TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

THIS PAGE INTENTIONALLY LEFT BLANK

4.12 Noise

Would the project result in:	Potentially Significant Impact	Potentially Significant Unless APMs Incorporated	Less Than Significant Impact	No Impact
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	❒	❒	☑	❒
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 2 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?	❒	❒	❒	☑

Would the project result in:	Potentially Significant Impact	Potentially Significant Unless APMs Incorporated	Less Than Significant Impact	No Impact
f. For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	❒	❒	❒	☑

4.12.1 Introduction

The purpose of this section is to describe the ambient noise conditions in the vicinity of the Proposed Project and to assess noise impacts that may potentially occur as a result of Proposed Project implementation, particularly with regard to short-term construction activities and long-term operation. Construction of the Proposed Project would not result in a significant increase in temporary, periodic, or permanent ambient noise levels in the Proposed Project area. Additionally, the Proposed Project would not expose sensitive receptors to significant vibration levels.

4.12.2 Methodology

By definition, "noise" is human-caused sound that is considered unpleasant and unwanted. Whether a sound is considered unpleasant depends on the individual who hears the sound, as well as the setting and circumstance under which the sound is heard. While performing certain tasks, people expect and accept certain sounds that are considered unpleasant under other circumstances. Because an individual's tolerance for noise varies by setting, some land uses are more sensitive to changes in the ambient noise environment than others. Noise-sensitive receptors include schools, hospitals, convalescent homes, long-term care facilities, mental care facilities, residential uses, places of worship, libraries, and passive recreation areas.

Decibel (dB) is the unit of measure used to describe the loudness of sound. Because the range of sound that humans can hear is quite wide, the decibel scale is logarithmic, making calculations more manageable. Several factors affect people's perception of sound. These factors include the actual noise level, frequencies involved, exposure period to the sound, and changes or fluctuations in sound level during exposure. To measure sound in a manner that accurately reflects human perception, several measuring systems, or scales, have been developed. The A-weighted scale reflects that the human ear does not perceive all pitches or frequencies equally; therefore, decibel measurements are adjusted (or weighted) to compensate for the human lack of sensitivity to low-pitched and high-pitched sounds. The adjusted unit is known as the A-weighted decibel (dBA).

The subjective human perception of noise "loudness" is usually different than what is measured. Generally, a 3-dBA increase in ambient noise levels is considered the minimum

threshold at which most people can detect a change in the noise environment; an increase of 10 dBA is perceived as a doubling of the ambient noise level. As a point of reference, a conversation between two people would typically measure approximately 60 to 65 dBA, and prolonged noise levels at higher than 85 dBA can cause hearing loss.

To reflect the fact that ambient noise levels from various sources vary over time, they are generally expressed as an equivalent noise level (L_{eq}), which is a computed steady noise level over a specified period of time. L_{eq} values are commonly expressed for 1-hour periods, but different averaging times may be specified.

For the evaluation of community noise effects, Community Noise Equivalent Level (CNEL) is often used. It represents the average A-weighted noise level during a 24-hour day with a 5-dB addition for the period from 7 p.m. to 10 p.m., and a 10-dB addition for the period from 10 p.m. to 7 a.m.

4.12.3 Environmental Setting

The proposed Salt Creek Substation site and the majority of the proposed TL 6965 route is located in the eastern portion of the City of Chula Vista. Approximately 4,700 linear feet of the northernmost portion of TL 6965, north of Mount Miguel Road, is located in an unincorporated portion of San Diego County on SDG&E fee-owned land surrounding the Existing Substation. Noise levels in these areas are those typical of suburban and rural residential communities. The primary noise source in the area is vehicular traffic on major roads and streets.

4.12.3.1 Regulatory Setting

Federal

There are no federal noise standards that directly regulate noise from the operation of electrical power lines and substation facilities. The federal government has, however, passed general laws to regulate and limit noise levels.

The USEPA Office of Noise Abatement and Control was originally established to coordinate federal noise-control activities. After inception, the Office of Noise Abatement and Control established the federal Noise Control Act of 1972, which established programs and guidelines to identify and address the effects of noise on public health and welfare and the environment. Administrators at USEPA determined in 1981 that subjective issues, such as noise, would be better addressed at the lower levels of government. Consequently, responsibilities for regulating noise-control policies were transferred to state and local governments. Noise-control guidelines contained in the rulings by USEPA in prior years are not standards, criteria, regulations, or goals, but are defined to protect public health and welfare with an adequate margin of safety, and to provide guidelines for implementing noise standards locally. However, the Noise Control Act of 1972 and the Quiet Communities Act of 1978 were not rescinded by Congress and remain in effect today.

Noise Control Act of 1972

The Noise Control Act of 1972 was the first comprehensive statement of national noise policy. It declares, "It is the policy of the U.S. to promote an environment for all Americans free from noise that jeopardizes their health or welfare."

Quiet Communities Act of 1978

The Noise Control Act was amended by the Quiet Communities Act of 1978 to promote the development of effective state and local noise-control programs, to provide funds for noise research, and to produce and disseminate educational materials to the public on the harmful effects of noise and ways to effectively control it.

By 2002, agencies, including the Department of Transportation, Department of Labor, Federal Railroad Administration, and FAA, developed their own noise-control programs, with each agency setting its own criteria.

State

California adopted noise standards in specific areas of regulation not previously covered by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise, and noise insulation.

CEQA states that the potential for excessive groundborne noise and vibration levels must be analyzed; however, CEQA does not define the term "excessive" vibration. Numerous public and private organizations and governing bodies provide guidelines to assist in the analysis of groundborne noise and vibration; however, federal, state, and local governments have yet to establish specific groundborne noise and vibration requirements. Additionally, there are no federal, state, or local vibration regulations or guidelines directly applicable to the Proposed Project.

Federal Transit Administration and California Department of Transportation

Publications by the Federal Transit Administration (FTA) and Caltrans are two of the seminal works for the analysis of groundborne noise and vibration relating to transportation and construction. The Proposed Project is not subject to FTA or Caltrans regulations; however, these guidelines serve as a useful tool to evaluate vibration impacts. Therefore, FTA and Caltrans guidance are used to establish significance criteria for assessing the impacts of the Proposed Project, as presented in Section 4.12.4.1, Significance Criteria. Caltrans guidelines recommend that a standard of 0.2 inches per second (in/sec) peak particle velocity (PPV) not be exceeded for the protection of normal residential buildings, and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans 2004). With respect to human response within residential uses (i.e., annoyance, sleep disruption), FTA recommends a maximum acceptable vibration standard of 80 vibration decibels (VdB) (FTA 2006).

Local

Local governments outline requirements for noise abatement and control in the noise element of their general plans and municipal codes. These noise elements typically set noise goals and

objectives, and the municipal codes set sound-level limits and time of day restrictions for activities. The municipalities applicable to the Proposed Project are the City of Chula Vista and the County of San Diego.

City of Chula Vista General Plan

The Environmental Element (EE) of the City of Chula Vista's General Plan contains applicable noise/land use compatibility guidelines (City of Chula Vista 2005), which are shown in Table 4.12-1. Policies from the City of Chula Vista's General Plan relevant to this noise analysis are as follows:

EE 21.1 Apply the exterior land use noise compatibility guidelines contained in Table 9-1 of this Environmental Element to new development where applicable and in light of project-specific considerations. (Note: Table 9-1 of the Environmental Element is Table 4.12-1 of this PEA.)

EE 21.3 Promote the use of available technologies in building construction to improve noise attenuation capacities.

EE 22.5 Where necessary, require appropriate mitigation measures in order to attenuate existing and projected traffic noise levels in accordance with applicable standards, including the exterior land use noise compatibility guidelines contained in Table 9-1 of this Environmental Element.

As shown in Table 4.12-1, all land uses are considered incompatible with noise levels in excess of 75 dBA CNEL. Offices, businesses, churches, athletic fields, and community parks are considered incompatible in excess of 70 dBA CNEL. Residences, schools, neighborhood parks, and libraries, are considered incompatible in excess of 65 dBA CNEL.

City of Chula Vista Noise Ordinance

Chapter 19.68 of the City of Chula Vista's Zoning Code, the Noise Control Ordinance, requires that "[n]o person shall operate or cause to be operated, any source of sound … or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level to exceed … the applicable limits given in Table III." Construction noise and the noise from motor vehicles operating on public ROWs are exempt from these standards. Table 4.12-2 includes the applicable portion of Table III of the Noise Control Ordinance.

The ordinance states that if the measured ambient level exceeds that permissible, as shown in Table 4.12-2, the allowed noise exposure shall be the ambient noise level, measured from the noise source. Construction activity is exempt from these standards.

Table 4.12-1: Exterior Land Use Noise Compatibility Guidelines

Land Use	Annual CNEL in Decibels					
	50	55	60	65	70	75
Residential						
Schools, Libraries, Daycare Facilities, Convalescent Homes, Outdoor Use Areas, and Other Similar Uses Considered Noise Sensitive						
Neighborhood Parks, Playgrounds						
Community Parks, Athletic Fields						
Offices and Professional						
Places of Worship (excluding outdoor use areas)						
Golf Courses						
Retail and Wholesale Commercial, Restaurants, Movie Theaters						
Industrial, Manufacturing						

Source: City of Chula Vista 2005

Table 4.12-2: Exterior Noise Standards

Environmental Noise – L_{eq} in any Hour[1]		
Receiving Land Use Category	**Noise Level (dBA)**	
	10 p.m. to 7 a.m. (Weekdays) 10 p.m. to 8 a.m. (Weekends)	**7 a.m. to 10 p.m. (Weekdays) 8 a.m. to 10 p.m. (Weekends)**
All residential, except multiple dwelling	45	55
Multiple dwelling residential	50	60
Commercial	60	65

Source: City of Chula Vista Municipal Code, Section 19.68.030

[1] Environmental noise is the L_{eq} in any hour. The limits also apply to a category of noise defined as nuisance noise, and the limits are not to be exceeded at any time.

Section 17.24.0040B of the City of Chula Vista's Municipal Code restricts the hours of construction activity as follows: "The use of any tools, power machinery or equipment, or the conduct of construction and building work in residential zones so as to cause noises disturbing to the comfort and repose of any person residing or working in the vicinity, between the hours of 10:00 p.m. and 7:00 a.m., Monday through Friday, and between the hours of 10:00 p.m. and 8:00 a.m., Saturday and Sunday, except when the same is necessary for emergency repairs required for the health and safety of any member of the community." Any construction activities that occur within the City of Chula Vista would need to occur during these times.

County of San Diego

San Diego County General Plan

Goal N-2 of the San Diego County General Plan Noise Element is relevant to the Proposed Project:

> GOAL N-2: Protection of Noise Sensitive Uses. A noise environment that minimizes exposure of noise sensitive land uses to excessive, unsafe, or otherwise disruptive noise levels.

County of San Diego Noise Ordinance

The County of San Diego Noise Ordinance, County Code Section 36.404, sets limits on operational noise levels generated from one property to another, such as from mechanical equipment. Sections 36.408 and 36.409 of the Noise Ordinance also regulate when construction can occur, and noise levels generated by construction activities.

Section 36.404. Sound Level Limits

Under the County of San Diego Noise Ordinance, a person generally cannot cause or allow noise generated on a particular property to exceed the 1-hour average sound level set forth in Section 36.404 of the Noise Ordinance and shown herein as Table 4.12-3. The noise-level limits vary with the zoning of the properties concerned. The Existing Substation site and the power line north of San Miguel Ranch Road is currently zoned Holding Area (S90), which allows for "Minor Impact Utilities" such as the Proposed Project; adjacent properties are zoned Residential and Open Space, as discussed in further detail in Section 4.10, Land Use.

Table 4.12-3: County of San Diego Noise Ordinance Sound Level Limits

Zone	Applicable Hours	Sound Level Limit dB $L_{eq\ (1\ hour)}$
RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92, RV, and RU. Use regulations with a density of less than 11 dwelling units per 1 acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45

Zone	Applicable Hours	Sound Level Limit dB $L_{eq\ (1\ hour)}$
RRO, RC, RM, C30, S86, RV, RU, and V5. Use regulations with a density of 11 or more dwelling units per 1 acre.	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
S94, V4, and all other commercial zones	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
V1, V2	7 a.m. to 7 p.m. 7 p.m. to 10 p.m.	60 55
V1	10 p.m. to 7 a.m.	55
V2	10 p.m. to 7 a.m.	50
V3	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	70 65
M50, M52, and M54	Any time	70
S82, M56, and M58	Any time	75
S88 (see Note "c" below)		

Source: County of San Diego Noise Ordinance, Section 36.404

(a) Except as provided in Section 36.409 of the County of San Diego Noise Ordinance, it shall be unlawful for any person to cause or allow the creation of any noise that exceeds the 1-hour average sound-level limits shown in the above table, when the 1-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit that authorizes the noise-generating use or activity, and the decision-making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with note (a), above.

(c) S88 zones are Specific Planning Areas, which allow for different uses. The sound-level limits in the table above that apply in an S88 zone depend on the use being made of the property.

(d) If the measured ambient noise level exceeds the applicable limit shown in the table above, the allowable 1-hour average sound level shall be the 1-hour average ambient noise level, plus 3 dB. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(e) The sound-level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The 1-hour average sound-level limit applicable to extractive industries, however, including borrow pits and mines, shall be 75 dB at the property line, regardless of the zone in which the extractive industry is located.

(f) Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line are subject to the noise-level limits in this table, as measured at or beyond 6 feet from the boundary of the easement upon which the equipment is located.

Section 36.408. Hours of Operation of Construction Equipment

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment as follows:

(a) Between 7 p.m. and 7 a.m.

(b) On a Sunday or a holiday. For purposes of this section, a holiday means January 1, the last Monday in May, July 4, the first Monday in September, December 25, and any day appointed by the President as a special national holiday or the governor of the state as a special state holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind, and does not violate the limitations in Sections 36.409 and 36.410 [of the County of San Diego Noise Ordinance].

Section 36.409. Sound Level Limitations on Construction Equipment

Except for emergency work, it is unlawful for any person to operate construction equipment or cause construction equipment to be operated that exceeds an average sound level of 75 dBA L_{eq} for an 8-hour period between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

In addition to the general limitations on sound levels in Section 36.404, Section 36.410 of the County of San Diego Noise Ordinance applies the sound-level limitations shown in Table 4.12-4 to control impulse noise sources. As with Section 36.404 County of San Diego Noise Ordinance, these limits are applied when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received. A violation is determined to occur when the limit identified in Table 4.12-4 of this PEA is exceeded for 15 minutes or more in a given hour. Additionally, if the maximum noise level limit is exceeded for only a portion of the minute, the entire minute is included in the determination.

The County of San Diego also evaluates noise impacts in light of a project's potential to result in a significant impact if it would result in a substantial permanent increase in ambient noise levels in the vicinity. This increase is defined as an increase of 10 dBA CNEL above existing conditions in the County of San Diego Noise Report Guidelines, Section 4.1-A (ii).

Table 4.12-4: County of San Diego Code Section 36.410
Maximum Sound Level (Impulsive) Measured at Occupied Property

Occupied Property Use	Decibels (dBA)
Residential, Village Zoning, or Civic Use	82
Agricultural, Commercial, or Industrial Use	85

4.12.3.2 Community Noise Survey

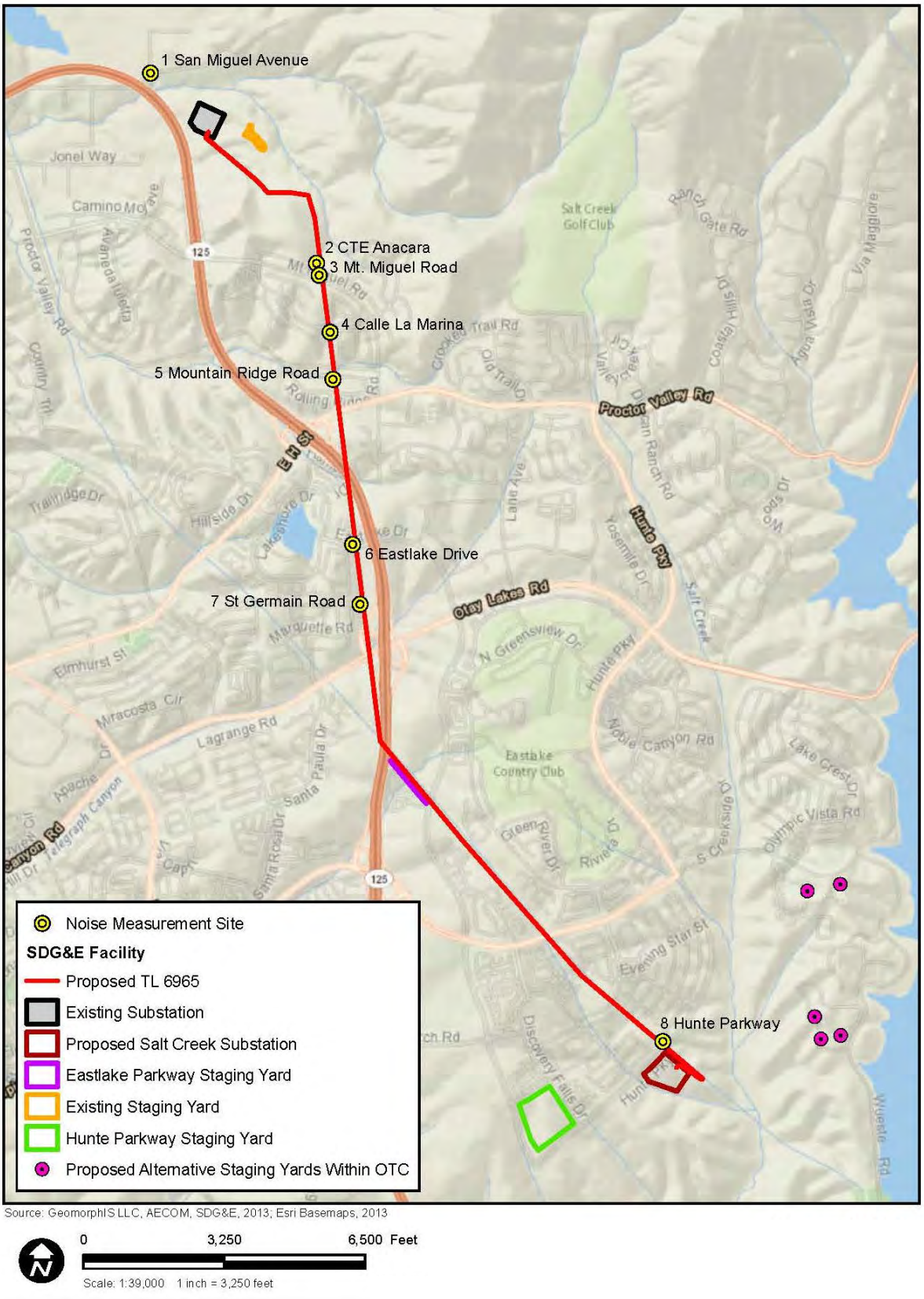
Ambient noise levels in the Proposed Project area are influenced primarily by vehicle traffic on major roads and highways, such as SR-125, and aircraft flyovers in the area. A community noise survey was conducted to document existing ambient noise within noise-sensitive communities located near the proposed Salt Creek Substation site and along proposed TL 6965 up to the Existing Substation. Noise-sensitive receptors are generally defined as residences, places of worship, and schools, but may also include convalescent homes, long-term care facilities, mental care facilities, hospitals, libraries, and passive recreation areas.

A community noise survey was conducted on June 5 and 6, 2012, to document the existing noise environment at noise-sensitive receptors and existing noise sources within the Proposed Project area. As part of site reconnaissance, noise-sensitive receptors located closest to the Proposed Project area were determined to include residences north of Hunte Parkway. These residences are approximately 190 feet northwest of the proposed Salt Creek Substation site. The Hunte Parkway Trail runs adjacent to the proposed Salt Creek Substation site along Hunte Parkway. All other noise-sensitive receptors are located at greater distances from the Salt Creek Substation site. Noise-sensitive land uses along the proposed TL 6965 route include schools (e.g., Liberty Elementary, Thurgood Marshall Elementary, Olympic View Elementary, High Tech High, High Tech Middle, High Tech Elementary, and Eastlake High Schools), a church (Parkway Hills Church Nazarene), parks (e.g., Sunset View Park, Chula Vista Community Park, Windingwalk Park, and Mount San Miguel Community Park), and residences. These are located as close as approximately 100 feet from the proposed power line, as shown in Figure 4.14-1, Public Services, and Figure 4.15-1, Recreational Facilities.

Noise-level measurements were conducted at eight locations, in accordance with the American National Standards Institute (ANSI) standards using a Larson Davis Laboratories (LDL) Model 820 sound-level meter. The sound-level meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to verify that the meters were measuring accurately. The equipment used meets all pertinent specifications of the ANSI for Type 1 sound-level meters.

Community noise survey measurement sites are shown in Figure 4.12-1. The L_{eq}, maximum noise level (L_{max}), minimum noise level (L_{min}), and noise level exceeded 90% of a specific time period (L_{90}) were recorded at each short-term ambient noise measurement location and are presented in Table 4.12-5. Detailed noise field measurement data is provided in Appendix 4.12-A.

Figure 4.12-1: Noise Measurement Sites



Note: SDG&E is providing this map with the understanding that the map is not survey grade.

Table 4.12-5: Summary of Monitored Short-Term Daytime Ambient Noise Levels

Site	Location	Date/ Time	Primary Noise Source	A-Weighted Sound Level (dBA)			
				L_{eq}	L_{min}	L_{max}	L_{90}
1	San Miguel Avenue	5 Jun/4:36 p.m.	Vehicles	60.3	49.3	71.7	53.7
2	CTE Anacara	6 Jun/12:46 p.m.	Aircraft	48.1	35.9	61.4	37.8
3	Mt. Miguel Road	6 Jun/1:08 p.m.	Vehicles	54.5	38.3	67.6	42.8
4	Calle La Marina	6 Jun/1:36 p.m.	Vehicles	47.4	39.9	61.0	41.2
5	Mountain Ridge Road	6 Jun/2:10 p.m.	Vehicles	50.5	37.9	66.0	40.2
6	Eastlake Road	6 Jun/2:40 p.m.	Vehicles	57.0	42.6	71.6	46.8
7	St. Germain Road	6 Jun/3:30 p.m.	Vehicles	47.0	39.5	57.2	42.4
8	Hunte Road	6 Jun/4:15 p.m.	vehicles	50.1	36.1	68.2	38.3

Notes: dBA = A-weighted decibels; L_{eq} = equivalent noise level; L_{min} = minimum noise level; L_{max} = maximum noise level; L_{90} = noise level exceeded 90% of a specific period of time

As shown in Table 4.12-5, average daytime ambient noise levels ranged from approximately 47 to 60 dBA L_{eq}, with maximum noise levels from approximately 57 to 71 dBA L_{max}. Based on the L_{90} measurements, background noise levels in the Proposed Project area are generally less than 50 dBA.

4.12.4 Impacts

4.12.4.1 Significance Criteria

The significance criteria for assessing the impacts from noise levels and groundborne vibration were derived from the CEQA Guidelines, Appendix G, Environmental Checklist. According to the CEQA Checklist, a project results in a potentially significant noise impact if it would result in any of the following:

- 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;
- 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;

- for a project located within an airport land use plan, or, where such a plan has not been adopted, within 2 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; and/or
- for a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels.

4.12.4.2 Impact Analysis

Question 4.12(a) – Noise Levels in Excess of Established Standards

Construction – Less-than-Significant Impact

Construction of the Proposed Project would require a variety of construction equipment. Typical maximum noise levels for construction equipment at 50 feet from the source are shown in Table 4.12-6.

In addition, a light-medium lift construction helicopter would be used during the transport, placement, and installation of the power line. Helicopter operation would occur during specific daytime construction activities (for approximately 5 days) at groundlevel to low altitude (groundlevel to 300 feet high). The helicopter flight path would be at low elevation and limited to the Transmission Corridor, with helicopter storage and refueling occurring at the Existing Substation. Helicopter noise typically is approximately 100 dB at 100 feet (Federal Interagency Committee on Noise 1992).

As shown in Table 4.12-6, the maximum intermittent noise levels are expected to range between 74 and 90 dBA at approximately 50 feet, and 100 dBA at 100 feet during helicopter activity. Based on FTA construction noise modeling, the highest combined predicted hourly noise level for construction equipment associated with the Proposed Project at 50 feet would be 84 dBA L_{eq} during construction of the proposed Salt Creek Substation and 78 dBA L_{eq} during the installation of power poles and grading of the access road. Higher levels are expected when intermittent helicopter activity is included, which would average hourly at approximately 90 dBA L_{eq} at 100 feet when working in a given area (FTA 2006).

Noise levels would be attenuated due to intervening structures and/or vegetation located in the vicinity of the Proposed Project. As an example, blocking the line-of-sight between a source and receiver can provide a 5-dBA attenuation, and vegetation can yield up to a 7.5-dBA attenuation per doubling of distance as opposed to a 6-dBA reduction per doubling of distance over hard surfaces such as roadways and parking lots.

During Proposed Project construction, there would be three primary access routes to and from the Proposed Project area. These three primary routes are as follows:

- SR-54 to Briarwood Drive, then extending easterly to the Existing Substation and Existing Substation staging yard
- SR-125 Toll Road

- Olympic Parkway, heading east from Interstate 805 to the proposed Salt Creek Substation, the Hunte Parkway staging yard, and the southern end of TL 6965.

Table 4.12-6: Typical Maximum Noise Levels Generated by Construction Equipment

Equipment	Noise Level (dBA) at 50 feet
Backhoe	80
Concrete mixer	85
Concrete saw	90
Pump truck	82
Crane, mobile	83
Dozer	85
Excavator	85
Generator	81
Grader	85
Man lift	85
Loader	85
Paver	89
Roller	85
Scraper	89
Trucks	74–88
Helicopter[1]	100

[1] Noise level (dBA) at 100 feet

Source: FTA 2006

Generally, these access routes and roadways are either lined with sound walls or vertically separated (i.e., depressed or elevated) from the residences that are located along these roadways, which would provide noise attenuation. However, limited construction traffic might also use other secondary roads in the Proposed Project area. As shown in Table 4.12-6, maximum noise levels associated with truck traffic would range from 74 dBA to 88 dBA at a distance of 50 feet, with a lower hourly average range of approximately 65 to 79 dBA L_{eq}. Construction truck trips are anticipated to be temporary, minimal, and intermittent, and, when combined with the greater regular traffic volumes of these roadways, are anticipated to result overall in a negligible increase in traffic noise.

Salt Creek Substation

The proposed Salt Creek Substation site is located in the eastern portion of the City of Chula Vista, southeast of Hunte Parkway, approximately 0.4 mile from High Tech Middle School and approximately 190 feet from the residences northeast of Hunte Parkway. Construction activities for the proposed Salt Creek Substation are anticipated to occur for approximately 18 to 24 months, and would generally occur during daytime work hours Monday through Friday, 7 a.m. to 7 p.m., and between 8 a.m. and 7 p.m. on Saturday; however, some concrete pours may take place during an extended day, depending on the size of the pour. Transformer oil filling may necessitate vacuum pulls and oil installation requiring continuous work 24 hours per day (3 to 5 days per transformer).

Noise from construction of the proposed Salt Creek Substation is permissible under the City of Chula Vista's Municipal Code if the construction activities occur between 7 a.m. and 10 p.m., Monday through Friday, and between 8 a.m. and 10 p.m. on Saturdays and Sundays. The City of Chula Vista does not have specific noise-level limits for construction activities, but prohibits construction in residential zones that cause noises that disturb the comfort and repose of any person residing or working in the vicinity during these allowable hours.

Construction activities associated with the proposed Salt Creek Substation would occur in accordance with restrictions and standards established by the City of Chula Vista's Municipal Code; however, some concrete pours and transformer oil filling may necessitate work outside of the allowed hours. If work is required outside of the allowed hours, SDG&E would meet and confer with the City of Chula Vista, as needed. Therefore, impacts would be less than significant.

TL 6965 and TL 6910 Loop-In

Construction activities for the power lines are anticipated to occur for approximately 8 to 12 months and would generally occur during daytime work hours Monday through Friday, 7 a.m. to 7 p.m., and between 8 a.m. and 7 p.m. on Saturday. The majority of the proposed TL 6965 would be located in the eastern portion of the City of Chula Vista. Approximately 4,700 linear feet of the northernmost portion of the power line would be located in an unincorporated portion of San Diego County.

Construction activities associated with the proposed TL 6965 and TL 6910 loop-in within the City of Chula Vista would occur in accordance with restrictions and standards established by the City of Chula Vista's Municipal Code. If work is required outside of the allowed hours, SDG&E would meet and confer with the City of Chula Vista, as needed. Therefore, impacts would be less than significant.

Noise from construction of the power lines within the County of San Diego is permissible under the County Municipal Code if the construction activities occur between 7 a.m. and 7 p.m., Monday through Saturday, and do not exceed an average sound level of 75 dBA L_{eq} for an 8-hour period between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

Installing power poles is anticipated to generate an hourly average of 78 dBA L_{eq} at 50 feet. However, construction noise averaged over an 8-hour period is not anticipated to exceed San Diego County's average sound level limit of 75 dBA L_{eq} for an 8-hour period between 7 a.m. and 7 p.m. when measured at the boundary line of SDG&E's fee-owned property at the Existing Substation (where the noise source is located) or on any occupied property where the noise is being received.

Construction activities associated with the proposed power line within the County of San Diego would occur in accordance with restrictions and standards established by the County of San Diego's Municipal Code. If work is required outside of the allowed hours, SDG&E would meet and confer with the County of San Diego, as needed. Therefore, impacts would be less than significant.

Existing Substation Modifications

Proposed modifications at the Existing Substation, located within the County of San Diego, are anticipated to require approximately 3 months. Construction activities would generally occur during normal work hours, Monday through Saturday, 7 a.m. to 7 p.m. Given that refueling and storage of a helicopter would occur at the Existing Substation, there would be temporary noise during start-up, take-offs, and landings at the Existing Substation site. Helicopter noise is typically approximately 100 dB at 100 feet (Federal Interagency Committee on Noise 1992).

Construction activities associated with the proposed modifications to the Existing Substation would occur in accordance with restrictions and standards established by the County of San Diego's Municipal Code. If work is required outside of the allowed hours, SDG&E would meet and confer with the County of San Diego, as needed. Therefore, impacts would be less than significant.

Staging Yards

Staging yards would be used to store construction materials and equipment for the Proposed Project components. Construction activities are anticipated to occur for approximately 18 to 24 months, and would generally occur during normal work hours, Monday through Friday, 7 a.m. to 7 p.m., and between 8 a.m. and 7 p.m. on Saturday. Construction activities associated with the Proposed Project would occur in accordance with restrictions and standards established by the County of San Diego Noise Ordinance and Chula Vista Municipal Code. If work is required outside of the allowed hours, SDG&E would meet and confer with the County of San Diego and/or the City of Chula Vista, as needed. Therefore, impacts would be less than significant.

Operation and Maintenance – Less-than-Significant Impact

Operation of the Proposed Project would consist of inspection, routine maintenance activities, and occasional emergency repairs. Inspections would occur in the form of aerial patrol through the use of helicopters, or through ground patrols visiting the facilities. Prior to using helicopters for operation and maintenance of the Proposed Project facilities, SDG&E or its contractor would notify the FAA and any local agencies, as required, prior to conducting maintenance activities requiring a helicopter. Helicopter operators would comply with all applicable federal, state, and

local regulations. These activities would not occur on a continuous basis, and would likely not involve the creation of substantial noise. If extraordinary emergency repairs are required, SDG&E would meet and confer with the County of San Diego and/or the City of Chula Vista, as needed. Additionally, operation and maintenance activities of some components (e.g., Existing Substation and TL 6965) would not be substantially different from ongoing existing operation and maintenance activities.

Due to the distance to the nearest sensitive receptors (approximately 190 feet), noise associated with operation of the proposed Salt Creek Substation would be negligible. All activities associated with operation of the proposed Salt Creek Substation would comply with applicable noise standards and regulations established by the City of Chula Vista, and would not result in exposure of persons to excessive noise levels. Impacts would be less than significant.

Question 4.12(b) – Generation of Excessive Groundborne Vibration or Groundborne Noise Levels

Construction – Less-than-Significant Impact

Salt Creek Substation

Construction activities for the proposed Salt Creek Substation site, such as drilling and driving heavy trucks on uneven surfaces, may produce minor groundborne vibration and noise in the immediate vicinity of the construction activity. Impacts from construction-related groundborne vibration and noise would be intermittent and confined to the immediate area surrounding the activity. According to the FTA, large bulldozers can create vibration levels of 0.089 in/sec PPV and 87 VdB referenced to 1 microinch per second (µin/sec) and based on the root mean square (RMS) velocity amplitude at 25 feet, as shown in Table 4.12-7.

Table 4.12-7: Typical Construction-Equipment Vibration Levels

Equipment	PPV at 25 feet (in/sec)	Approximate L_V at 25 feet
Haul Trucks	0.076	86
Large Bulldozer	0.089	87

Source: FTA 2006

Notes: in/sec = inches per second; L_V = velocity level in decibels (VdB) referenced to 1 microinch/second and based on the root mean square velocity amplitude; PPV = peak particle velocity

Installation of underground (below grade) facilities is anticipated to generate the highest vibration levels. Below-grade activities would require the use of an excavator/backhoe to excavate and backfill trenches for installing the ground grid, cables, foundations and footings, and duct banks; a cement mixer for preparing concrete for cable trenches, foundations and footings, and equipment vaults; and trucks for hauling equipment and construction materials.

Other activities, such as grading and facility construction, would also generate vibrations; however, these vibrations levels would be less intense and would occur for a shorter duration.

The nearest sensitive receptors to the construction activities at the proposed Salt Creek Substation site would be residences located approximately 190 feet to the north of Hunte Parkway. FTA's recommended procedure for applying propagation adjustments to the reference levels shown in Table 4.12-7 accounts for the decrease in vibration levels with an increase in distance from the source to receptor. Using FTA's recommended procedure predicted that a worst-case vibration level of approximately 0.010 in/sec PPV and 68 VdB at the nearest sensitive receptor could occur from excavation and related below-grade activities. These vibration levels would not exceed Caltrans' recommended standards with respect to preventing structural building damage (0.2 in/sec PPV for normal buildings) or exceed FTA's maximum-acceptable-vibration standard with respect to human response (80 VdB for residences and buildings where people normally sleep) at nearby existing vibration-sensitive land uses (Caltrans 2004; FTA 2006).

TL 6965 and TL 6910 Loop-In

The nearest sensitive receptor that may be subjected to groundborne vibration or groundborne noise levels from installing poles, stringing line, and installing telecommunication equipment are residences located along the proposed power line alignment. Residences along the proposed alignment are located as close as 60 feet from potential pole locations. Use of equipment such as an auger/drill or backhoe has the potential to generate groundborne vibrations. Using FTA's recommended procedure for applying propagation adjustments to the reference levels shown in Table 4.12-7, predicted worst-case vibration levels of approximately 0.024 in/sec PPV and 76 VdB at the nearest sensitive receptor could occur from drilling. These vibration levels would not exceed Caltrans' recommended standards or FTA's maximum-acceptable-vibration standard with respect to human response (Caltrans 2004; FTA 2006). Therefore, impacts would be less than significant.

Existing Substation Modifications

Construction activities associated with proposed Existing Substation modifications, such as the passing of heavy trucks on uneven surfaces, installing poles, line stringing, and installing telecommunication equipment, may produce minor groundborne vibration and noise in the immediate vicinity of the construction activity. Impacts from construction-related groundborne vibration and noise would be intermittent and confined to the immediate area, where there are no residences or buildings where people normally sleep. According to the FTA, large bulldozers can create vibration levels of 0.089 in/sec PPV and 87 VdB referenced to 1 µin/sec and based on the RMS velocity amplitude at 25 feet, as shown in Table 4.12-7. Other activities, such as grading and facility construction, would also generate vibrations; however, these vibrations levels would be less intense and would occur for a shorter duration. Therefore, impacts would be less than significant.

Staging Yards

The staging yards would be used for storing construction materials and equipment for the Proposed Project components. The main source of groundborne vibration and noise in the immediate vicinity of the staging yards would be heavy trucks passing on uneven surfaces and concrete cutting and removal. Impacts from construction-related groundborne vibration and noise would be intermittent and confined to the immediate area surrounding the activity. According to the FTA, large bulldozers can create vibration levels of 0.089 in/sec PPV and 87 VdB referenced to 1 µin/sec and based on the RMS velocity amplitude at 25 feet, as shown in Table 4.12-7. Therefore, impacts would be less than significant.

Operation – Less-than-Significant Impact

Operation of the Proposed Project would consist of routine maintenance activities and emergency repairs. These activities would be unlikely to produce significant groundborne vibration. Operation of transformers at the proposed Salt Creek Substation could produce groundborne vibration; however, groundborne vibrations would be perceptible only in the immediate transformer pad vicinity (i.e., less than 25 feet), if at all. No other component of the Proposed Project would generate vibrations during operation. Therefore, impacts would be less than significant.

Questions 4.12(c) and (d) – Substantial Permanent or Temporary Increase in Ambient Noise Levels

Construction – Less-than-Significant Impact

Salt Creek Substation

Noise impacts associated with construction of the Salt Creek Substation would primarily affect those persons located closest to the proposed substation site and along the truck/haul routes. Existing residences near the proposed Salt Creek Substation site, including the primary access routes and roadways, would experience a temporary increase in daytime ambient noise levels above those existing without the Proposed Project. However, the distance from the nearest residences to the proposed Salt Creek Substation site would attenuate substation construction noise by approximately 12 dBA to an average hourly noise level of 64 dBA L_{eq} and maximum noise levels of 69 dBA L_{max} at the nearest residences.

As shown in Table 4.12-5, average daytime ambient noise levels ranged from approximately 47 to 60 dBA L_{eq}, and maximum noise levels from approximately 57 to 71 dBA L_{max}, with the higher end of the range based on proximity to major roadways. A substantial increase is typically defined as a 10-dBA increase. Based on the noise principle that doubling of noise sources increase noise levels by only 3 dBA, the temporary increase in daytime ambient noise levels during construction would not be a substantial increase. As construction would be temporary, there would be no permanent increase in ambient noise levels during construction. Therefore, impacts would be less than significant.

TL 6965 and TL 6910 Loop-In

As shown in Table 4.12-6, the maximum intermittent noise levels of typical construction equipment are expected to range between 74 and 89 dBA at approximately 50 feet. Based on FTA construction noise modeling procedures, the combined predicted hourly noise level for construction equipment associated with the proposed power line at 50 feet would be approximately 78 dBA L_{eq} during power pole installation and access roadway grading (FTA 2006). It is estimated that installing a new power line would generate noise levels of approximately 69 dBA L_{eq} at 50 feet. Some new poles may be installed as close as 60 feet from residences. At 60 feet, noise levels would attenuate slightly to approximately 75 dBA L_{eq} or less, with maximum noise levels of up to 82 L_{max}. Noise levels associated with installing new poles would be short in duration, as it would typically take 1 to 3 days to erect poles, depending on the type. Other pole installation activities would be less intense and would generate lower noise levels than the identified activities.

Noise levels would be further attenuated due to intervening structures and/or vegetation located in the vicinity of the construction. As an example, blocking the line-of-sight between a source and receiver can provide a 5-dBA attenuation, and vegetation can yield up to a 7.5-dBA attenuation per doubling of distance, as opposed to a 6-dBA reduction per doubling of distance over hard surfaces such as roadways and parking lots.

During construction, there would be three primary access routes to and from the Proposed Project area. In addition, it is anticipated that three primary roads would be used during construction to provide access to SDG&E access roads within the Transmission Corridor for TL 6965. The three primary roads are as follows:

- Eastlake Parkway
- Mt. Miguel Road
- San Miguel Ranch Road and Proctor Valley Road (west of SR-125)

Generally, these access routes and roadways are either lined with sound walls or vertically separated (i.e., depressed or elevated) from the residences that are located along these roadways to provide noise attenuation. However, limited construction traffic may also use other secondary roads in the Proposed Project area to access the power line during construction, as needed.

As shown in Table 4.12-6, typical maximum noise levels generated by construction truck traffic ranges from 74 to 88 dBA L_{max} at 50 feet, depending on truck size and horsepower, and a lower hourly average range of approximately 65 to 79 dBA L_{eq}. Construction truck trips are anticipated to be temporary, minimal, and intermittent, and, when combined with the greater regular traffic volumes of these roadways, are anticipated to result overall in a negligible increase in existing traffic noise.

Noise impacts associated with construction of the power lines would primarily affect those persons located closest to the proposed power line and along the truck/haul routes. Existing residences near the Proposed Project elements, including the primary access routes and

roadways, would experience a temporary increase in noise levels above those existing without the Proposed Project.

For new poles installed as close as 60 feet from residences, noise levels would attenuate at the residences to approximately 75 dBA L_{eq} or less, and maximum noise levels would reach up to 82 L_{max}. Noise levels associated with installing new poles would be short in duration, as it would typically take 1 to 3 days to erect poles, depending on the type.

Helicopter activity over approximately 5 days total would generate noise levels of approximately 100 dBA at 100 feet; however, helicopter activity would be limited to the transmission line corridor ROW (from ground level up to 300 feet) and the Existing Substation (no overflight of residences), and would occur during the allowable daytime construction hours of the County of San Diego Noise Ordinance and City of Chula Vista Noise Ordinance. Helicopter use would generate a temporary increase in ambient noise levels within the transmission line corridor from ground-level up to 300 feet over the approximately 5-day period; however, the helicopter would not be at a stationary location for extended periods of time, and, therefore, the noise would not be considered substantial.

As shown in Table 4.12-5, average daytime ambient noise levels ranged from approximately 47 to 60 dBA L_{eq}, and maximum noise levels from approximately 57 to 71 dBA L_{max}, with the higher end of the range based on proximity to major roadways. A substantial increase is typically defined as a 10-dBA increase. Based on the noise principle that doubling of noise sources increases noise levels by only 3 dBA, the temporary increase in daytime ambient noise levels would not be a substantial increase. As construction would be temporary, there would be no permanent increase in ambient noise levels during construction. Therefore, impacts would be less than significant.

Existing Substation Modifications

The construction helicopter used for power line installation would be stored and refueled at the Existing Substation, which would generate a temporary increase in ambient noise during start-up, take-offs, and landings. However, there are no noise-sensitive receptors located in proximity to the Existing Substation; the nearest residence is approximately 0.25 mile away. Due to sufficient distance from residences, these noise levels would be less than substantial at the residences. In addition, the Existing Substation is adjacent to the freeway, and the closest residence is across the freeway.

As shown in Table 4.12-5, average daytime ambient noise levels ranged from approximately 47 to 60 dBA L_{eq}, and maximum noise levels from approximately 57 to 71 dBA L_{max}, with the higher end of the range based on proximity to major roadways. A substantial increase is typically defined as a 10-dBA increase. Based on the noise principle that doubling of noise sources increases noise levels by only 3 dBA, the temporary increase in daytime ambient noise levels would not be a substantial increase. As construction would be temporary, there would be no permanent increase in ambient noise levels during construction. Therefore, impacts would be less than significant.

Staging Yards

Staging yards would be used for storing construction materials and equipment for the Proposed Project components. There are residences in proximity to the proposed staging yards; however, the main source of construction noise in the immediate vicinity of the staging yards would be construction traffic. Generally, access routes and roadways are either lined with sound walls or vertically separated (i.e., depressed or elevated) from residences that are located along these roadways to provide noise attenuation. As shown in Table 4.12-6, noise associated with truck traffic would range from 74 dBA to 88 dBA at a distance of 50 feet.

As shown in Table 4.12-5, average daytime ambient noise levels ranged from approximately 47 to 60 dBA L_{eq}, and maximum noise levels from approximately 57 to 71 dBA L_{max}, with the higher end of the range based on proximity to major roadways. A substantial increase is typically defined as a 10-dBA increase. Based on the noise principle that doubling of noise sources increases noise levels by only 3 dBA, the temporary increase in daytime ambient noise levels would not be a substantial increase. As construction would be temporary, there would be no permanent increase in ambient noise levels during construction. Therefore, impacts would be less than significant.

Operation and Maintenance – Less-than-Significant Impact

Operation of the Proposed Project would consist of routine, short-term inspection and maintenance of the facilities. Although the proposed Salt Creek Substation would be unattended and remotely monitored, routine maintenance activities would occur and would consist of testing, monitoring, and repairing equipment. Maintenance of power lines would occur on an as-needed basis, and activities would include inspecting power lines, repairing conductors, replacing insulators, replacing poles, and maintaining access roads. Because operations would involve temporary and limited amounts of activities, the Proposed Project would not contribute to a substantial permanent increase in ambient noise in the area. Impacts would be less than significant.

Permanent noise sources associated with the Proposed Project would be limited to transformer operation at the proposed Salt Creek Substation and the power lines.

Based on the proposed Salt Creek Substation layout, the transformer banks would be located near the center of the substation footprint, with the nearest transformer bank 100 feet from the northern boundary of the proposed Salt Creek Substation. The substation would be located at a depressed elevation, on a substation pad below ground level. A 10-foot-high masonry wall would enclose the substation area. Substations typically generate steady noise from transformers, along with cooling fans and oil pumps needed to cool the transformer during periods of high electrical demand. With all auxiliary cooling fans operating simultaneously, the worst-case noise level from the transformers at full load is predicted to be no more than 66 dBA at 3 feet from the center of the equipment (CPUC 2009).

Based on the design of the proposed Salt Creek Substation, the transformers would be approximately 240 feet from the nearest property line; at this distance, noise levels generated by the transformers would be 32 dBA L_{eq} or less. A noise level of this magnitude would generally be indistinguishable from ambient noise levels. As a result, the Proposed Project would not cause a substantial permanent increase in ambient noise levels in the vicinity of the Proposed Project above levels existing without the Proposed Project. Impacts would be less than significant.

When a power line is in operation, an electric field is generated in the air surrounding the conductors, forming a "corona." The corona results from the partial breakdown of the electrical insulating properties of air surrounding the conductors. When the intensity of an electric field at the surface of the conductor exceeds the insulating strength of the surrounding air, a corona discharge occurs at the conductor surface, representing a small dissipation of heat and energy. Some of the energy may dissipate in the form of small local pressure changes that create audible noise. Audible noise generated by corona discharge is characterized as a hissing or crackling sound that may be accompanied by a 120-hertz hum.

Slight irregularities or water droplets on the conductor and/or insulator surface accentuate the electric field strength near the conductor surface, thereby making corona discharge and the associated audible noise more likely. Therefore, audible noise from power lines is generally a foul weather (wet conductor) phenomenon. However, during fair weather, insects and dust on the conductors can also serve as sources of corona discharge.

The Electric Power Research Institute (EPRI) conducted several studies of corona effects (EPRI 1978, 1987). The typical noise levels for power lines with wet conductors are shown in Table 4.12-8.

Table 4.12-8: Power Line Voltage and Audible Noise Level

Line Voltage (kV)	Audible Noise Level Directly Below the Conductor (dBA)
138	33.5
240	40.4
356	51.0

Source: CPUC 2009

Based on the line voltage of the proposed power line, operation of the proposed power lines can be predicted to generate noise less than 33.5 dBA based on studies conducted by EPRI (see Table 4.12-8) (CPUC 2009). A noise level of this magnitude would generally be indistinguishable from background noise. Therefore, operation of the proposed transmission facilities would have a negligible effect to existing ambient noise levels in the area. Impacts would be less than significant.

Questions 4.12(e) and (f) – Located within an Airport Land Use Plan or Vicinity of a Private Airstrip

Construction – No Impact

The nearest public airport is Brown Field, located approximately 3.7 miles southwest of the proposed Salt Creek Substation site, TL 6965, TL 6910 loop-in, Existing Substation, and staging yards. None of the Proposed Project components are within 2 miles of Brown Field. Thus, the proposed construction activities would not affect noise generated by airport operations or generate substantial noise. Therefore, the Proposed Project would not expose people working in the Proposed Project area during construction to excessive noise levels attributable to a public airport. No impact would occur.

The nearest private air strip is John Nichol's Field, approximately 3.5 miles to the northeast of the Proposed Project. Similar to Brown Field, none of the Proposed Project components are within 2 miles of John Nichol's Field. Therefore, the Proposed Project would not expose people working in the Proposed Project area during construction to excessive noise levels attributable to a private airstrip. No impact would occur.

Operation and Maintenance – No Impact

None of the Proposed Project components are within 2 miles of Brown Field. Thus, operation and maintenance of the Proposed Project would not affect noise generated by airport operations or generate substantial noise. Therefore, the Proposed Project would not expose people working in the Proposed Project area during operation and maintenance to excessive noise levels attributable to a public airport. No impact would occur.

Similar to Brown Field, none of the Proposed Project components are within 2 miles of John Nichol's Field. Therefore, the Proposed Project would not expose people working in the Proposed Project area during operation and maintenance to excessive noise levels attributable to a private airstrip. No impact would occur.

4.12.5 Project Design Features and Ordinary Construction/Operations Restrictions

With implementation of the ordinary construction restrictions as outlined within Section 3.8, Project Design Features and Ordinary Construction/Operations Restrictions, potential impacts related to noise would remain less than significant.

4.12.6 Applicant-Proposed Measures

Because noise impacts would be less than significant, no APMs are required or proposed beyond adherence to applicable noise standards.

4.12.7 Detailed Discussion of Significant Impacts

Based on the above analyses, no significant impacts have been identified for the Proposed Project, and no APMs are required or proposed.

4.12.8 References

California Department of Transportation (Caltrans). 2004. Transportation- and Construction-Induced Vibration Guidance Manual. p. 24. Sacramento, California. June.

California Public Utilities Commission (CPUC). 2009. Proponent's Environmental Assessment, Mascot Substation Project, Application A.09.11.020. San Francisco, California. November 25.

City of Chula Vista. 2005. Vision 2020 General Plan, Environmental Element. December 13. Available at http://www.chulavistaca.gov/City_Services/Development_Services/Planning_Building/General Plan/documents.asp.

City of Chula Vista. 2013. Municipal Code Chapter 19.68.010, Performance Standards and Noise Control. May 28. Available at: http://www.codepublishing.com/CA/chulavista_PDF.html.

County of San Diego (County). 2013. Municipal Code Chapter 4, Noise Abatement and Control. July. Available at http://www.sdcounty.ca.gov/pds/ce5/Noise.html.

Electrical Power Research institute (EPRI). 1978. Transmission Line Reference Book, 115- to 138-kV.

Electrical Power Research institute (EPRI). 1987. Transmission Line Reference Book, 345 kV.

Federal Interagency Committee on Noise. 1992. *Federal Agency Review of Selected Airport Noise Analysis Issues*, Table B.1. August.

Federal Transit Administration (FTA). 2006. Transit Noise and Vibration Impact Assessment. Washington, D.C. Pp. 7-5 – 7-8. May.

THIS PAGE INTENTIONALLY LEFT BLANK