Measurement Location	Station E Substation Modeled Operational Noise (dBA L_{50})	Existing Measured Lowest Hourly Nighttime Noise Level (dBA L_{50})	Modeled Plus Existing Nighttime Noise Level (dBA L_{50})	Change in Noise Level due to Implementation of Proposed Project (dBA L_{50})
LT-1	31	49	49	0
LT-2	30	47	47	0
LT-3	17	48	48	0

Source: URS Corporation calculations (2013).

Figure 3. Operational Noise Levels Generated by Station E Substation

Appendix A

Ambient Noise Level Field Data Measurement Sheet

FIELD MEASUREMENT DATA SHEET

URS **Project Name:** SMUD North City Substation **Job #** ____________

ID

SITE IDENTIFICATION: LT-1 **OBSERVER(s):** P( ) Team- RM + RA
START DATE & TIME: 7/11/13 8:45 **END DATE & TIME:** 7/12/13 10:05
ADDRESS: 204 21st Street
CITY: Sacramento, CA
GPS coordinates: N-38°35'05.8 **W-** 121°28'29.3

Weather

TEMP: 65 °F HUMIDITY: 55 % R.H. WIND: [✓ **CALM LIGHT**] **MODERATE VARIABLE**
WINDSPEED: 2 MPH DIR: **N NE E SE S SW W NW** **STEADY GUSTY**____MPH
SKY [✓ **CLEAR SUNNY**] **DARK PARTLY CLOUDY OVRCST FOG DRIZZLE RAIN** Other: ____________

Acoustic Measurements

INSTRUMENT: LD 820 **TYPE:** [✓ 1] 2 **SERIAL #:** Blux 1768
CALIBRATOR: BK 4231 **SERIAL #:** 1850301
CALIBRATION ~~CHECK: PRE~~-TEST 94.0 **dBA SPL** **POST-TEST** 94.0 **dBA SPL** **WINDSCREEN** X
SETTINGS: [✓ **A-WEIGHTED SLOW**] **FAST FRONTAL** [✓ **RANDOM**] **ANSI OTHER:** ____________
Rec # Start Time / End Time
____/ ________/________: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ________
____/ ________/________: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ________
____/ ________/________: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ________
____/ ________/________: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ________

COMMENTS: Traffic along C St.

Source Info and Traffic Counts

PRIMARY NOISE(S): **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER**
ROADWAY TYPE: ____________
COUNT DURATION:______**-MINUTE** **SPEED (mph)** **#2 COUNT:** ________ **SPEED (mph)**

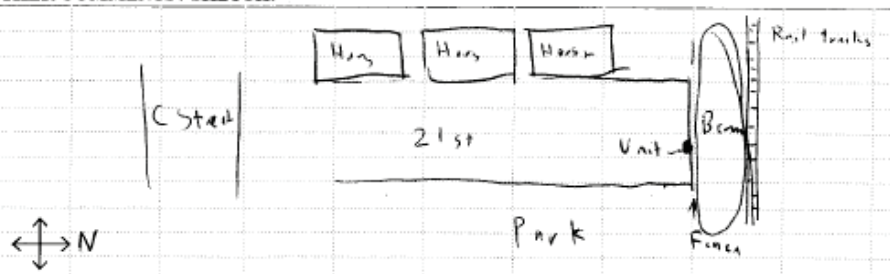
	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant **AIRCRAFT** overhead / **RUSTLING LEAVES** / distant **BARKING DOGS** / **BIRDS**
distant **CHILDREN PLAYING** / distant **TRAFFIC** / distant **LANDSCAPING** / distant **TRAINS**
OTHER: ____________

Description / Sketch

TERRAIN: **HARD SOFT MIXED FLAT OTHER:** ____________
PHOTOS: ____________
OTHER COMMENTS / SKETCH:



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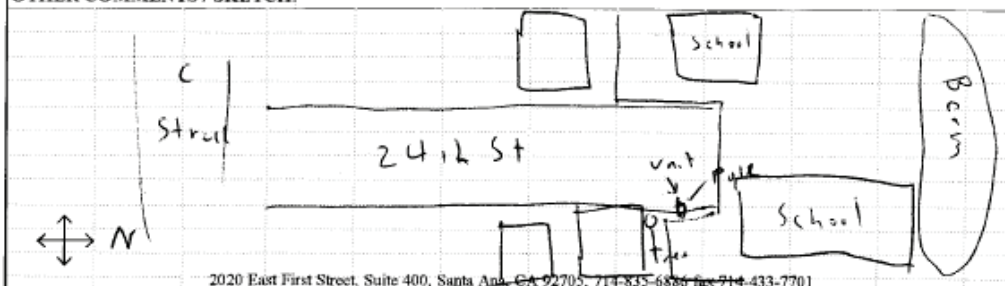

FIELD MEASUREMENT DATA SHEET

URS Project Name: SMUD North City Substation Job #

SITE IDENTIFICATION: LT-2
OBSERVER(s): P( ) Team- RM+RA
START DATE & TIME: 7/11/13 9:05
END DATE & TIME: 7/12/13 10:15
ADDRESS: 215 24th St
CITY: Sacramento CA
GPS coordinates: N- 38' 35' 01.1 W- 121°28' 15.2

ID

TEMP: 65 °F HUMIDITY: 55 % R.H. WIND: [✓ CALM LIGHT] MODERATE VARIABLE
WINDSPEED: 2 MPH DIR: N NE E SE S SW ~~W NW~~ STEADY GUSTY ____ MPH
SKY: [✓ CLEAR SUNNY] DARK PARTLY CLOUDY OVRCST FOG DRIZZLE RAIN Other: ____

Weather

INSTRUMENT: LD 820 TYPE: [✓ 1] 2 SERIAL #: Green 1597
CALIBRATOR: BK 4231 SERIAL #: 1850301
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 93.8 dBA SPL WINDSCREEN X
SETTINGS: [✓ A-WEIGHTED] [✓ SLOW] FAST FRONTAL [✓ RANDOM] ANSI OTHER: ____

Rec # Start Time / End Time
____/____/____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____
____/____/____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____
____/____/____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____
____/____/____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____

COMMENTS: Traffic along C St

Acoustic Measurements

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER
ROADWAY TYPE: ____
COUNT DURATION: ____-MINUTE

	NB / EB / SB / WB	SPEED (mph) NB EB / SB WB	#2 COUNT: NB / EB / SB / WB	SPEED (mph) NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / distant TRAINS
OTHER: ____

Source Info and Traffic Counts

TERRAIN: HARD SOFT MIXED FLAT OTHER: ____
PHOTOS: ____
OTHER COMMENTS / SKETCH:

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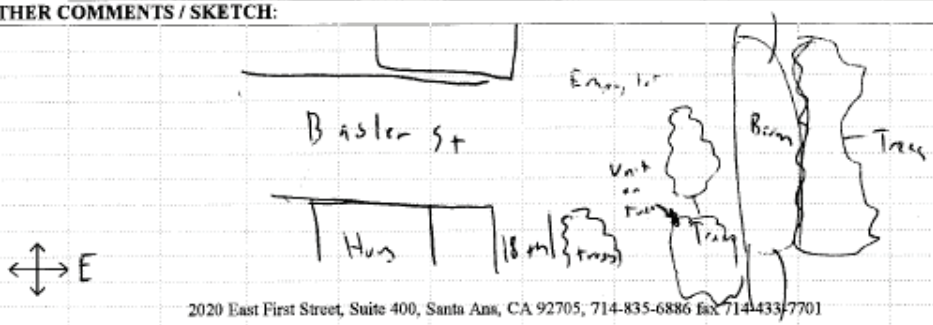
Description / Sketch



FIELD MEASUREMENT DATA SHEET

URS Project Name: SMUD North City Substation Job # ____

ID

SITE IDENTIFICATION: LT-3 OBSERVER(s): P( ) Team- RM + RA
START DATE & TIME: 7/11/13 9:30 END DATE & TIME: 7/12/13 10:30
ADDRESS: Corner of N. 18th st and Basler St
CITY: Sacramento CA
GPS coordinates: N- 38°35'27.6 W- 121°28'34.4

Weather

TEMP: 65 °F HUMIDITY: 55 % R.H. WIND: [✓ CALM LIGHT] MODERATE VARIABLE
WINDSPEED: 2 MPH DIR: N NE E SE S SW W NW STEADY GUSTY ____ MPH
SKY: [✓ CLEAR SUNNY] DARK PARTLY CLOUDY OVRCST FOG DRIZZLE RAIN Other: ____

Acoustic Measurements

INSTRUMENT: LD 820 TYPE [✓ 1] 2 SERIAL #: Rcd 1528
CALIBRATOR: BK 4231 SERIAL #: 1850301
CALIBRATION CHECK: PRE-TEST 94.0 dBA SPL POST-TEST 94.0 dBA SPL WINDSCREEN X
SETTINGS: [✓ A-WEIGHTED SLOW] FAST FRONTAL [✓ RANDOM] ANSI OTHER: ____

Rec # Start Time / End Time
____/ ____/ ____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____
____/ ____/ ____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____
____/ ____/ ____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____
____/ ____/ ____: L_{eq}____, L_{max}____, L_{min}____, L_{90}____, L_{50}____, L_{10}____, ____

COMMENTS: Distant back up alarms, industrial

Source Info and Traffic Counts

PRIMARY NOISE(S): TRAFFIC AIRCRAFT RAIL [✓ INDUSTRIAL] AMBIENT OTHER
ROADWAY TYPE: ____
COUNT DURATION: ____ -MINUTE SPEED (mph) #2 COUNT: SPEED (mph)

	NB / EB / SB / WB	NB EB / SB WB	NB / EB / SB / WB	NB EB / SB WB
AUTOS:	/	/	/	/
MED. TRUCKS:	/	/	/	/
HVY TRUCKS:	/	/	/	/
BUSES:	/	/	/	/
MOTORCYCLES:	/	/	/	/

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER NOISE SOURCES: distant AIRCRAFT overhead / RUSTLING LEAVES / distant BARKING DOGS / BIRDS
distant CHILDREN PLAYING / distant TRAFFIC / distant LANDSCAPING / [✓ distant TRAINS]
OTHER: ____

Description / Sketch

TERRAIN: HARD SOFT MIXED FLAT OTHER: ____
PHOTOS: ____
OTHER COMMENTS / SKETCH:

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Appendix B

Certification of Calibration for Ambient Noise Survey Equipment

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2011-151300

Instrument Model 820, Serial Number 1768, was calibrated on 08NOV2011. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: 08NOV2011
Calibration due: 08NOV2013

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2239	0099 / 0104	12 Months	18JAN2012	2011-138645

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 25 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data same as shipped data.
Tested with PRM828-2751

Signed: Ron Harris
Technician: Ron Harris

Page 1 of 1

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Toll Free: 888.258.3222 Telephone: 716.926.8243 Fax: 716.926.8215
ISO 9001-2008 Certified

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2011-151397

Microphone Model 377B20, Serial Number 112353, was calibrated on 10NOV2011. The microphone meets factory specifications per Test Procedure D0001.8167.

Instrument found to be in calibration as received: YES
Date Calibrated: 10NOV2011
Calibration due: 10NOV2013

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Hewlett Packard	34401A	3146A62099	12 Months	11NOV2011	4994123
Larson Davis	2559	2504	12 Months	29NOV2011	17865-1
Larson Davis	PRM916	0102	12 Months	23DEC2011	2010-137908
Larson Davis	CAL250	42630	12 Months	04JAN2012	2011-138110
Larson Davis	2900	0575	12 Months	14JUN2012	2011-144882
Larson Davis	PRM915	0102	12 Months	16AUG2012	2011-147581
Larson Davis	PRM902	0206	12 Months	16AUG2012	2011-147576
Larson Davis	MTS1000 / 2201	1000 / 0100	12 Months	09SEP2012	SM090911-3

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data is the same as shipped data.

Signed: _____
Technician: Abraham Ortega

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ISO 9001-2008 Certified

PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2011-151245

Instrument Model PRM828, Serial Number 2751, was calibrated on 08NOV2011. The instrument meets factory specifications per Procedure D0001.8135.

Instrument found to be in calibration as received: YES
Date Calibrated: 08NOV2011
Calibration due: 08NOV2013

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Hewlett Packard	34401A	MY41044529	12 Months	26JAN2012	5056765
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	21MAR2012	2011-141059

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 25 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data same as shipped data.

Signed: Ron Harris
Technician: Ron Harris

Page 1 of 1

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PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2012-153626

Instrument Model 820, Serial Number 1528, was calibrated on 11JAN2012. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: NO
Date Calibrated: 11JAN2012
Calibration due: 11JAN2014

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	21MAR2012	2011-141059

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data unavailable due to unit failure.
Tested with PRM828-2437

Signed: Ron Harris
Technician: Ron Harris

Page 1 of 1

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PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2012-153708

Microphone Model PCB377A02, Serial Number 47468, was calibrated on 22DEC2011. The microphone meets factory specifications per Test Procedure D0001.8167.

Instrument found to be in calibration as received: YES
Date Calibrated: 22DEC2011
Calibration due: 22DEC2013

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	2559	2506	12 Months	24MAY2012	18309-1
Larson Davis	2900	0575	12 Months	14JUN2012	2011-144882
Larson Davis	PRM915	0102	12 Months	16AUG2012	2011-147581
Larson Davis	PRM902	0206	12 Months	16AUG2012	2011-147576
Larson Davis	MTS1000 / 2201	1000 / 0100	12 Months	09SEP2012	SM090911-3
Hewlett Packard	34401A	3146A62099	12 Months	15NOV2012	5436054
Larson Davis	PRM916	0102	12 Months	22DEC2012	2011-153087
Larson Davis	CAL250	42630	12 Months	04JAN2013	2012-153336

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data is the same as shipped data.

Signed: Abraham Ortega
Technician: Abraham Ortega

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PCB PIEZOTRONICS
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Certificate of Calibration and Conformance

Certificate Number 2012-153624

Instrument Model PRM828, Serial Number 2437, was calibrated on 11JAN2012. The instrument meets factory specifications per Procedure D0001.8135.

Instrument found to be in calibration as received: NO
Date Calibrated: 11JAN2012
Calibration due: 11JAN2014

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Hewlett Packard	34401A	MY41044529	12 Months	26JAN2012	5056765
Larson Davis	LDSigGn/2209	0277 / 0109	12 Months	21MAR2012	2011-141059

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 23 ° Centigrade

Relative Humidity: 27 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

This calibration complies with the requirements of ISO 17025 and ANSI Z540. The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

SEE "AS RECEIVED" data.

Signed: Ron Harris
Technician: Ron Harris

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PCB PIEZOTRONICS
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Certificate of Calibration and Conformance

Certificate Number 2013-175376

Instrument Model 820, Serial Number 1597, was calibrated on 11JUN2013. The instrument meets factory specifications per Procedure D0001.8160, ANSI S1.4 1983, IEC 651-Type 1 1979, and IEC 804-Type 1 1985.

Instrument found to be in calibration as received: YES
Date Calibrated: 11JUN2013
Calibration due: 11JUN2014

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	LDSigGn / 2209	0522 / 0113	12 Months	26FEB2014	2013-170584

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 24 ° Centigrade

Relative Humidity: 28 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"As Received" data is the same as shipped data.

Tested with PRM828 S/N 2491.

Signed: David Jensen
Technician: David Jensen

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PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2013-175325

Microphone Model 377B02, Serial Number 101267, was calibrated on 11JUN2013. The microphone meets factory specifications per Test Procedure D0001.8167.

Instrument found to be in calibration as received: YES
Date Calibrated: 11JUN2013
Calibration due: 11JUN2014

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Larson Davis	2900	0575	12 Months	26JUL2013	2012-162047
Larson Davis	PRM902	0206	12 Months	14AUG2013	2012-162575
Larson Davis	2559	3034LF	12 Months	14AUG2013	2012-162596
Larson Davis	MTS1000 / 2201	1000 / 0100	12 Months	07SEP2013	SM070912-2
Larson Davis	PRM902	0529	12 Months	07SEP2013	2012-163529
Larson Davis	PRM902	0528	12 Months	10SEP2013	2012-163530
Hewlett Packard	34401A	3146A82099	12 Months	26NOV2013	5884920
Larson Davis	PRM915	0102	12 Months	04DEC2013	2012-167168
Larson Davis	PRM916	0102	12 Months	13DEC2013	2012-167454
Larson Davis	2559	2504	12 Months	03JAN2014	19648-1
Larson Davis	CAL250	42630	12 Months	04JAN2014	2013-168402

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"AS RECEIVED" data is the same as shipped data.

Signed: Abraham Ortega
Technician: Abraham Ortega

Page 1 of 1

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PCB PIEZOTRONICS
A PCB GROUP COMPANY

Certificate of Calibration and Conformance

Certificate Number 2013-175375

Instrument Model PRM828, Serial Number 2491, was calibrated on 11JUN2013. The instrument meets factory specifications per Procedure D0001.8135.

Instrument found to be in calibration as received: YES
Date Calibrated: 11JUN2013
Calibration due: 11JUN2014

Calibration Standards Used

MANUFACTURER	MODEL	SERIAL NUMBER	INTERVAL	CAL. DUE	TRACEABILITY NO.
Agilent Technologies	34401A	MY47024345	12 Months	16OCT2013	5841332
Larson Davis	2900 / 2239	0276 / 0105	12 Months	05NOV2013	2012-166307

Reference Standards are traceable to the National Institute of Standards and Technology (NIST)

Calibration Environmental Conditions

Temperature: 24 ° Centigrade

Relative Humidity: 28 %

Affirmations

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the U.S. National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at Provo Engineering & Manufacturing Center. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

The collective uncertainty of the Measurement Standard used does not exceed 25% of the applicable tolerance for each characteristic calibrated unless otherwise noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. A one year calibration is recommended, however calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of the issuer.

"As Received" data is the same as shipped data.

Signed: David Jensen
Technician: David Jensen

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ISO 9001-2008 Certified

Odin Metrology, Inc.
Calibration of Sound & Vibration Instruments

Certificate Number: 19574-1

Certificate of Calibration for Brüel & Kjær Sound Level Calibrator

This calibration is performed by comparison with measurement reference standard pistonphones:

Type No.	4220	4228
Serial No.	1048473	1504084
Calibrated by	TE	TE
Cal Date	23 OCT 2012	23 OCT 2013
Due Date	23 OCT 2013	23 OCT 2013

a) Estimated uncertainty of comparison: ± **0.05** dB
b) Estimated uncertainty of calibration service for standard pistonphone: ± **0.06** dB
c) Total uncertainty: $\sqrt{a^2+b^2}$ = ± **0.08** dB
d) Expanded uncertainty (coverage factor k = 2 for 95% confidence level): = ± **0.16** dB

This acoustic calibrator has been calibrated using standards with values traceable to the National Institute of Standards and Technology. This calibration is traceable to NIST Test Number **681/280896-11 D1308**.

CONDITION OF TEST		
Ambient Pressure	**994.48**	hPa
Temperature	**23**	°C
Relative Humidity	**43**	%
Date of Calibration	**28 NOV 2012**	
Re-calibration due on	**28 NOV 2013**	

The calibration of this acoustic calibrator was performed using a test system conforming to the requirements of ANSI/NCSLZ540-1, 1994, ISO 17025, and ISO 9001-2008, Certification NQA No. 11252.

Calibration performed by Harold Lynch

Harold Lynch, Service Manager

ODIN METROLOGY, INC.
3533 OLD CONEJO ROAD, SUITE 125
THOUSAND OAKS, CA 91320
PHONE: (805) 375-0830; FAX: (805) 375-0405

Calibrator type **4231**
Serial no. **1850301**
Submitted by **URS Corporation**
Santa Ana, CA 92705
Purchase order no. **01158213.000001127-12**
Asset no. **N/A**

This calibrator has been found to perform **within** the specifications listed below at the normalized conditions stated.

SPL produced in coupler terminated by a loading volume of 1.333 cm^3	94.0 ± 0.2 dB
Level Step	20 ± 0.1 dB
Frequency	1,000 Hz ± 0.1%
Distortion	< 1%
At 1,013 hPa, 20°C, and 65% relative humidity	

PERFORMANCE AS RECEIVED		
Frequency	**999.8**	Hz
SPL	**94.00**	dB
SPL+20 dB	**114.03**	dB
Distortion	**0.3**	%
Battery Voltage	**1.14**	V

Was adjustment performed? **No**
Were batteries replaced? **Yes**

FINAL PERFORMANCE		
Frequency	**999.8**	Hz
SPL	**94.00**	dB
SPL+20 dB	**114.03**	dB
Distortion	**0.3**	%

Note: This calibrator was **within** manufacturer's specifications as received.

Page 1 of 2

Appendix C

Construction Activities and Equipment

Construction Activity	Duration (weeks)	Equipment Type	Quantity	Duration of Usage		Number of Trips (per day)	
				Days	Hrs/Day	To Site	From Site
Demolition (Cogen, Metal Buildings, etc.), Clearing & Grubbing	4	330 Excavator w/Breakers	2	20	8	1	1
		Semi End Dump - Demo Export (conc, steel, asphalt)	4	20	8	4	4
		Front Loader	2	20	8	1	1
		1 Ton Service Truck*	2	20	8	1	1
		Pavement Grinder	1	5	8	1	1
		30 Ton Crane	1	5	8	1	1
		49 HP Air Compressor (250cfm)	2	20	8	1	1
		Water Truck	1	20	8	1	1
		20 HP Generator	1	20	8	1	1
		Construction Staff Vehicles*	10	20	8	1	1
		Street Sweeper	1	20	8	1	1
Grading, Drainage & Access Road	10	Grader	2	50	8	1	1
		Scraper	2	50	8	1	1
		Sheeps Foot Compactor	2	50	8	1	1
		1 Ton Service Truck	2	50	8	1	1
		Water Truck	1	50	8	1	1
		20 Ton Tandem Haul Truck - Import (4,700 trips, 47,000 cyds)	25	50	8	4	4
		Construction Staff Vehicles	15	50	8	1	1
		Rubber Tire Drill Rig	1	5	8	1	1
		Casing Delivery - 5 ton 20' Semi Flat Bed	1	1	8	1	1
		Front Loader	1	5	8	1	1
		Semi-End Dump - Import (AB/AC)	1	5	8	2	2

Construction Activity	Duration (weeks)	Equipment Type	Quantity	Duration of Usage		Number of Trips (per day)	
				Days	Hrs/Day	To Site	From Site
		30 Ton Crane	1	5	8	1	1
		20 HP Generator	1	5	8	1	1
		Street Sweeper	1	50	8	1	1
Fencing, Perimeter Grounding, & Retaining Wall	4	2 Ton Truck	2	10	8	1	1
		Skid Steer w/Drill	3	10	8	1	1
		Semi Flatbed Material Delivery	1	3	8	1	1
		Backhoe	1	10	8	1	1
		Construction Staff Vehicles	6	10	8	1	1
		Concrete Truck	3	5	8	1	1
		3-5 Ton Roller	1	10	8	1	1
		Street Sweeper	1	10	8	1	1
Civil Construction (Water, Drain Pipe, Foundations, Cable Trough, etc)	8	Truck Mounted Drill Rig	1	30	8	1	1
		Track Mounted Drill Rig	1	10	8	1	1
		1 Ton Service Truck	1	30	8	1	1
		1 Ton Service Truck	1	10	8	1	1
		Front Loader	1	20	8	1	1
		1 Ton Service Truck	1	40	8	1	1
		Semi End Dump - Export (Foundation Soil) - *May keep on* site	4	10	8	4	4
		AB + Rebar Material Delivery - 5 Ton 20' Semi Flat Bed	1	10	8	1	1
		16 HP Welder	1	20	8	1	1
		Forms (Lumber) Material Delivery - 5 Ton 20' Semi Flat Bed	1	5	8	1	1
		Concrete Delivery	10	15	8	1	1
		Construction Employee Vehicles	12	40	8	1	1

Construction Activity	Duration (weeks)	Equipment Type	Quantity	Duration of Usage		Number of Trips (per day)	
				Days	Hrs/Day	To Site	From Site
		20 HP Generator	2	40	8	1	1
		Street Sweeper	1	40	8	1	1
Grounding, Conduit & Encasement	8	Backhoe	2	40	8	1	1
		Conduit Delivery - 5 Ton 20' Semi Flat Bed	6	10	8	1	1
		Concrete Trucks	1	15	8	6	6
		3-5 Ton Roller/Compactor	2	40	8	1	1
		Haul Spoils - Front Loader	1	5	8	1	1
		Semi End Dump - Export (soil) - *May keep on site*	4	5	8	4	4
		1 Ton Service Truck	4	40	8	1	1
		Construction Employee Vehicles	12	40	8	1	1
		Street Sweeper	1	40	8	1	1
Steel Erection	8	Steel Delivery - Semi Flat Bed	10	10	8	1	1
		60 Ton Crane	1	10	8	1	1
		60 Ft Manlift	2	10	8	1	1
		10,000 lb Reach Forklift	1	10	8	1	1
		Construction Employee Vehicles	4	10	8	1	1
		1 Ton Service Truck	2	10	8	1	1
		20 HP Generator	1	10	8	1	1
		16 HP Welder	1	10	8	1	1
		Street Sweeper	1	10	8	1	1
Electrical Equipment (New Substation, New T/L and Cutover)	26	5 SMUD Crew Vehicles	20	60	8	1	1
		SMUD Crew Truck	2	60	8	1	1
		SMUD Foreman Truck	2	60	8	1	1

Construction Activity	Duration (weeks)	Equipment Type	Quantity	Duration of Usage		Number of Trips (per day)	
				Days	Hrs/Day	To Site	From Site
		Equipment Delivery - 5 Ton 20' Semi Flat Bed	1	20	8	1	1
		290 Ton Crane	1	5	8	1	1
		9-axle Semi Flat Bed (Off Haul Equip)	3	1	8	1	1
		20 HP Generator	2	60	8	1	1
		1 SMUD Network Crew	4	20	8	1	1
		Street Sweeper	1	60	8	1	1
Dismantling of North City Substation	12	330 Excavator	1	20	8	1	1
		150 Ton Crane	1	5	8	1	1
		30 Ton Crane	1	20	8	1	1
		Front Loader	1	10	8	1	1
		Semi Flat Bed	4	10	8	4	4
		1 Ton Service Truck	1	5	8	1	1
		290 Ton Crane	1	5	8	1	1
		9-axle Semi Flat Bed (Off Haul Equip & Structures only. No soil)	6	6	8	1	1
		16 HP Welder	1	20	8	1	1
		20 HP Generator	1	20	8	1	1
		Construction Employee Vehicles	4	20	8	1	1
		1 Ton Service Truck	2	20	8	1	1
		Street Sweeper	1	20	8	1	1

APPENDIX E: CULTURAL RESOURCES ASSESSMENT

This report was prepared under separate cover.

For more information, please contact SMUD.

APPENDIX F: VALLEY ELDERBERRY LONGHORN BEETLE ASSESSMENT AND AVOIDANCE MEASURES

AREA WEST
ENVIRONMENTAL, INC.

December 18, 2013

Jose Bodipo-Memba
Sacramento Municipal Utility District
Environmental Management Department
6201 S Street
Sacramento, CA 95817-1899

SUBJECT: Station E Substation Project – Valley Elderberry Longhorn Beetle Assessment and Avoidance Measures

Dear Mr. Bodipo-Memba:

This letter presents our assessment of the proposed Station E Substation Project's potential impact on valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB), a species listed as threatened under the federal Endangered Species Act.

Elderberry shrubs (*Sambucus* sp.) are the obligate host plant for the VELB. Area West Environmental, Inc. (AWE) performed an elderberry shrub survey for the project on June 14, 2013. The survey area included the entire 15.50-acre project site and a 100-foot buffer around the project site. The elderberry shrub survey was conducted according to guidance described in the U.S. Fish and Wildlife Service's (USFWS') *Conservation Guidelines for the Valley Elderberry Longhorn Beetle*[1]. Twenty-four elderberry shrubs with stems measured greater than one inch in diameter are present within the survey area; most of these shrubs are located along the property perimeter near the existing fence (Figure 1). All of the elderberry shrubs in the survey area occur within ruderal and developed upland areas and do not occur within riparian habitat. Results of the survey are shown on the attached figure and a copy of the survey report is provided as Attachment 1.

After completing the elderberry shrub survey, Sacramento Municipal Utility District (SMUD) provided AWE biologists with a conceptual design plan and project description for the new substation. Based on the August 2013 proposed design, the project would have affected nearly all identified shrubs through removal, trimming, or other work within 20 feet of the shrub's drip line. Initial estimates concluded the original project design may require removal of 13 shrubs with stems greater than one inch. In October 2013, SMUD designers and AWE biologists met to determine if alternative designs could be used to avoid adversely affecting VELB while maintaining the effectiveness of the proposed substation. SMUD altered the conceptual plan in order to reduce the impact on local elderberry bushes by relocating the proposed perimeter access road, storm water detention basin, and security fencing. The new conceptual design is provided on the attached figure (Figure 2).

With the new conceptual design, SMUD would no longer require construction activities within 20 feet of the drip line of the elderberry shrubs along the perimeter fence and would avoid removal of

[1] U.S. Fish and Wildlife Service. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle.* July 9, 1999. Sacramento, California.

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WEB AREAWEST.NET

all but two small elderberry shrubs, numbers E-B and E-7 on the attached figures) observed near the middle of the project site during the June 2013 survey. Located within previously leveled and disturbed habitat, one of the shrubs (E-7) contained one stem with a diameter at ground level of more than one inch. The other shrub (E-B) did not have any stems greater than one inch. To confirm the previous study findings regarding shrub E-7 and to assess its potential value as VELB habitat, AWE conducted a second field assessment.

AWE biologist Dustin Brown and SMUD Environmental Management Specialist Jose Bodipo-Memba conducted a site visit on October 31, 2013. Mr. Brown took measurements on shrub E-7 with calipers (1/32-inch accuracy). For E-7, the two stems measured $1\frac{3}{4}$ inch and $\frac{7}{8}$ inch. No VELB exit holes were observed on the shrub. Mr. Brown also used a range finder to measure the distance from shrub E-7 to the closest shrub with at least one stem greater than one inch in diameter. Shrub E-13 is located approximately 350 feet southeast of E-7. Additionally, the nearest riparian habitat is located approximately 1,400 feet (0.27 mile) north of shrub E-7 along the American River. Photographs of shrub E-7 are included in Attachment 2.

Based on results of our elderberry shrub survey, we have determined that removal of elderberry shrubs E-7 and E-B would not result in take of VELB. As noted in the elderberry shrub survey report, stems measuring less than 1-inch diameter at ground level are unlikely to be habitat for VELB[1]. Also, most VELB occurrences are known from elderberry shrubs within or adjacent to riparian habitats. Because it does not have stems greater than one inch, shrub E-B is not considered potential habitat for VELB and removal of E-B would not result in take of the species. Also, removal of shrub E-7 is not likely to result in take of VELB due to the following conditions:

- shrub E-7 is relatively small, with one stem greater than one inch and one stem less than one inch in diameter;
- it is isolated from larger shrubs by approximately 350 feet;
- the shrub is located in previously leveled and disturbed ruderal habitat (i.e., non-riparian habitat);
- the nearest riparian habitat is more than a quarter-mile north of the site; and
- no VELB exit holes were observed on shrub E-7 during the June and October 2013 site visits.

Although we have concluded that the project would not result in incidental take of VELB, AWE recommends that SMUD implement the following avoidance measures for activities conducted between 20 and 100 feet of an elderberry shrub[2]:

1. The presence of elderberry shrubs in the construction area will be documented on work orders and the SMUD Planner Supervisor will be informed.

2. All on-site construction personnel will receive instruction regarding the presence of elderberry shrubs, VELB, the importance of avoiding impacts to VELB and its habitat, and the possible penalties for not complying with these requirements.

[2] These Avoidance Measures are taken from the USFWS technical assistance letter and to SMUD for their Routine Operation and Maintenance Project, dated June 19, 2007, and they are consistent with the USFWS No Take determination for VELB discussed in that technical assistance letter.

3. Flag the 20-foot exclusion boundary around the elderberry shrub and post a sign with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable and must be maintained for the duration of construction.

4. A biological monitor will be required to supervise construction activities falling between 20-feet and 100-feet of elderberry shrubs and stop work should personnel be out of compliance with the VELB avoidance measures, or if there is a risk that incidental take may occur.

5. Disturbance shall be minimized, and the site will be restored following construction.

Results of this assessment and recommended mitigation measures should be incorporated into the California Environmental Quality Act (CEQA) document prepared for the project. Based on our assessment, consultation with the USFWS would not be required. If you have any questions regarding this letter or the attached materials, please contact me or Aimee Dour-Smith at (916) 987-3362 or via email (adour-smith@areawest.net or becky@areawest.net).

Thank you,

Becky Rozumowicz

Figures

Figure 1. Elderberry Shrub Locations and Drip Lines
Figure 2. Conceptual Plan: Station E Substation Project (October 31, 2013)

Attachment

Attachment 1. Elderberry Shrub Survey Report (July 2013)
Attachment 2. Photographs of Shrub E-7

NORTH CITY SUBSTATION

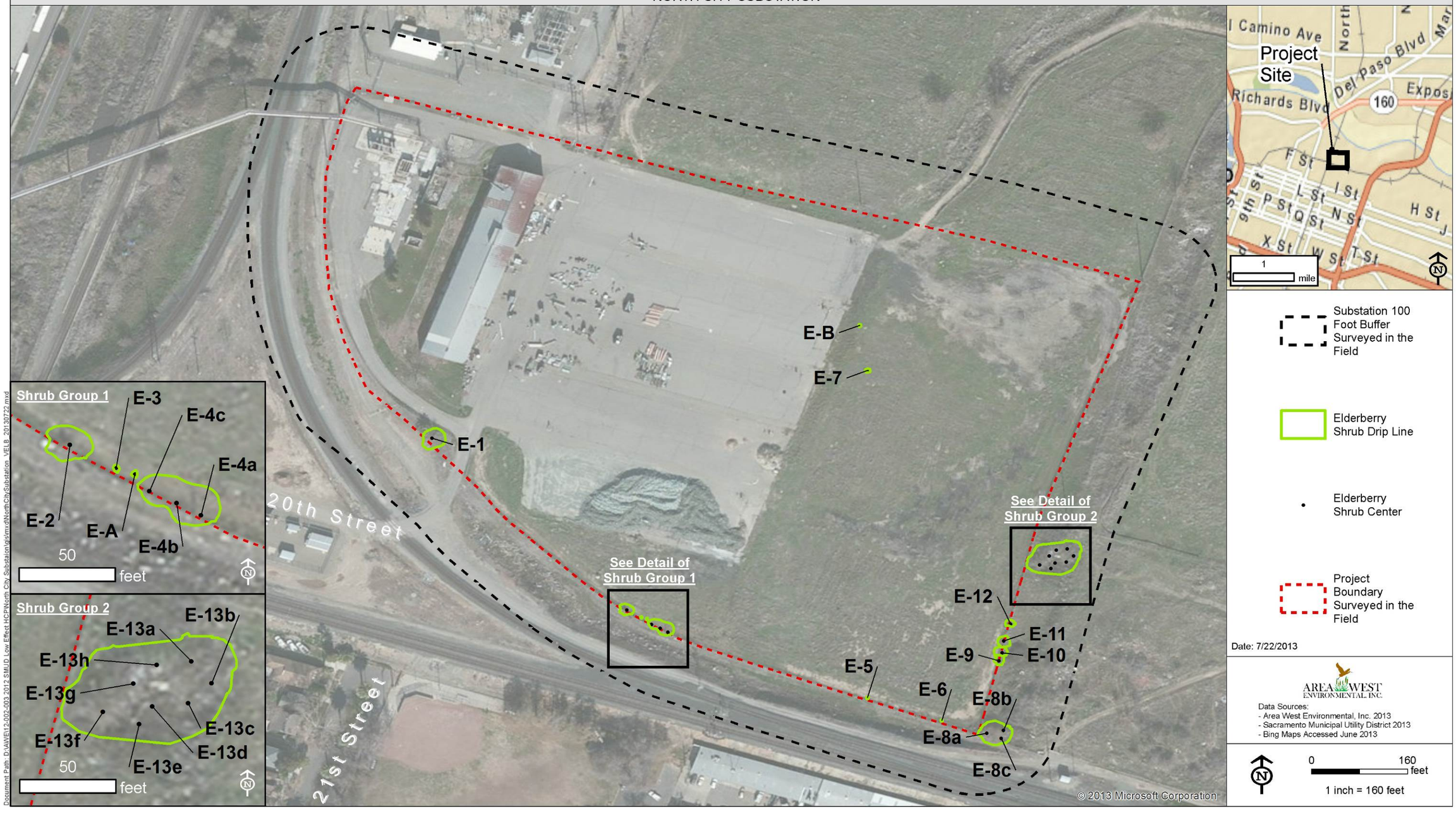

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Figure 1. Elderberry Shrub Locations and Drip Lines

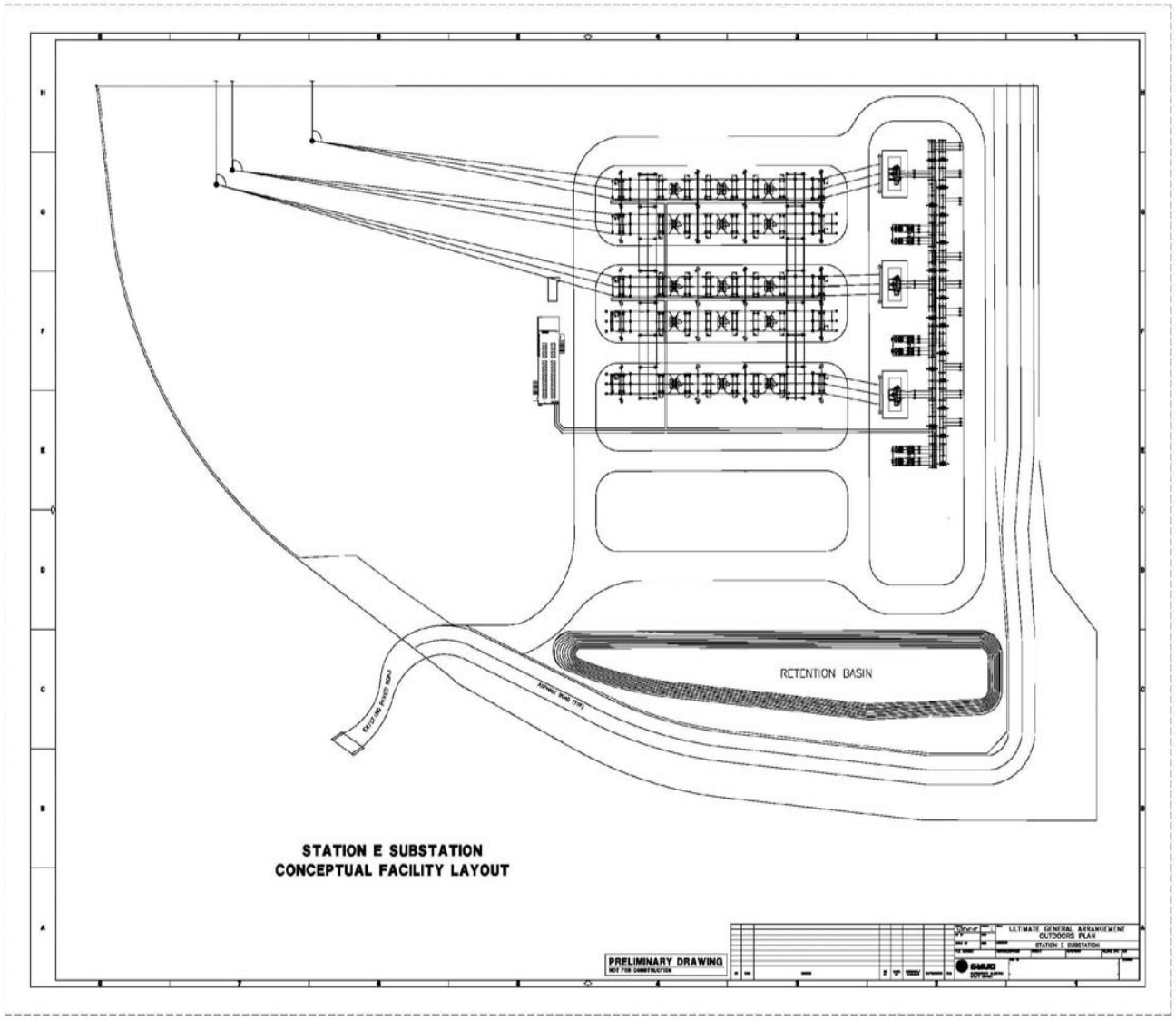

Figure 2. Revised Conceptual Plan for Station E Substation Project
October 31, 2013

Attachment 1. Elderberry Shrub Survey Report

Elderberry Shrub Survey Results
for the
North City Substation
Sacramento County, California

Prepared for:

SMUD™

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July 2013
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Introduction

The Sacramento Municipal Utility District (SMUD) retained Area West Environmental, Inc. (AWE) to perform an elderberry shrub survey for the North City Substation Project (Project). This survey was undertaken to document the location of elderberry shrubs, the host plant for the valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*), and to assist with project design to minimize potential impacts to VELB.

The Project is located in Sacramento County, California just north of downtown Sacramento (Figure 1) within an unsectioned portion of the Sacramento East U.S. Geological Survey 7.5 minute quadrangle map (Figure 2). The project site encompasses approximately 15.50 acres and is bound by the Southern Pacific Railroad to the west and south (Figure 2).

Proposed Action

SMUD proposes to construct a substation and associated infrastructure on the 15.50-acre site.

Study Area Defined

For purposes of the elderberry shrub survey, the study area includes the entire 15.50-acre project site and a 100-foot buffer around the project site. The inclusion of a 100-foot buffer area is based on the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (U.S. Fish and Wildlife Service [USFWS] 1999), which states that complete avoidance (no adverse effects on VELB) may be assumed when a 100-foot (or wider) buffer is established and maintained around elderberry plants containing stems measuring 1-inch or greater in diameter at ground level. Figure 3 depicts the limits of the project study area and locations of surveyed elderberry shrubs within the study area.

Overview of Site Conditions

The project site is situated within the northern portion of the city of Sacramento, just north of downtown Sacramento. The Project occurs within an industrial setting that is characterized by industrial buildings, flat ruderal areas, and a paved lot that covers approximately 50% of the project site. Elevation within the 15.50-acre project site varies from 40 feet above mean sea level (msl) to 30 feet above msl. The American River flows east to west approximately 0.25 miles north of the site.

Two biological community types occur within the project site: Developed and Ruderal. These community types are briefly described below. Community types within the 100-foot buffer are similar to those on the project site.

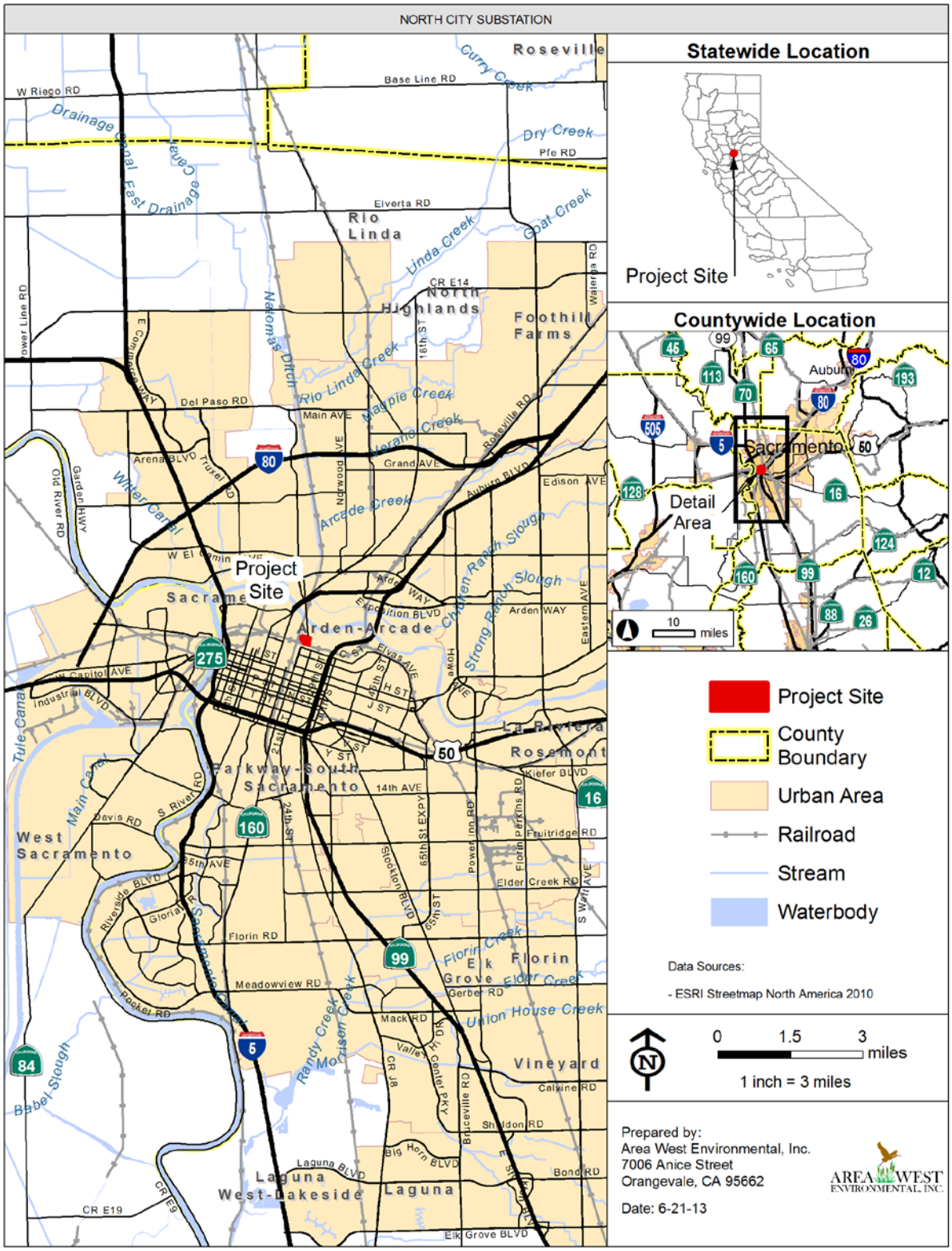

Figure 1. Project Vicinity

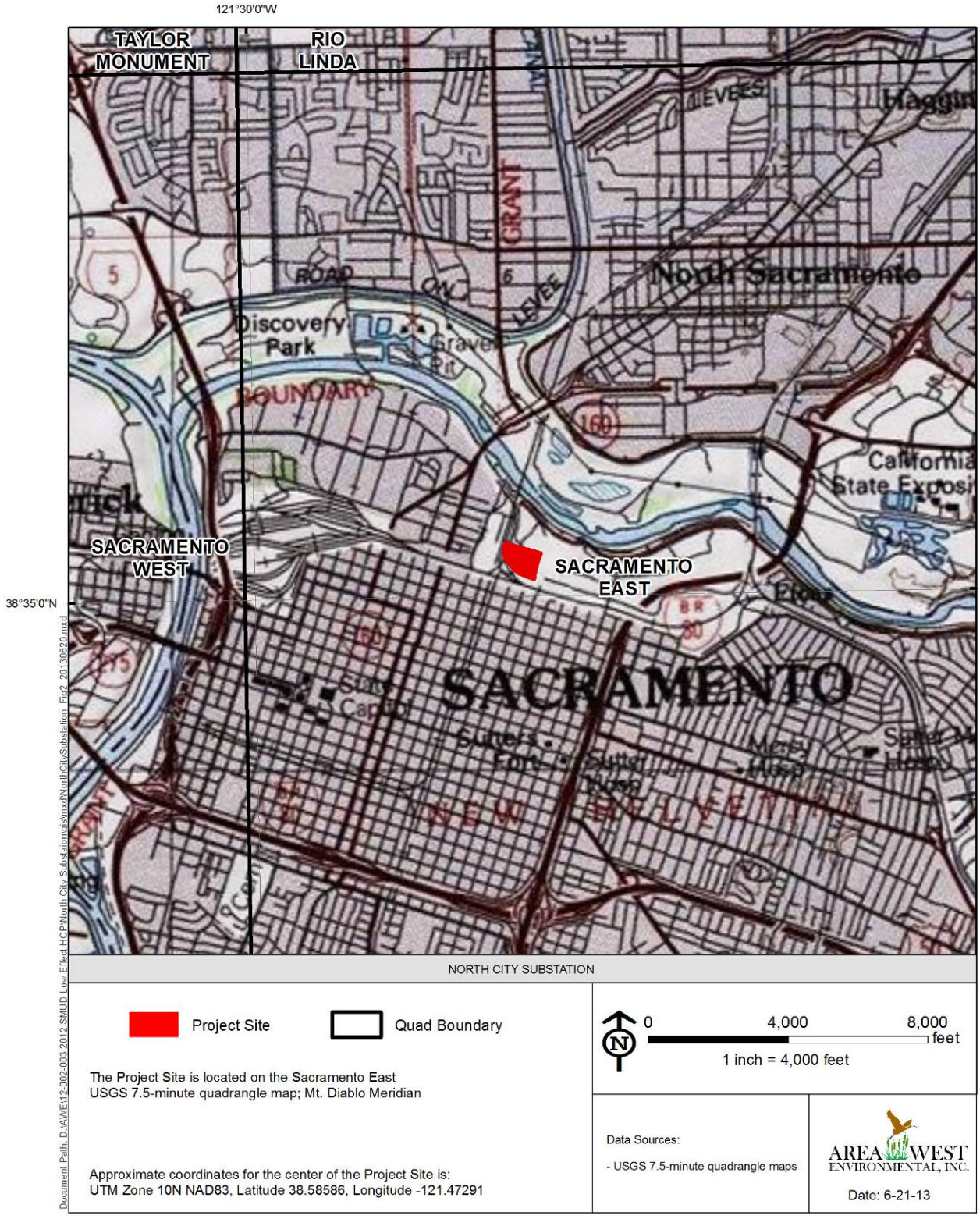

Figure 2. Project Area

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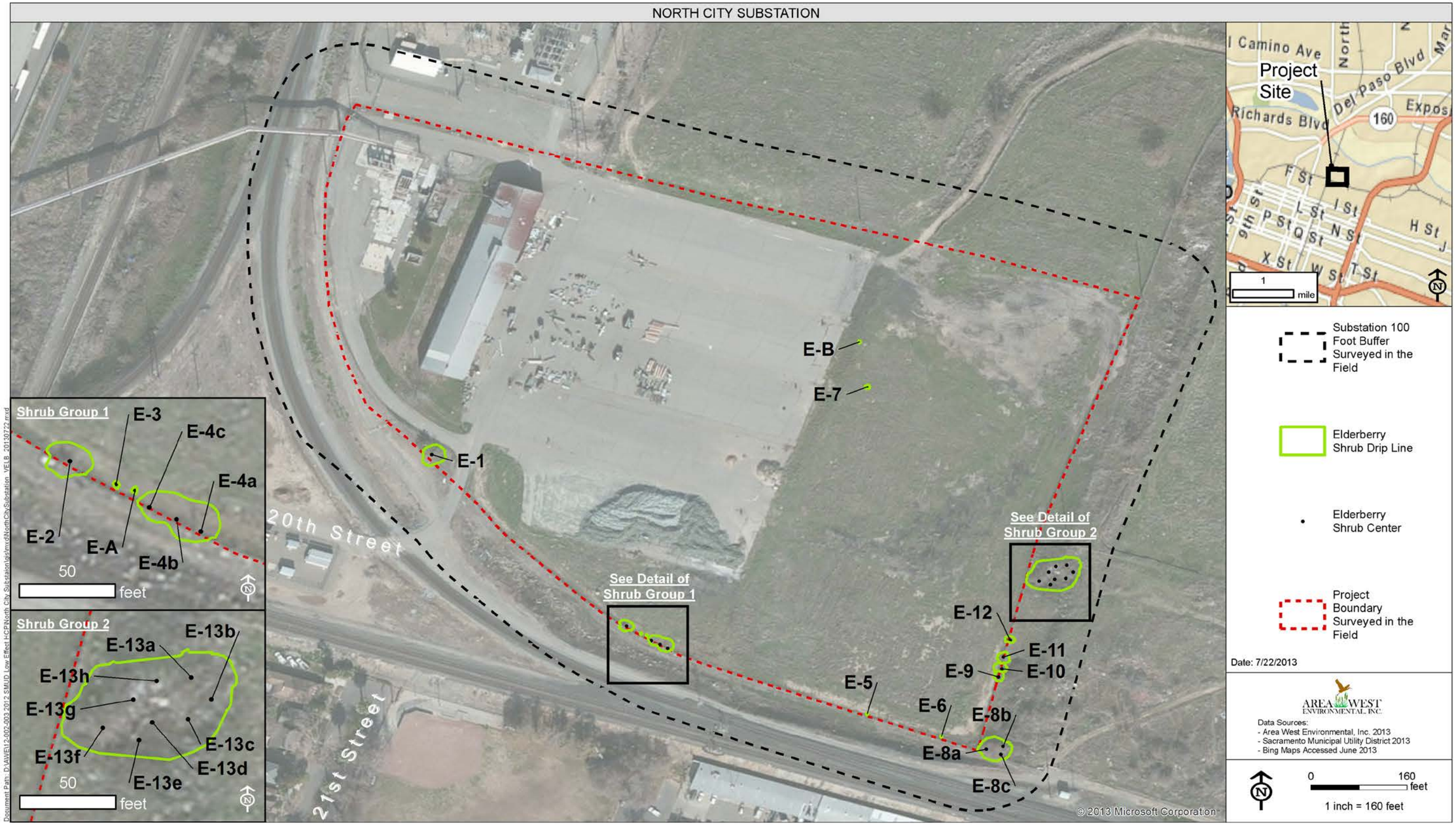

Figure 3. Elderberry Locations

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Developed

Approximately half the project site is developed. Developed habitat at the project site is characterized by anthropogenic features including roads, paved parking lots, and buildings. The developed habitat dominates the west half of the project site and consists mostly of a paved lot.

Ruderal

Approximately half the project site is ruderal. Ruderal habitat at the project site is characterized by disturbed non-native grasslands. Dominant vegetation includes ripgut brome (*Bromus diandrus*), yellow star thistle (*Centaurea solstitialis*), bull thistle (*Cirsium vulgare*), Italian thistle (*Carduus pynocephalus*), and winter vetch (*Vicia villosa*). The ruderal habitat dominates the east half of the project site.

Regulatory Protection for Valley Elderberry Longhorn Beetle

The VELB was federally listed as a threatened species on August 8, 1980 (45 FR §52803) and is protected under the Federal Endangered Species Act (ESA). On October 2, 2006, the USFWS announced a recommendation for VELB to be removed from the endangered species list based on successful recovery efforts (USFWS 2006). As of June 2013, USFWS has not published a formal proposal to delist the VELB.

Pursuant to the requirements of the ESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species may be present in the study area and determine whether the proposed project will result in "take" of any such species. In addition, the federal agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the ESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section §1536[3], [4]).

If the Project will result in potential direct effects to VELB, SMUD will need to obtain an incidental take permit to comply with the ESA. Section 7 of the ESA provides a means for authorizing incidental take of federally endangered or threatened species that results from federally conducted, permitted, or funded projects. Similarly, Section 10 authorizes incidental take of federally endangered or threatened species by non-federal agencies. At this time, no federal funding has been authorized and no federal permits have been drafted for the Project.

Survey Methods

AWE biologist Dustin Brown conducted an elderberry shrub survey within the project study area on June 14, 2013. These surveys were conducted at the time of year when the elderberry shrubs are most easily identifiable (shrubs had abundant foliage and were blooming and fruiting) and during the emergence period for VELB. The elderberry shrub surveys were conducted according to guidance described in the *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (USFWS 1999).

The VELB is closely associated with the blue elderberry plant (*Sambucus nigra* ssp. *caerulea*), an obligate host for beetle larvae. The blue elderberry is considered a typical riparian shrub in California; but where there is a source of water, elderberry shrubs also grow in non-riparian habitats. However, most VELB occurrences are known from elderberry shrubs within or adjacent to riparian habitats. Elderberry shrub surveys were conducted throughout the entire study area. A detailed description of survey methods within the project site and within the 100-foot buffer are described below.

Surveys of the Project Site

To look for elderberry shrubs, AWE biologist Dustin Brown walked the entire project site in meandering transects. Elderberry shrub locations on the project site were collected using a global positioning system (GPS) unit (Trimble GeoXT) with sub-meter accuracy. Each individual elderberry shrub was given a unique identification number. If elderberry shrubs occurred within five feet of each other, then they were considered a cluster and given one identifying number. Individual shrubs within each cluster were given letter identifiers. For example, shrub E-13d was the fourth shrub identified within shrub cluster 13.

Data on the number and size of live stems (dead stems were not counted), presence or absence of beetle exit holes (evidence of beetle presence), and habitat associations for each shrub or cluster identified within the project study area was collected and recorded onto standardized data forms. Stem diameters were measured at ground level using a pocket tree caliper. Stems measuring less than 1-inch diameter at ground level are unlikely to be habitat for VELB (USFWS 1999); however, because elderberry shrubs can experience a significant amount of growth within one growing season, the approximate number of young elderberry shoots measuring less than 1-inch in diameter at ground level were also recorded. All elderberry stems measuring 1-inch (or greater) in diameter at ground level were thoroughly searched for beetle exit holes. The number of exit holes was recorded for each shrub or cluster. Dominant vegetation around each elderberry shrub or cluster was noted and the habitat was characterized as either riparian or non-riparian.

Surveys of the 100-foot Buffer

Access was granted for the adjacent lots, so surveys within the 100-foot buffer followed the same methods as above.

Results

The June 14, 2013 elderberry shrub survey identified 15 elderberry shrubs or clusters within the study area (Figure 3). Information on the number and location of elderberry shrubs in the study area are provided below for the project site and for the 100-foot buffer area.

Elderberry Shrubs on the Project Site

A total of eight elderberry shrubs or clusters were mapped within the project site boundaries (Figure 3). Six elderberry shrubs or clusters were identified with stems measuring 1 inch or greater in diameter at ground level. Two elderberry shrubs were identified with stems measuring less than 1 inch ground level. Elderberry shrubs on the project site occur within the ruderal habitat on the south and east of the project site.

Field data collected for each shrub or cluster (e.g., identification number, number of stems per size class, number of exit holes per size class, habitat association) during the surveys is presented in Table 1. Table 1 also provides calculations for the total number of stems and exit holes for all elderberry shrubs and clusters that occur on the project site.

The surveys were conducted during the active period for adult VELB. Although a beetle exit hole was identified in an elderberry stem on the project site, no VELB were observed. Representative photographs of elderberry shrubs and stems with exit holes found on the project site are provided in Appendix A.

Elderberry Shrubs within the 100-Foot Buffer

A total of six elderberry shrubs or clusters were mapped within the 100-foot buffer (Figure 3). All six elderberry shrubs or clusters were identified with stems measuring 1 inch or greater ground level. These elderberry shrubs occur east of the project site within ruderal habitat.

Field data collected for each shrub or cluster (e.g., identification number, number of stems per size class, number of exit holes per size class, habitat association) during the surveys is presented in Table 1. Table 1 also provides calculations for the total number of stems and exit holes for all elderberry shrubs and clusters that occur on the project site.

No VELB exit holes or VELB were identified within the 100-foot buffer. Representative photographs of elderberry shrubs and stems found within the 100-foot buffer are provided in Appendix A.

Table 1. Summary of Stem Counts for Elderberry Shrubs on the Project Site

Shrub ID	Number of Stems (by Diameter)			Number of Exit Holes in Stems (by Diameter)			Riparian/ Non-Riparian	Habitat Associations[1]	Comments
	1 - 3 inches	3 - 5 inches	>5 inches	1 - 3 inches	3 - 5 inches	>5 inches			
E-1	13	8	1	1	0	0	Non-riparian	Ruderal-surrounded by roads and gravel lots	Good health, but large branch broken.
E-2	11	1	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	Good health.
E-3	1	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	2 other stems < 1 inch.
E-4a	10	2	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	
E-4b	7	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	
E-4c	8	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	15-20 stems < 1 inch.
E-5	1	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	6-8 stems < 1 inch.
E-6	1	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	8-12 stems < 1 inch.
E-7	1	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	1 other stem less than 1”
E-8a	29	6	2	0	0	0	Non-riparian	Ruderal	
E-8b	18	1	0	0	0	0	Non-riparian	Ruderal	
E-8c	3	0	0	0	0	0	Non-riparian	Ruderal	
E-9	6	0	0	0	0	0	Non-riparian	Ruderal	
E-10	15	0	0	0	0	0	Non-riparian	Ruderal	
E-11	14	0	0	0	0	0	Non-riparian	Ruderal	
E-12	3	0	0	0	0	0	Non-riparian	Ruderal	Dozens of stems < 1 inch.

Table 1. Summary of Stem Counts for Elderberry Shrubs on the Project Site

Shrub ID	Number of Stems (by Diameter)			Number of Exit Holes in Stems (by Diameter)			Riparian/ Non-Riparian	Habitat Associations[1]	Comments
	1 - 3 inches	3 - 5 inches	>5 inches	1 - 3 inches	3 - 5 inches	>5 inches			
E-13a	11	4	0	0	0	0	Non-riparian	Ruderal	
E-13b	6	0	0	0	0	0	Non-riparian	Ruderal	
E-13c	12	0	0	0	0	0	Non-riparian	Ruderal	
E-13d	4	3	1	0	0	0	Non-riparian	Ruderal	
E-13e	11	6	0	0	0	0	Non-riparian	Ruderal	
E-13f	6	3	0	0	0	0	Non-riparian	Ruderal	
E-13g	1	0	0	0	0	0	Non-riparian	Ruderal	
E-13h	1	1	0	0	0	0	Non-riparian	Ruderal	
E-A	0	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, and Italian thistle	10 to 15 stems < 1 inch
E-B	0	0	0	0	0	0	Non-riparian	Ruderal – Ripgut brome, star thistle, bull thistle, Italian thistle, and lupine	2-5 stems <1 inch.
Totals	**193**	**35**	**4**	**1**	**0**	**0**			

Citations

U.S. Fish and Wildlife Service. 1999. *Conservation Guidelines for the Valley Elderberry Longhorn Beetle.* July 9, 1999. Sacramento, California.

U.S. Fish and Wildlife Service. 2006. Press Release: Fish and Wildlife Service announces completion of 5-year reviews 28 for 12 species in California. Sacramento, Carlsbad and Ventura Fish and Wildlife Offices. 29 October 2, 2006. Online site accessed on May 10, 2009. http://www.fws.gov/sacramento/es/documents/VELB%205-year%20review.FINAL.pdf

General site photo – facing northeast

Developed habitat – facing north

Ruderal habitat – facing northwest

Elderberry E-1 – facing northeast

Elderberry E-1 – exit hole

Elderberry E-2 – facing southeast

Elderberry E-3 – facing south

Elderberry E-4a

Elderberry E-4b

Elderberry E-4c

Elderberry E-5 – facing southeast

Elderberry E-6 – facing south

Elderberry E-7 – facing east

Elderberry E-8a

Elderberry E-8b

Elderberry E-8c

Elderberry E-9 – facing northwest

Elderberry E-10 – facing southwest

Elderberry E-11 – facing southwest

Elderberry E-12 – facing northwest

Elderberry E-13a

Elderberry E-13b

Elderberry E-13c

Elderberry E-13d

	
Elderberry E-13e	Elderberry E-13f
	
Elderberry E-13g	Elderberry E-13h
	
Elderberry E-A – facing southwest	Elderberry E-B – facing northwest

Attachment 2. Photographs of Shrub E-7

Photograph of shrub E-7 – facing west
taken October 31, 2013

Photograph of shrub E-7 – facing north
taken October 31, 2013