3.12 NOISE

This section addresses the effects on the acoustical environment that would be caused by the proposed Tule Wind Project. This section identifies the affected environment/environmental setting, and analyzes impacts. Existing federal, state, and local noise regulations are also presented in Section 3.1.2. A Draft Noise Analysis Report was prepared by HDR Engineering, Inc. (HDR) for the proposed project in April 2010 and updated in August 2010. The results from the analysis are discussed in this section. The complete Draft Noise Analysis Report is included in Appendix P.

3.12.1 Affected Environment/Environmental Setting

The project area is situated in the Mountain Empire Planning Area located in the eastern portion of San Diego County, approximately 50 miles east of the City of San Diego, 90 miles west of Arizona, and north of the community of Boulevard. The area is accessible via Interstate 8 (I-8), State Route 94 (SR-94) and Ribbonwood Road junction, and McCain Valley Road off Old Highway 80. The majority of the project area lies in the In-Ko-Pah Mountains adjacent to the Tecate Divide, south of the Cleveland National Forest, and west of Anza-Borrego Desert State Park. The topography of the area is gently-to-steeply sloping with an elevation ranging between about 3,600 and 5,600 feet above mean sea level (AMSL). The project vicinity is shown in **Figure 2.0-1,** Region and Vicinity.

General Noise Concepts

Noise is defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm, or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only frequencies audible to the human ear. The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly 60 dBA, while loud jet engine noises equate to 110 dBA, which can cause serious auditory discomfort.

Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in dBA. The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak hour L_{eq} is the noise metric used to identify the loudest hour associated with a specific activity, like roadway traffic. Twenty-four consecutive hourly L_{eq} values are used to calculate the Day-Night Level (L_{dn}). L_{dn} is the weighted average of the hourly L_{eq} values, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 10 dBs to A-weighted hourly L_{eq} levels between 10 p.m. and 7 a.m. (this period is defined as nighttime). These additions are made to account for the noise sensitive time periods during nighttime hours when sound appears louder, and thus, is weighted accordingly. For example, monitoring experience has shown that 24-hour weighted L_{dn} is typically 2-3 dB higher than the mid-afternoon L_{eq} sound levels. L_{dn} does not represent the actual sound level heard at any particular time, but rather represents the total sound exposure throughout a 24-hour period (with a penalty during nighttime hours). Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, County guidelines require that for some planning purposes an artificial dBA increment may be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) (San Diego County General Plan, Noise Element (Part VIII)). The CNEL is calculated identical to L_{dn} except that an additional penalty of 5 dBA is added to the evening hours between 7:00 pm and 10:00 pm, while the day period is the same as the L_{dn}.

Whether a noise is objectionable will vary depending on its type (tonal, broadband, low frequency, impulsive, etc.), overall volume level, and the circumstances and sensitivity of the individual who hears it (often referred to as the receptor). Land-uses that are sensitive to noise are often referred to as a noise-sensitive receptor, or simply the sensitive receptor. There is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction; primarily because of the wide variation in the levels of individual tolerance for noise. It may, however, be useful for comparison purposes to measure noise of various types from other sources in the project area, or to provide sound levels associated with common activities and situations, shown in Typical Environmental and Industry Sound Levels, **Table 3.12-1**. For regulatory purposes, noise limits often are specified at the nearest receptor (property line or residence) to the noise source, or at a given distance from the source (National Wind Coordinating Collaborative [NWCC] Handbook 2002).

Table 3.12-1. Typical Environmental and Industry Sound Levels

Source and Given Distance from that Source	A-Weighted Sound Level in Decibels (dBA)	Environmental Noise	Subjectivity/ Impression
Civil Defense Siren [Tonal]	140-130		Pain Threshold
Jet Takeoff (200') [Broadband and Tonal]	120		
	110	Rock Music Concert	Very Loud
Pile Driver (50')	100		
Ambulance Siren (100') [Tonal]	90	Boiler Room	
Freight Cars (50') [Broadband and Impulsive]			
Pneumatic Drill (50') [Broadband] 80		Printing Press Kitchen Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100') [Broadband and Tonal]	60	Data Processing Center Department Store/Office	
Light Traffic (100') [Broadband]	50	Private Business Office	Quiet
Large Transformer (200') [Tonal]	40		
Soft Whisper	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

Source: Peterson and Gross 1974

According to the Bureau of Land Management (BLM) Wind Energy Development Environmental Impact Statement (EIS), the human response to changes in dB levels has the following characteristics (NWCC 1998):

- A 3 dB change in sound level is noticeable to a person with average hearing senses;
- A 5 dB change in sound level is clearly noticeable and discernable; and
- A 10 dB change, which is considered to be a doubling of the sound level.

According to BLM, large fluctuations in broadband noise are common in wind energy projects due to operational noise and on-going maintenance activities. In addition, noise containing discrete tones (tonal noise) is much more noticeable and more annoying at the same relative loudness level than other types of noise, because it stands out against background noise.

'Sensitive receptors' most often include hospitals, schools, churches, residences and noise-sensitive species. There are no hospitals or assisted living facilities within the vicinity of the project boundary. The Clover Flat Elementary school is located approximately 1.5 miles south of the project entrance area at Ribbonwood Road, or 3,500 feet from the Ribbonwood/I-8 intersection at 39639 Old Highway 80. The McCain Valley Adult Conservation Camp is located approximately one-mile from the project boundary. There are approximately 43 residence structures and two campgrounds located within one-mile of the project area; however, there are no residences located within the construction corridor. In addition forty-three residences were modeled for noise impacts due to the alternative transmission line. The closest receptor to the project buffer zone is 13 feet from a proposed road improvement, 820 feet from the underground utilities construction, 330 feet from a substation, 30 feet from the 138 kV transmission line construction, 492 feet from the batch plant operation area, and approximately 884 feet from a proposed turbine (G19).

Wind Turbine Noise Concepts

Common environmental noise sources in rural or remote hilly terrain include noise caused by wind and vehicular traffic. Turbines emit a sound with the passage of the blades through the air. This "swooshing" sound is distinct in that it occurs in pulses corresponding to the passage of the turbines' blades as the rotor turns. Some turbines also emit tonal sounds from mechanical components.

Wind direction and changes in the ambient temperature profile (the change in temperature with increasing height above ground) can affect turbine noise. According to the BLM Wind Energy Development EIS, sound propagation for horizontal distances less than about 330 feet is essentially independent of atmospheric conditions. For locations at greater distances from a given source, wind direction can cause considerable differences in sound levels between upwind and downwind locations. The typical increase of wind speed with height will bend the path of sound to "focus" it in the downwind direction and make a "shadow" in the upwind direction. Upwind sound levels will be lower, and downwind levels higher, than if there were no wind. Under most conditions, modern turbines are quiet, generating primarily broad-band sound levels no higher than those of a moderately quiet room at distances of 750 to 1,000 feet (NWCC 2002).

Changes in temperature with height play a major role in sound propagation. During the day, air temperature tends to decrease with height. In contrast, on a clear night, the temperature often increases with height (a condition known as a temperature inversion). Because the speed of sound varies with temperature, sound tends to bend (refract) upward during the day, leading to reduced sound levels on the ground; it bends downward during inversions, leading to higher sound levels on the ground. These temperature effects are uniform in all directions from the source, whereas the wind affects receptors primarily in the upwind and downwind directions.

Low Frequency Noise Health Effects

Low frequency sounds may be annoying or cause sleep disturbance in some people. According to Wind Turbine Sound and Health Effects, an Expert Panel Review, the U.S. Environmental Protection Agency (EPA) document titled *Information on Levels of Environmental Noise Requisite to Protect Public Health*

and Welfare with an Adequate Margin of Safety (1974) recommends that indoor day-night-level (DNL) not exceed 45 dBA. DNL is a 24-hour average that gives 10 dB extra weight to sounds occurring between 10 p.m. and 7 a.m., on the assumption that during these sleep hours, levels above 35 dBA indoors may be disruptive.

Recent studies focusing on infrasound have found that infrasound emitted from wind turbines are below the threshold of audibility. A recent white paper by AWEA found that "there is a consensus among acoustic experts that the infrasound from wind turbines is of no consequence to health." A recent field study performed by Epsilon Associates (Epsilon Associates 2009) measured low frequency noise associated with two modern turbines, the GE 1.5sle and the Siemens 2.3-93. Using existing American National Standards Institute (ANSI) criteria for the evaluation of interior noise levels Epsilon Associates determined that noise generated by wind farms at distances beyond 1,000 feet were below the low frequency noise criteria for bedrooms, classrooms and hospitals. The overall noise level and spectrum of the GE 1.5-SLE turbine is similar to the noise emissions of the GE 1.5 XLE used in the noise analysis for the Tule Wind Project. Current setbacks for the Tule Wind Project are more than 1,500 feet from the nearest non-participating land owner. Based on the Epsilon noise study, low frequency noise at a distance of 1,500 feet will have no audible infrasound and will meet ANSI S12.2 criteria for acceptable indoor levels for low frequency sound.

Existing Noise Conditions

Existing noise levels were measured at six sites throughout the project area. Monitoring locations were selected by reviewing digital aerial photographs of the project area and identifying areas whose ambient acoustical environment appeared to be representative of the project area. The noise monitoring data represent the ambient acoustic environment of rural areas in San Diego County that were generally expected to have quiet ambient daytime and nighttime noise levels. Noise monitoring locations are shown in **Figure 3.12-1**.

A real-time analyzer was used to collect noise monitoring data every hour for an unattended continuous 24-hour period at each monitoring location. Six 24-hour measurements were performed in the project area during the week of January 11, 2010. Each hour, the real-time analyzer stored the hourly noise level, peak noise level and minimum noise level on an A-weighted scale.

The ambient acoustic environment in the project area is dominated by noise from traffic on I-8, vehicular traffic on local roads, wind and occasional aircraft overflights. Existing traffic related noise levels in the area range from 51 to 68 dBA on a CNEL basis. Ambient sound level surveys throughout the project area demonstrated an acoustical environment comparable with a typical rural setting. Based on 24-hour monitoring data, the existing CNEL within the project area ranged from 45 to 54 dBA. Ambient hourly equivalent noise levels ($L_{eq}(h)$) in the project area ranged from 32 dBA L_{eq} to 58 dBA L_{eq}. The measured daytime sound levels for the project area averaged 48 dBA. Measured nighttime sound levels for the project area averaged 42 dBA on an hourly L_{eq} basis. The quietest hours typically took place during the evening and nighttime. Peak noise levels in the project area typically occurred during early morning rush-hour. **Table 3.12-2** shows the existing noise levels at the monitoring locations**.**

| G:\GIS_Production\Projects\IberdrolaRenew_424914\TuleWindEnergy_115965\14_00_GIS_MODELS\14_03_Map_Docs\14_03_04_mxd\EIR\General_plan.mxd | Created by: AB, YL | Last Updated : 03-25-10

Noise Monitoring Location

Turbines and Met Towers
- Proposed Turbine Location
- Proposed Met Station
- Alternate Met Station
- Proposed SODAR

Project Collector System
- Proposed Overhead Collector
- Proposed Underground Collector
- Alternate Overhead Collector
- Alternate Underground Collector

Project Transmission Line
- Proposed Transmission Line
- Alternate Transmission Line I
- Alternate Transmission Line II
- Alternate Transmission Line III

Access Roads
- Proposed New Roads
- Existing Roads to be Improved

O & M Building and Substation
- Proposed Substation
- Proposed O&M Building
- Alternate Substation
- Alternate O&M Building
- Rebuilt Boulevard Substation

Staging Areas
- P — Proposed 10-acre Parking Area
- L — Proposed 2-acre Laydown Area
- B — Proposed Batch Plant
- W — Construction Wells

Construction Well #4
Home #47
Cottonwood Campground
Home #42
SODAR
PM-W-2
Lark Canyon Campground
O&M #1
Construction Well #1
Rough Acres Ranch
Home #28
Construction Well #2
Construction Well #3
PM-W-1
PM-E-1
PM-E-2
Rebuilt Boulevard Substation
THING VALLEY RD
CANEBRAKE RD
MANZANITA COTTONWOOD RD
LOST VALLEY RD
CROSS RD
CRESTWOOD RD
BLACKWOOD RD
OLD MINE RD
HUBBLE RD
CRESTWOOD / BIA 12
WILLIAMS RD
MILLER VALLEY RD
CAM TRES AVES
GREAT BLUE HERON WY
STAGECOACH SPRINGS RD
HONEY BEE LN
GREAT EAGLE WY
HI PASS RD
QUAIL RUN
RED SHANK LN
LILAC LN
ANGEL DR
CHURCH RD
LIVE OAK SPRINGS RD
OLD HIGHWAY 80
RIBBONWOOD RD
MANZANITA DUCE
MC CAIN VALLEY RD
JEWEL VALLEY WY
TIERRA DEL SOL RD
SHASTA WY
SOL WOOD
WORTHINGTON RD
PINION PINE TL
EUCALYPTUS AVE
CLOUD PL
STARSHIP ST
94
8

N W E S

0 0.5 1 2 Miles

HDR ONE COMPANY | Many Solutions℠

Noise Monitoring Locations

FIGURE 3.12-1

Iberdrola Renewables | Tule Wind Project | Applicant's Environmental Document

Table 3.12-2. Existing Noise Level Summary

Monitoring Location	Hourly L_{eq} (day) dBA			Hourly L_{eq} (night) dBA		
	Average	Lowest	Highest	Average	Lowest	Highest
Cottonwood Campground	42	32	49	45	32	55
Lark Canyon Campground	44	33	49	34	33	35
Home #28	51	45	55	45	39	51
Home #42	50	34	56	44	34	49
Home #47	49	35	54	43	32	53
Rough Acres Ranch	52	33	58	43	33	49
Average Ambient Noise Level for Tule Project Area	48	37	54	42	34	49

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)

3.12.2 Regulatory Setting

Environmental noise is generally regulated by local governments as there are no federal standards which directly regulate environmental or community noise. The U.S. Environmental Protection Agency (EPA) has published guidelines on recommended noise levels to protect public health and welfare, and the State of California has recommended guidelines for jurisdictions at the local level to be included in General Plan Guidelines. No noise standards were identified from the BLM or the California Public Utilities Commission (CPUC). The following summarizes federal and local regulations and recommendations for environmental and community noise levels.

Federal

The Noise Control Act of 1972

The Noise Control Act of 1972, along with its subsequent amendments (Quiet Communities Act of 1978 [42 U.S.C. Parts 4901–4918]), delegates to the states the authority to regulate environmental noise and directs government agencies to comply with local community noise statutes and regulations. Although no federal noise regulations exist, the EPA has promulgated noise guidelines. The EPA shifted federal noise control policy to be regulated by state and local governments, although some states have no quantitative environmental noise limits or regulations. Many local governments enact noise ordinances to manage community noise levels. The noise limits specified in such ordinances are typically applied to define noise sources and specify a maximum permissible noise level.

As discussed above, there are no federal noise standards that directly apply to environmental or community noise. The EPA has published recommended noise levels which are the threshold levels to protect public health and welfare. EPA recommendations are listed below in **Table 3.12-3**.

Table 3.12-3. EPA Noise Level Recommendations

Effect	Maximum Noise Level	Area
Hearing Loss	$L_{eq}(24)$ <70 dB	Interior and Exterior Areas
Outdoor activity interference and annoyance	L_{dn} <55 dB	Outdoors in residential, farm and other areas in which quiet is the basis for use.
Outdoor activity interference and annoyance	$L_{eq}(24)$ <55 dB	Outdoor areas where limited time is spent (school yards, playgrounds, etc)
Indoor activity interference and annoyance	L_{dn} <45 dB	Indoor residential areas
Indoor activity interference and annoyance	$L_{eq}(24)$ <45 dB	Other indoor areas with human activities

Source: EPA

State

The State of California does not publish specific restrictions on noise levels. However, the state does require local governments to include a noise element within its general plan. For some planning purposes, an artificial dBA increment (CNEL) may be added to quiet time noise levels in a 24-hour noise descriptor.

Caltrans

Most limits on construction vibration are based on minimizing the potential for damage to nearby structures. **Table 3.12-4** presents CALTRANs construction vibration damage thresholds. Other vibration-producing construction equipment proposed for use on the proposed project includes loaded trucks and bull dozers.

Table 3.12-4. Vibration Induced Damage Impact Threshold

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources[1]	Continuous/ Frequent Intermittent Sources[2]
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
Newer residential structures	1.0	0.5
Modern industrial / commercial buildings	2.0	0.5

Source: Jones & Stokes 2004. Transportation – and construction-induced vibration guidance manual. June (J&S 02-039). Sacramento, CA. Prepared for California Department of Transportation, Noise, Vibration, and Hazardous Waste Management Office, Sacramento, CA.

Notes: [1] Transient sources create a single, isolated vibration even, such as blasting or drop balls.
[2] Continuous / frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers and vibratory compaction equipment.

Local

Noise regulation is primarily regulated at the local level, with local governments setting appropriate noise standards for the various uses within their jurisdiction.

The San Diego County Code of Regulatory Ordinances sets noise standards for different zoned areas within the County based on the uses within the zone. Determination of significance of construction noise at property boundaries was performed in compliance with San Diego County Code of Regulatory Ordinances Section 36.409 and 36.410. The following table, **Table 3.12-5**, gives the noise standards relevant to the project site. The portion of the project site under San Diego County land use jurisdiction is zoned as general agriculture, open space, and general rural.

Table 3.12-5. San Diego County Noise Standards

Description	Time	One-Hour Average Sound Level Limits (dBA)
General Agriculture, Open Space, General Rural	7 a.m. to 10 p.m.	50 dBA
	10 p.m. To 7 a.m.	45 dBA
Construction	7 a.m. to 7 p.m.	75 dBA

Source: San Diego County Noise Element and San Diego County Code of Regulatory Ordinances (Section 36.409)

The San Diego County Code of Regulatory Ordinances also sets noise standards for construction equipment. Section 36.409 of this code states "except for emergency work, construction equipment noise shall not exceed an average sound level of 75 dB s for an eight-hour period between 7 a.m. to 7 p.m. as measured from the boundary line of the project." It is also unlawful to operate construction equipment on a Sunday or a holiday. The code also identifies schools, courts, churches and hospitals as sensitive receptors.

While the County of San Diego General Plan does not presently have noise performance standards in its zoning ordinance, the General Plan does establish CNEL as the method of measure of cumulative community noise effects. The CNEL is the average noise level in dBA over 24 hours. A 5-dB penalty is given to noise between 7 p.m. and 10 p.m. and a 10-dB penalty is given to noise between 10 p.m. to 7 a.m.

Airborne noise analysis for vehicular traffic was performed in compliance with Section 4b of the San Diego County Noise Element. Significant noise impacts would occur if project implementation would result in noise levels in excess of any of the following:

- Exterior noise levels above 60 dBA, on a CNEL basis, at any noise sensitive land use;
- An increase in noise level of 10 dB, on a CNEL basis, over pre-existing noise conditions.

Determination of significance of construction noise at property boundaries was performed in compliance with San Diego County Code of Regulatory Ordinances Section 36.409 and 36.410. The portion of the project site under San Diego County land use jurisdiction is zoned as general agriculture, open space and general rural. Significant noise impacts would occur if project implementation would result in noise levels in excess of any of the following:

- 75 dBA L_{eq} averaged over an 8-hour period between the hours of 7 a.m. and 7 p.m.;
- One minute maximum sound level of 82 dBA for 25 percent of the minutes within in a measurement period.

3.12.3 Environmental Consequences/Impact Analysis

California Environmental Quality Act Significance Criteria

The *California Environmental Quality Act (CEQA) Guidelines*, Appendix G (VII), identifies the following significance criteria for noise compliance. These guidelines are used to assess whether an impact would be significant, less than significant, or mitigated to be less than significant. A significant impact to or resulting from noise would be identified if the project was determined to 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 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; and
- 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.

Significance conclusions for individual impacts for compliance with NEPA are not required.

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

Construction and Decommissioning

The Federal Highway Administration Roadway Construction Noise Model (RCNM) was used to assess noise from construction equipment. The analysis used aerial photographs and GIS data to determine the distance between receptors and construction area buffer zones and included 57 sensitive receptors and two campgrounds.

Transmission line right-of-way (ROW) often abut to adjacent residential parcels; therefore, transmission line construction activities were modeled according to the distance from the edge of the parcel closest to the construction buffer, and to the center of the construction buffer. Most receptors (parcel property lines) south of I-8 are within 150 feet of the transmission line construction buffer zone with the exception of 41B and 42B and therefore exhibit a noise impact. For analysis sake, modeling determined that at a distance of 167 feet from the centerline of the construction buffer, transmission line construction noise levels will comply with County noise regulations. However, because no structures could be positively identified at the time of this analysis as residences and at receptors 1B-39B, and because San Diego County prefers noise levels be gauged at the property line, most of the property lines within this analysis and south of I-8 fall within 150 feet and therefore exhibit 138 kV transmission line construction noise impacts regardless of where a structure is on a parcel.

Construction of the proposed project would involve the operation of many short-term uses of heavy equipment which may temporarily increase ambient noise levels existing over a period of 18 to 24 months. Impacts due to the construction phase of the project would include transport of equipment to the construction site, and noise generated by construction activities on-site. **Table 3.12-6** lists the type of equipment that is generally used during construction of a wind facility project.

Table 3.12-6. Equipment Typically Used for Wind Facility Construction

Equipment	Use
Bulldozer	Road and pad construction
Grader	Road and pad construction
Water trucks	Compaction, erosion and dust control
Roller/compactor	Road and pad compaction
Backhoe/trenching machine	Digging trenches for underground utilities
Excavator	Foundation excavation
Heavy duty rock trencher	Underground trenching
Truck-mounted drilling rig	Drilling power pole holes
Concrete trucks/concrete pumps	Pouring tower and other structure foundations
Cranes	Tower/turbine erection
Dump trucks	Hauling road and pad material
Flatbed & Low-bed trucks	Hauling turbine towers, turbines and components, construction equipment
Pickup trucks	General use and hauling of minor equipment
Small hydraulic cranes/forklifts	Loading and unloading equipment
Four-wheel-drive all-terrain vehicles	Rough grade access and underground cable installation
Rough-terrain cranes / forklifts	Lifting equipment and pre-erection assembly

Source: Iberdrola Renewables

Equipment types and percentile usage factors are anticipated to be used in the following five phases or conditions of work expected for the proposed project. Modeling conducted for the project produced the following noise levels due to construction equipment for the five phases of the project;

- Rough Grading and Tower Base construction- Consisting of the construction of the access roads to the turbine locations, with an anticipated noise level to be between 75 dBA and 84 dBA Lmax at 50 feet, utilized four to eight hours per day.

- Underground Utilities Construction- The underground placement of utilities and supporting network of energy transport, with an anticipated noise level between 75 dBA and 82 dBA Lmax at 50 feet, utilized one-half hour to six hours per day.

- Tower Construction- The actual construction of the tower and turbine systems, temporary cement batch plant operation and transmission line construction activities, with an anticipated noise level to be between 75 dBA and 84 dBA Lmax at 50 feet, utilized four to six hours per day.

- 138 kV Transmission Line Construction- Skid cat and hydraulic cranes to be used during the transmission line pole construction, with an anticipated noise level to be between 74 dBA and 82 dBA Lmax at 50 feet, utilized one-half hour to eight hours per day. Due to the height at which the crane will be operating, it is anticipated this will be the most noticeable noise source to receptors. Duration is expected to be short-term (2-3 days).
- Cement Batch Plant Operation Equipment- Predicted to be in operation for full duty cycles of 8-hour work days during construction, with an anticipated noise level of 73 dBA Lmax at 50 feet, utilized eight hours per day.

The model expressed calculated noise levels to adjacent property boundaries using the Leq descriptor specified by the San Diego noise ordinances. The model calculates the Leq by taking the measured Lmax of equipment types at 50 feet, and converting it within the model to an Leq dependent upon the duration during each 8-hour day the equipment is used. The anticipated construction noise levels for the proposed project will range from 73 dBA to 84 dBA.

The construction noise analysis used RCNM to calculate project-related construction noise levels at parcels adjacent to construction activities. Calculated noise levels reflect phase specific equipment and equipment utilization. Several homes may be located on a single parcel. Residences located on the same parcel were grouped by receptor location. **Table 3.12-7**, Construction Noise Level Results shows the anticipated noise that will be associated with the five construction phases of the project, with exceeded noise levels presented in bold. The largest source of construction equipment noise for the project is anticipated to be the tractors for the grading for roadway construction with an anticipated noise level of 75 to 99 dBA that impact six sensitive receptors. Noise levels due to the 138 kV transmission line construction is anticipated to have a noise level of 77 to 90 dBA and impact 47 sensitive receptors. Noise impacts due to underground utilities construction, tower base construction, and batch plant operation are not anticipated to exceed the County of San Diego noise construction standard of 75 dBA, therefore will not be discussed further.

Blasting

There is potential for blasting in some locations during construction to remove rock. Blasting will create an impulse sound, a very short-duration sound with a sharp peak in magnitude. Generally impulsive sounds are less than one second in duration, rise and decay 20 dB in less than 250 milliseconds. Blasting impulsive noise generally rises more quickly.

General areas or exact locations for blasting will be identified by results of a geotechnical investigation. Construction blasting will be planned, in part, where it will cause less noise and vibration than non-blasting construction methods. The effect of blasting impulsive noise to the overall construction noise level is discussed in Section 3.3, Potential General Construction Noise Impacts.

San Diego Code Section 36.410, "Sound Level Limitations on Impulsive Noise," regulates impulsive noise. The code limit for residential, village zoning or civic use is a one-minute maximum sound level of 82 dBA for 75 percent of the minutes within a measurement period (one-hour minimum period), but exceedances are allowed for 25 percent of the minutes. Construction blasting may exceed the limit at certain locations, but blasting can be planned to occur infrequently enough that it does not exceed the limit for more than 15 minutes of any hour or 25 percent of any hour.

Table 3.12-7. Construction Noise Level Results

Receptors		Noise Level Results per Condition									
		Roadway Construction		Underground Utilities Construction		Tower Base Construction		138 kV Transmission Line Construction (Including Alternatives)		Batch Plant Operation	
Receptor Name	Homes Represented	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})
Receptors 1A	Home 1	387	67	4,659	44	4,511	46	1,001	60	3,379	46
Receptors 2A	Home 2	13	97	820	59	623	63	30	90	525	63
Receptors 3A	Home 3-26 (23)	13	97	820	59	623	63	30	90	492	63
Receptors 4A	Home 27	13	97	6529	41	8,038	41	1,165	58	5840	42
Receptors 5A	Homes 28-29 (2)	180	74	7,546	39	8,202	41	49	86	6962	40
Receptors 6A	Home 30	164	75	7,218	40	7,710	41	49	86	6693	41
Receptors 7A	Home 31	387	67	7,218	40	7,218	42	49	86	6,562	41
Receptors 8A	Home 32	5,315	45	5,348	42	5,151	45	4,593	46	7,546	39
Receptors 9A	Home 42	4,511	46	4,265	44	4,265	46	4,101	47	8,202	39
Receptors 10A	Homes 33 and 44 (2)	82	81	8,858	38	9,186	40	459	66	8,038	39
Receptors 11A	Homes 34,35 and 43 (3)	10	99	9,186	38	9,514	39	49	59	8,202	39
Receptors 12A	Home 36	2,657	51	2,822	48	8,366	40	2,477	52	8,038	39
Receptors 13A	Homes 37-41 (4)	39,370	27	4,429	44	3,937	47	49	86	3,773	45
Receptors 14A	Home 47	2,543	51	2,133	50	2,297	52	26,247	31	49,213	23
Receptor 1B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 2B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 3B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 4B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 5B	N/A[1]	-	-	-	-	-	-	82	81	-	-
Receptor 6B	N/A[1]	-	-	-	-	-	-	82	81	-	-
Receptor 7B	N/A[1]	-	-	-	-	-	-	82	81	-	-
Receptor 8B	N/A[1]	-	-	-	-	-	-	82	81	-	-
Receptor 9B	N/A[1]	-	-	-	-	-	-	82	81	-	-
Receptor 10B	N/A[1]	-	-	-	-	-	-	105	78	-	-

Receptors		Noise Level Results per Condition									
		Roadway Construction		Underground Utilities Construction		Tower Base Construction		138 kV Transmission Line Construction (Including Alternatives)		Batch Plant Operation	
Receptor Name	Homes Represented	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})
Receptor 11B	N/A[1]	-	-	-	-	-	-	105	78	-	-
Receptor 12B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 13B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 14B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 15B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 16B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 17B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 18B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 19B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 20B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 21B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 22B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 23B	N/A[1]	-	-	-	-	-	-	49	85	-	-
Receptor 24B	N/A[1]	-	-	-	-	-	-	82	81	-	-
Receptor 25B	N/A[1]	-	-	-	-	-	-	82	81	-	-
Receptor 26B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 27B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 28B	N/A[1]	-	-	-	-	-	-	115	78	-	-
Receptor 29B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 30B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 31B	N/A[1]	-	-	-	-	-	-	115	78	-	-
Receptor 32B	N/A[1]	-	-	-	-	-	-	98	79	-	-
Receptor 33B	N/A[1]	-	-	-	-	-	-	115	78	-	-
Receptor 34B	N/A[1]	-	-	-	-	-	-	66	83	-	-
Receptor 35B	N/A[1]	-	-	-	-	-	-	66	83	-	-
Receptor 36B	N/A[1]	-	-	-	-	-	-	66	83	-	-

Receptors		Noise Level Results per Condition									
		Roadway Construction		Underground Utilities Construction		Tower Base Construction		138 kV Transmission Line Construction (Including Alternatives)		Batch Plant Operation	
Receptor Name	Homes Represented	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})	Distance to Buffer (feet)	Level (L_{eq})
Receptor 37B	N/A[1]	-	-	-	-	-	-	82	**81**	-	-
Receptor 38B	N/A[1]	-	-	-	-	-	-	82	**81**	-	-
Receptor 39B	N/A[1]	-	-	-	-	-	-	49	**85**	-	-
Receptor 40B	1	-	-	-	-	-	-	135	**77**	-	-
Receptor 41B	1	-	-	-	-	-	-	278	71	-	-
Receptor 42B	1	-	-	-	-	-	-	180	74	-	-
Receptor 43B	1	-	-	-	-	-	-	98	**80**	-	-
Total Impacted Parcels per Condition		6		0		0		47		0	

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)
Note: Bold and shaded cells denote a noise impact
[1] At the time of analysis, the number of homes per parcel was indeterminate

Construction blasting will be managed with the preparation of a blasting plan for each site. The blasting plan will include identification of planned blasting locations, a description of the planned blasting methods, an inventory of receptors potentially affected by the planned blasting, and calculations to determine the area affected by the planned blasting. The actual peak sound pressure level, as well as the duration, rise time and decay time, depend upon the magnitude of the blast, the local environment and propagation characteristics. As will any other sound pressure level, the magnitude falls as distance from the blast increases.

Temporary noise impacts due to blasting and blasting support equipment are anticipated. The implementation of a site specific blasting plan would reduce impacts to area residents. Depending on the results of the blasting plan, mitigation measures may include coordination with building occupants. Impacts are considered less than significant with implementation of the blasting plan.

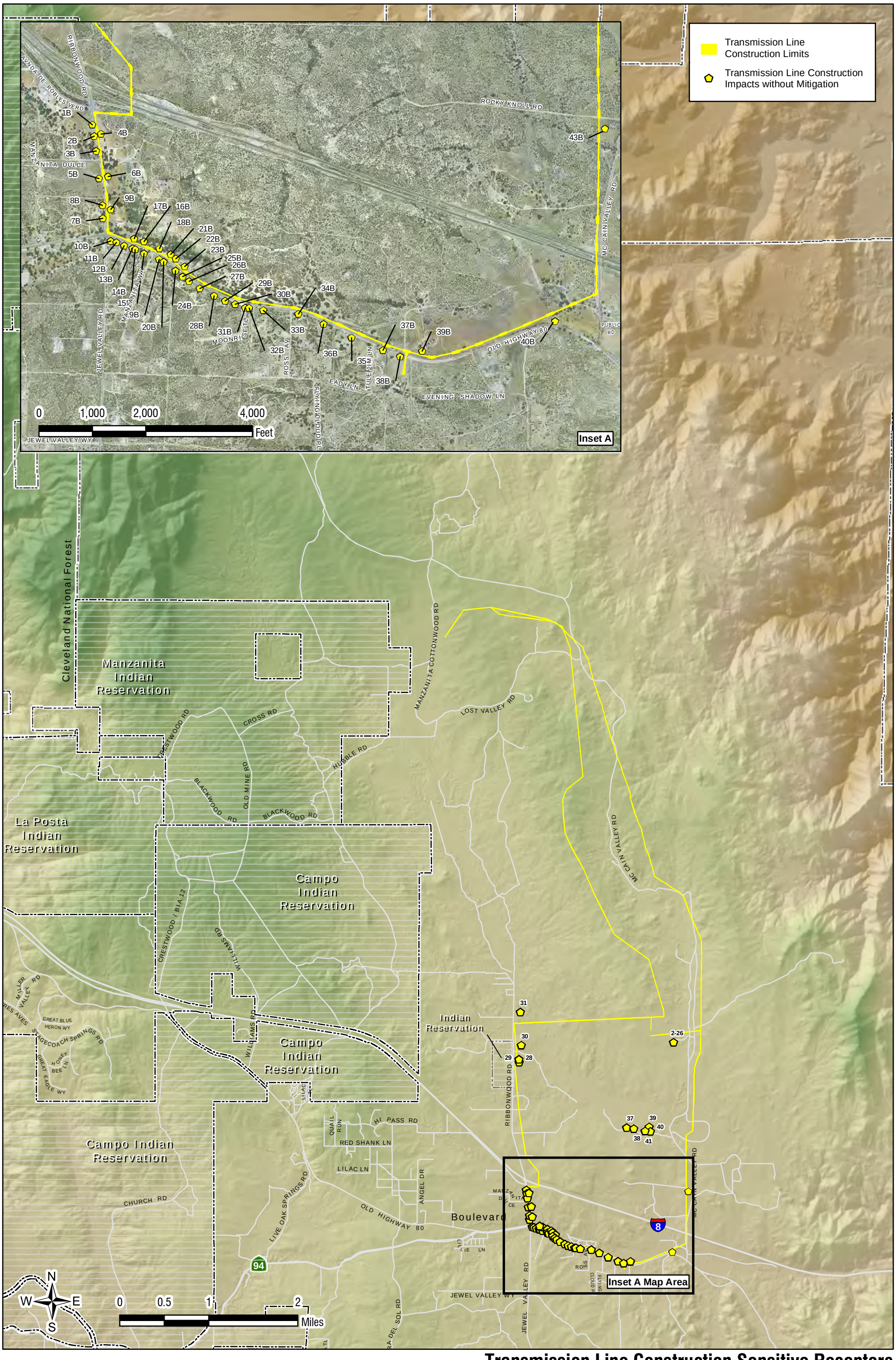
Roadway Construction

As shown in **Table 3.12-7**, roadway construction has the potential to impact six receptors adjacent to construction activities; receptors 2A, 3A, 4A, 6A, 10A, and 11A. The most significant impact during roadway construction is 99 dBA at receptors 11A. The adjacent property boundaries are in some instances as close as 10 feet from the construction buffer zone and will experience the highest noise levels from road construction and grading activities. Roadway construction is considered a temporary significant impact to area receptors. Best Management Practices (BMPs) will be implemented to reduce impacts to sensitive receptors due to roadway construction. The BMPs include but are not limited to the following: maintaining original equipment manufacturer (OEM) mufflers or better, ensuring all equipment is in good operating condition, and limiting hours of operation. However, it is anticipated that BMPs will not completely reduce noise levels to meet the County standards. Where temporary noise impacts cannot be reduced or eliminated utilizing BMPs, appropriate mitigation and noise reduction techniques such as moveable noise barriers will be utilized for areas that have been identified as impacted and a site specific mitigation plan will be prepared.

With the incorporation of BMPs and mitigation measures the highest predicted construction noise level at an adjacent property boundary will be reduced from 99 dBA to 74 dBA L_{eq}, and will be in compliance with the San Diego Noise Ordinance. On-site noise monitoring and documentation by a County-approved acoustical consultant will ensure that any noise impacts to potentially affected receptors will be reduced to comply with the San Diego Noise Ordinance.

Transmission Lines

Transmission line ROWs often abut to adjacent residential parcels; therefore, transmission line construction activities were modeled according to distance from the edge of the parcel closest to the construction buffer, and to the center of the construction buffer. Most receptors (parcel property lines) south of I-8 are within 150 feet of the transmission line construction buffer zone with the exception of 41B and 42B and therefore exhibit a noise impact. For analysis sake, modeling determined that at a distance of 167 feet from the centerline of the construction buffer, transmission line construction noise levels will comply with County noise regulations. At the time of this analysis receptors 1B-39B could not be identified if people were residing in the residences, although for the noise modeling it was conservatively assumed. San Diego County prefers noise levels be gauged at the property line, most of the property lines within this analysis and south of I-8 fall within 150 feet and therefore exhibit 138 kV transmission line construction noise impacts regardless of where a structure is on a parcel. **Figure 3.12-2** presents the identified sensitive receptors that were modeled for transmission line construction noise.



Transmission Line Construction Sensitive Receptors

FIGURE 3.12-2

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Transmission line construction activities have the potential to cause temporary significant impacts to six parcels north of I-8 and 41 parcels south of I-8. Implementation of BMPs will help reduce or eliminate temporary construction related impacts. In addition on-site noise monitoring and documentation by a County-approved acoustical consultant will ensure that any noise impacts to potentially affected receptors will be reduced to comply with the San Diego Noise Ordinance.

Construction Traffic Noise

The project is proposing roadway improvements and new roadways to facilitate the delivery of large equipment and cranes. This access will require a roadway connecting Ribbonwood Road to Rough Acres Ranch and then to McCain Valley Road. This roadway improvement would connect with a private road. Additional roadway access for the turbines located on the mountain ridge on the Ewiiaapaayp tribal land in the western portion of the project area will be provided from the Crestwood Road exit off I-8 and will run through the Campo and Manzanita Indian Reservations, although an agreement has not been completed at this time. The County construction noise guidelines list a one-hour average sound level limit of 75 dBA at the project boundary. As shown in **Table 3.12-7** noise levels associated with construction trucks range between 27 dBA and 99 dBA at 50 feet and would impact six receptors.

The average daily traffic volume associated is discussed in Section 3.18, Traffic and Transportation. A typical day during the peak of the construction period would generate approximately 200 truck trips, which would include the transportation of turbines, movement of heavy equipment, transport of material and concrete, as well as trips for pump trucks and subcontractor trucks. A total of 325 peak daily workers are expected to be working in the project area during the peak construction period, approximately 125 on-site construction employees and 200 delivery truck drivers.

The existing vehicular mix on Ribbonwood Road, McCain Valley Road, and Old Highway 80 are based on vehicular classification counts taken on December 15, 2009. On roadway segments where vehicular classification counts were unavailable a conservative mix of 93 percent cars, 4 percent medium trucks and 3 percent heavy trucks was assumed. Modeled vehicular mixes for all project-related traffic are based on a traffic distribution of 62 percent heavy trucks and 38 percent cars.

Since Ribbonwood Road is the primary interchange off I-8 for the proposed for the project, the majority of the construction traffic is expected to use Ribbonwood Road. Depending on the location of the construction work zone, some trips may also use McCain Valley Road. To access McCain Valley Road, trips would use Ribbonwood Road and Old Highway 80. Also, construction traffic may access the western portion of the project site by using the Crestwood Road interchange with the I-8 and traveling on Crestwood Road and Old Mine Road. The project applicant will complete a Traffic Management Plan (TMP) and a Ground Transportation Plan (GMP) prior to construction to reduce the hazards and traffic impacts associated with the proposed project. The plan will address the number of vehicles traveling on-site per day, the size and type, origins and destinations, and any congestion points on secondary roads.

Existing traffic related noise levels in the area range from 51 to 68 dBA on a CNEL basis. Project-related noise levels, during the peak of project construction, range from 56 to 61 dBA on a CNEL basis. Predicted increases in noise level, due to project-related traffic, ranges from less than 1 dBA to 7 dBA on a CNEL basis at NSLUs.

The vehicular mix for the project-related traffic is anticipated to be 62 percent heavy trucks and 38 percent cars. Modeling of existing, project-related, and existing plus project–related average daily traffic volumes were calculated and project-related noise levels during the peak of the project construction are

anticipated to range from 51 dBA to 68 dBA, with a projected cumulative noise level of existing plus the proposed project of 58 dBA To 69 dBA, with the highest increase of 6.9 dBA located at Ribbonwood Road (north of I-8).

Direct roadway noise impacts would be considered significant if the project increases noise levels for a noise sensitive land above the County of San Diego 60 dBA CNEL standard, except if the existing noise level without the project is 58 dBA or greater, a 3 dBA increase is allowed up to the maximum permitted by the Federal Highway Administration Standards or if the project permanently increase the noise levels by 10 dBA CNEL. The project creates an increase of more than 3.0 dBA CNEL along a segment of McCain Valley Road and Ribbonwood Road as can be seen in **Table 3.12-8**, but does not increase the existing noise levels above the 60 dBA CNEL County threshold to noise sensitive areas. Based on the modeled results, no traffic-related roadway impacts are anticipated due to project-related traffic.

Table 3.12-8. Traffic Noise Summary

Receiver	Distance to Nearest NSLU, feet	Existing Exterior CNEL, dBA	Project Exterior CNEL, dBA	Existing + Project	Increase Over Existing
Crestwood Road	4,000	No Noise Sensitive Receptors within 1/2 Mile			
McCain Valley Road	400	52.9	56.3	58.0	5.1
Old Highway 80	50	64.7	60.1	66.0	1.3
Ribbonwood Road (North of I-8)	250	51.1	57.0	58.0	6.9
Ribbonwood Road (South of I-8)	80	68.3	60.7	69	0.7

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)

Noise-sensitive land uses currently approaching or exceeding the 60 dBA CNEL benchmark such as Old Highway 80 and Ribbonwood Road south of I-8, were assessed to determine if the project created a 3 dBA increase over existing noise levels. As shown in **Table 3.12-8**, project-related increases over existing noise levels along Old Highway 80 and Ribbonwood Road south of I-8 were 1 dB and less than 1 dB, respectively.

BMPs, presented in **Table 2.0-9**, will be in place to decrease the amount of noise generated during construction. The BMPs include but are not limited to the following: maintaining original equipment manufacture (OEM) mufflers or better, ensuring all equipment is in good operating condition, and limiting hours of operation.

Noise related to the decommissioning of the project would be consistent with, and most likely less than, the construction of the project due to the lack of roadway construction. Project construction and decommissioning would comply with all applicable noise ordinances concerning construction hour limitations. Compliance with the San Diego County Noise Ordinance, as well as implementation of BMPs, would ensure that the impacts to sensitive receptors due to construction traffic noise within the vicinity of the proposed project would be less than significant.

Operation and Maintenance

The proposed substation and deviant substation is located in an area with no residences that may be subjected to coronal discharge noise emitted from the transmission line that connect to the substation. No impacts are identified for the operation of the deviant substation.

Under some weather conditions, it is possible for transmission lines to create noise. This coronal noise is typically not audible due to the high voltage transmission line set-back distances to residences. Coronal discharge noise is typically not audible due to the high voltage transmission line set-back distances to residences. Based on the modeling, using the Bonneville model assuming wet weather conditions and maximum sag conditions, the transmission line noise will comply with County's noise ordinance requirements at the 100-foot ROW. At 50 feet, the right-of-way corona noise levels are predicted to be 26 dBA below the County nighttime noise level limits. No impacts are identified.

Post-construction the project is expected to be supported by up to12 permanent full-time employees. The noise report did not model vehicular trips for the operations due to the anticipated low generation of traffic associated with operation activities. Also, operational traffic would occur during normal business hours. No impacts due to traffic noise are anticipated.

According to field study by Epsilon Associate (Epsilon Associates 2009), noise generated by wind farms at distances beyond 1,000 feet were below the low frequency noise criteria for bedrooms, classrooms, and hospitals. The nearest non-participating land owners in the project area is more than 1,500 feet from the nearest turbine. The infrasound and low frequency noise from wind turbines is a less than significant impact.

In the analysis of wind turbine noise, HDR modeled noise from 134 GE 1.5XLE turbines using Cadna-A to calculate project-related noise levels at 47 noise-sensitive land uses in the area. The turbine locations include 97 wind turbines on BLM land, 17 turbines on Tribal lands, 7 turbines on State lands, and 13 wind turbines on private parcels (Rough Acres Ranch).The sound power level used in the analysis is based on maximum operating conditions at 10 meters per second. Additionally 2 dBs were added to each octave band to account for uncertainty. **Table 3.12-9** presents the spectral sound power level data provided by GE, the modeled turbine manufacturer.

Table 3.12-9. Spectral Noise Emissions Data – GE 1.5XLE

	Octave Bands, SWL (Hz)								
Noise Emissions	63	125	250	500	1k	2k	4k	8k	SWL, dBA
Manufacturer	83.4	92.2	97.8	99.4	97.7	93.4	86.6	84.8	104.1
Modeled	85.4	94.2	99.8	101.4	99.7	95.4	88.6	86.8	106.1

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)

Wind turbine project-related noise levels range from 33 dBA to 49 dBA at property boundaries within the study area, presented in **Table 3.12-10**. C-weighted project-related noise levels are comparable with existing conditions, ranging from 48 to 59 dBC L_{eq}(h) at adjacent property boundaries.

Determination of impact for operation related noise was performed in compliance with San Diego County Code of Regulatory Ordinances section 36.404. Without mitigation, the project would exceed maximum allowable noise limits for nighttime noise at two property boundaries, Home 1 and Home 2 by 2 and 4 dBs, respectively, as shown in **Table 3.12-11**. Operation related noise is not predicted to cause significant daytime airborne-noise impacts. Nighttime noise levels are in exceedance with the County of San Diego, impacts are considered significant.

Table 3.12-10. Wind Turbine Noise Analysis

Noise Source Identification (Proposed Turbine)	Receptor	Distance to Property Line, feet	Noise Level L_{eq}, dBA	Noise Level L_{eq}, dBC
R12	Home_1	1,583	47	58
G19	Home_2	884	49	59
G19	Home_27	5,928	37	50
G19	Home_28	7,633	37	51
G19	Home_30	7,331	37	51
G17	Home_31	5,969	39	51
G14	Home_32	5,014	41	54
G19	Home_33	8,316	35	50
G19	Home_34	8,859	35	49
G19	Home_36	8,598	33	48
G19	Home_39	2,376	42	54
G13	Home_42	4,445	42	54
K12	Home_47	2,191	41	52

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)
Note: dBC = Decibels relative to the carrier

Table 3.12-11. Summary of the Wind Turbine Noise Analysis

Descriptor	Project Related Noise	
	Daytime L_{eq}, dBA	Nighttime L_{eq}, dBA
Maximum Predicted Noise Level	49	49
Noise Level Limits	50	45
Δ (Predicted – Limit)	-1	4

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)

Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

Construction and Decommissioning

Project-related construction activities may cause ground-borne noise or ground-borne vibration to nearby noise-sensitive land uses. The construction activity that is most commonly associated with building damage is blasting during excavation. Other vibration inducing equipment includes dozers and heavy trucks.

Table 3.12-12 shows the vibrations levels at a distance of 15 feet due to construction-related vibrations, of which the project will comply with impact criteria for older residential structures with the exception of blasting. There are no vibration sensitive residential structures located within 15 feet of the transmission line construction limits. Impacts due to ground-borne vibration are less than significant.

Table 3.12-12. Vibration Levels at a Distance of 15 Feet

Equipment Type		Peak Particle Velocity at 15 feet
Hydromill	in soil	0.02
	in rock	0.04
Hoe Ram		0.19
Large bulldozer		0.19
Caisson drilling		0.19
Loaded trucks		0.16
Jackhammer		0. 08
Small bulldozer		0.01
RMS velocity in decibels (VdB) re 1 micro-inch/second		

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)

There is potential for blasting in some locations during construction to remove rock. General areas or exact locations will be identified by results of a geotechnical investigation. Construction blasting will be planned, in part, where it will cause less noise and vibration than non-blasting construction methods. Construction blasting will be managed with the preparation of a blasting plan for each site. The blasting plan will include identification of planned blasting locations, a description of the planned blasting methods, an inventory of vulnerable structures potentially affected by the planned blasting, and calculations to determine the area affected by the planned blasting. Construction blasting will create unavoidable groundborne vibration. Vibration propagation is highly dependent on soil conditions between the blast and the receptor. In some soil conditions, groundborne vibration dissipates quickly.

As part of the project design, a blasting plan will be prepared for each potentially impacted site. The plan will consider location, planned blasting methods and potentially affected receptors. Physical damage to potentially vulnerable structures will be addressed by avoiding construction blasting near the structures wherever possible, and non-blasting construction methods will be evaluated.

Depending upon the results of the blasting plan, mitigation measures may include coordination with building occupants so that blasting occurs in their absence, or at other acceptable times, to avoid nuisance or annoyance complaints. A rock anchoring or mini-pile system may be used to reduce the risk of damage to structures. Structures shall be restored if adversely affected by construction vibration, to an equivalent condition as that prior to the construction. In addition, fair compensation for lost use will be provided to the owner.

Construction and decommissioning could include activities that may temporarily expose people to ground-borne vibration or ground-borne noise. Blasting may be required in some areas for the construction of the turbine foundations. The nearest residence which may be subject to ground-borne vibration or noise levels from construction blasting is located on Rough Acres Ranch. Further, construction activities, including those which could result in ground-borne vibration would be completed between 7 a.m. and 7 p.m. in order to be compliant with the requirements of the County of San Diego. Additionally, construction blasting may be coordinated with building occupants to occur in their absence, or at other acceptable times, to avoid nuisance or annoyance complaints. Impacts are less than significant with the implementation of the blasting plan.

Operation and Maintenance

Operation and maintenance of the project is not expected to generate ground-borne vibration or ground-borne noise, thus, no impact is identified.

A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Construction and Decommissioning

Fifty-three construction noise impacts (six roadway and 47 138 kv transmission line) have been identified at receptors closest to roadway construction and transmission line construction , as shown in **Table 3.12-7**, although some of these impacted receptors do overlap. These residences are in some instances as close as 10 feet away from the construction buffer zone and will experience the highest noise levels from road construction and grading activities. No other construction phase of the project is anticipated to result in noise impacts.

Sensitive receptors are anticipated to be temporarily impacted during roadway and transmission line construction. The BMPs include but are not limited to the following: maintaining original equipment manufacturer (OEM) mufflers or better, ensuring all equipment is in good operating condition, and limiting hours of operation. Where temporary noise impacts cannot be reduced or eliminated utilizing BMPs, a site specific mitigation plan will be prepared and mitigation could include but not be limited to the use of a moveable noise barrier. Additionally, on-site noise monitoring and documentation by a County-approved acoustical consultant will ensure that any noise impacts to potentially affected receptors will be reduced to comply with the San Diego Noise Ordinance. Implementation of BMPs will not reduce noise levels to a level that complies with the San Diego County Noise Ordinance to ensure that the impacts to sensitive receptors within the vicinity of the proposed project. Temporary noise impacts are considered significant.

Operation and Maintenance

As mentioned in Section 3.12.1, an increase in noise of 3 dB or less is typically not noticeable to the human ear. An increase in noise of 5 dB is distinctly audible and is generally used as the threshold for a significant noise increase. A 10 dB increase is typically perceived as a doubling of loudness. Consideration is given to the perceptibility of changes in noise levels in assessing significance at existing sensitive receptors using a change of 5 dB as the threshold for a significant increase. The noise analysis modeled all residencies within one mile of the project area, as shown on **Figure 3.12-1**, Noise Monitoring Locations.

As shown in **Tables 3.12-9 through 3.12-11**, wind turbine project-related noise levels is anticipated to range from 33 dBA to 49 dBA at property boundaries. Nighttime noise levels would increase from 45 dBA to 49 dBA at Home 1 and Home 2, exceeding the maximum allowable noise limits for nighttime noise by 2 and 4 dBs, respectively. Project-related noise is not predicted to cause significant daytime airborne noise impacts. Prior to final approval of the turbine layout design a noise report will be finalized to reduce nighttime noise impacts to area receptors. Operational turbine noise will be mitigated to comply with the San Diego County Code of Regulatory Ordinances Section 36.404 prior to construction. Project nighttime noise impacts are significant.

Project-related traffic noise is not predicted to cause any significant airborne-noise impacts at any NSLU near the project-area. Post-construction will be supported by 12 permanent full-time employees during normal business hours. During normal operations the project is expected to generate minimal traffic on access road. Transportation related noise is not predicted to cause any significant airborne-noise impacts at any NSLU near the project-area thus no mitigation is required.

There are two project collector substation locations proposed on BLM land, the "proposed" collector substation and the "deviant" collector substation. Both substation locations are south of McCain Valley Road, with the deviant substation located 0.6 miles southwest of the proposed substation. The deviant substation location is a potential alternate to the proposed, and as part of the proposed project is not a separate alternative. The deviant substation is included in the project to provide flexibility in the project design to minimize impacts to view sheds and natural resources due to topography.

Substation noise was modeled for the proposed and alternate substation locations. The substation equipment is the same for all proposed locations and includes two (138 kV and 34.5 kV) 100 megavolt ampere (MVA) power transformers that are connected through 138 kV circuit breakers to a common 138 kV transmission line within the substation. Noise attributable to the proposed substation is below the calculation threshold. Substation noise at property boundaries are approximately 0 dBA and therefore will not increase the cumulative project related noise level. No impact is identified.

Based on the corona noise model, using typical 138 kV single-circuit transmission line configurations, transmission line noise will comply with the County's noise ordinance requirements at the 100-foot ROW. At 50 feet, the ROW corona noise levels are predicted to be 26 dBA below the County nighttime noise level limits; therefore, no noise impacts are predicted to occur due to corona noise. Impacts due to corona noise are considered less than significant.

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Construction and Decommissioning

There would not be any permanent increase in ambient noise levels in the project vicinity above existing levels due to the construction and decommissioning of the proposed project. Noise impacts would be considered temporary and BMPs will be applied to ensure noise levels comply with local noise ordinances. Impacts are less than significant.

Operation and Maintenance

When in motion, wind turbines emit a perceptible sound. This sound is generated from the wind turbine at points near the hub or nacelle (226-338 feet from the ground), from the blade tips as they rotate, and transformers near ground level. The level of this noise varies with the speed of the turbine, environmental conditions, terrain and the distance of the listener from the turbine. Due to technological advancements, (i.e., upwind versus downwind rotor placement, low-noise gearboxes, insulated nacelles, pitch-control rotors, vibration-isolated mechanical equipment, and variable-speed operation) noise levels for today's generation of wind turbines are lower than that of their predecessors. Furthermore, the character of noise produced is more broadband in nature and largely absent of tones (whines, whirrs, buzzes, or hums), as well as impulsive (or thumping) qualities.

Noise levels produced by the movement of the wind turbines as measured from the monitoring locations identified in **Figure 3.12-1** range from 49 to50 dBA in the daytime and 45 to 49 dBA during the nighttime. **Figure 3.12-3** depicts the noise contours on an hourly L_{eq} basis for the project area. Based on San Diego County's noise standard of 50 dBA during the daytime and 45 dBA during the nighttime hours, the nighttime operational noise would exceed the County standard of 45 dBA by 2 dBA at Home 1 and 4 dBA at Home 2. A final noise report will be completed upon the final approved layout of the wind turbines to reduce nighttime noise impacts to area receptors. Impacts are significant.

Under damp weather conditions, it is possible for the electromagnetic forces surrounding high-voltage electrical transmission lines to create faint noise. This is called corona discharge noise, and has been described as a crackling sound. While corona noise can sometimes be audible, it does not reach levels that cause concern about compliance with County noise limits. Corona discharge noise is not audible at large distances, partly because it does not have any low-frequency content and by virtue of its nature blends into the ambient acoustic environment easily.

Based on the corona noise model, using typical 138 kV single-circuit transmission line configuration, transmission line noise will comply with the County's noise ordinance requirements at the 100-foot ROW. At 50 feet, the ROW corona noise levels are predicted to be 26 dBA below the County nighttime noise level limits; therefore, no noise impacts are predicted to occur due to corona noise. Impacts due to corona noise are considered less than significant. In addition, **Table 2.0-6** identifies project design features and best management practices that would be required as conditions of approval that would ensure noise from transmission lines associated with wind turbines comply with County noise limits. Project-related noise due to transmission lines are not predicted to cause any significant airborne-noise impacts to any adjacent sensitive receptors in the vicinity of the project-area. Impacts are less than significant.

Cumulative operational project-related noise levels, for the proposed action, are dominated by wind turbine generated noise. Noise attributable to the proposed substation is below the calculation threshold. Project substation noise at property boundaries are approximately 0 dBA and therefore will not increase the cumulative operational project related noise level. Cumulative operational project-related noise levels, utilizing the proposed substation location, range from 33 to 49 dBA at property boundaries within the noise study area, as shown in **Table 3.12-13**.

Noise levels at adjacent property lines are anticipated to increase 0-6 dB due to project related noise, on an hourly L_{eq} basis, when utilizing the proposed substation. The County of San Diego standard is 50 dBA during the daytime and 45 dBA during the nighttime unless the ambient exceeds the threshold then the standard is ambient plus three decibels. The project will comply with the daytime standards at all sensitive uses. The maximum increase of 6 dB Leq is 4 dBs below the San Diego County criteria for significance; therefore, no impacts due to an increase over existing noise level are anticipated.

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

Construction, Operation and Maintenance, and Decommissioning

The Jacumba Airport is located approximately 6.5 miles southeast of the project area, and according to the San Diego County Regional Airport Authority, the Jacumba Airport Land Use Compatibility Plan 2006, the proposed project area is not located within the airport influence areas for noise compatibility, safety, over flight, or airspace protection. No impacts are identified.

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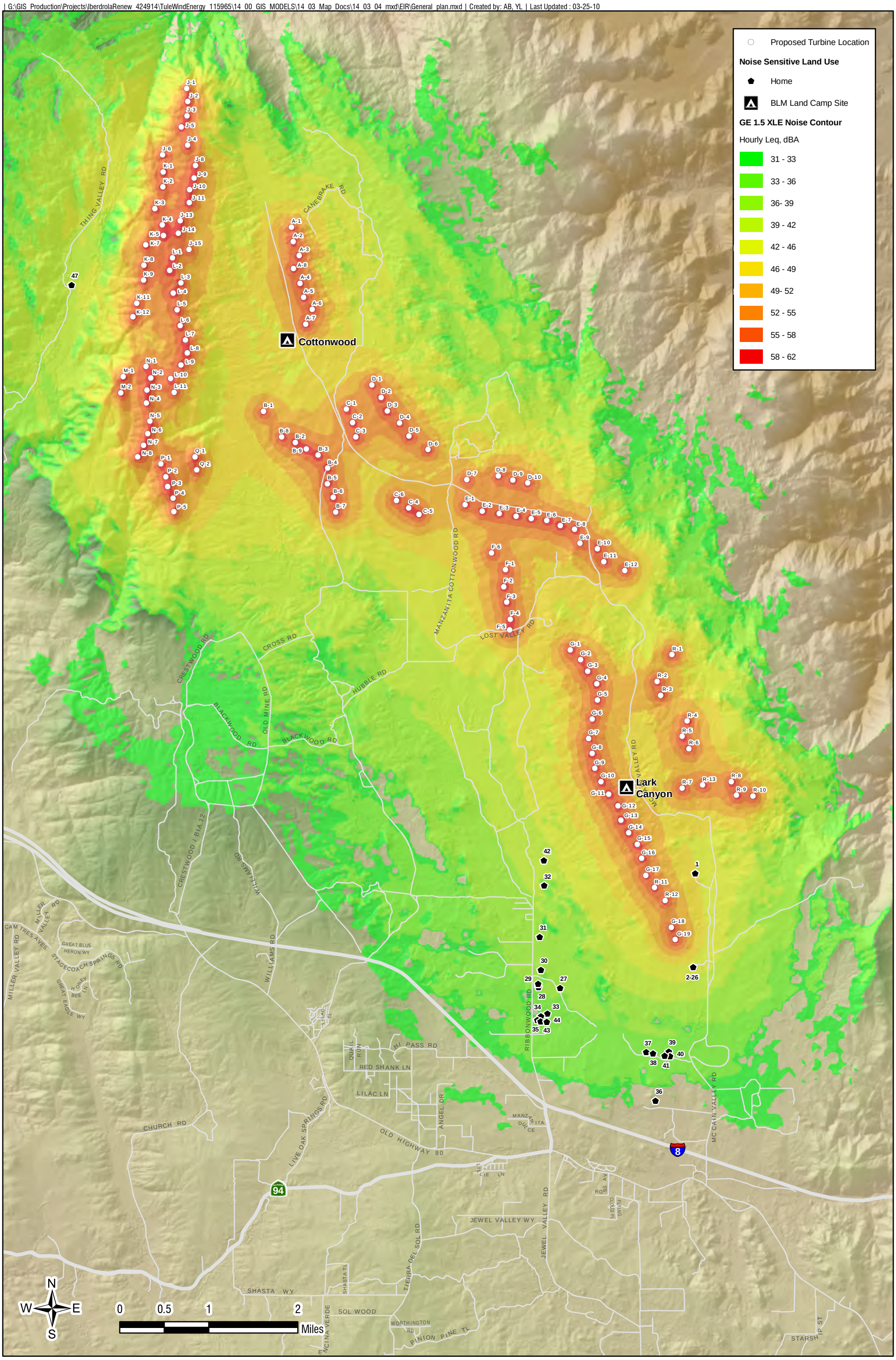

Noise Contours

FIGURE 3.12-3

Iberdrola | Tule Wind Project | Applicant's Environmental Document

HDR ONE COMPANY | *Many Solutions*℠

Table 3.12-13 Proposed Action - Property Line Airborne Noise Analysis

Noise Source Identification (Proposed Turbine)	Receptor	Existing Noise Level L_{eq}, dBA	Project-Related Noise Level		Existing + Project Noise Level, L_{eq}, dBA	Increase Over Existing, dB
			Noise Level L_{eq}, dBA	Noise Level L_{eq}, dBC		
R12	Home_1	42	47	58	48	6
G19	Home_2	50	49	59	53	3
G19	Home_27	50	37	50	50	0
G19	Home_28	50	37	51	50	0
G19	Home_30	50	37	51	50	0
G17	Home_31	49	39	51	49	0
G14	Home_32	49	41	54	49	1
G19	Home_33	50	35	50	50	0
G19	Home_34	50	35	49	50	0
G19	Home_36	50	33	48	50	0
G19	Home_39	50	42	54	51	1
G13	Home_42	49	42	54	50	1
K12	Home_47	48	41	52	49	1

Source: HDR Noise Analysis (August 2010)
Note: Receptor locations are based on the maximum calculated sound pressure level at an adjacent property boundary.

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

Construction, Operation and Maintenance, and Decommissioning

A private airstrip is located on Rough Acres Ranch off McCain Valley Road. The airstrip is currently non-operational. According to the property manager, Rough Acres Ranch has an agreement with SDG&E to terminate fixed wing air rights, which will ensure the private airstrip will remain non-operational. No impacts are identified.

3.12.4 Cumulative Impacts

The Campo Wind project was identified in the vicinity of the project area. The existing facilities are located approximately 2.2 miles west of the proposed project boundary. Because the distance between the two projects is more than twice the distance identified for noise impacts, and existing and projected traffic noise is not expected to be significantly adverse, the project will not have a cumulative noise impact on the surrounding area. The following projects as listed in **Table 2.0-8**, Cumulative Project List are considered to have noise impacts by the County of San Diego.

- Miller Creek Reclamation Plan – Reclamation Plan and MUP (04-004, 04-053). NOP February 2005, Major Use Permit and Reclamation Plan for the extraction of sand resources in Campo. Operations would encompass 136 of 763 acres. The MUP would allow for extraction of sand on 58.2 acres. 16.4 acres would be used for the creation of wetlands. General operations for processing would consist of 61.9 acres. The project is to be completed over 25 years in 4 phases.

Preparation of a Draft EIR is currently in the process. Noise impacts may result from increase in traffic to the area. Project is not located in close proximity to the proposed project, and would not have a cumulative impact on area noise.

- Dart – Tentative Map Parcel (20675). Mitigated Negative Declaration (MND) for 33.46 acres subdivision into three lots. Two lots for single-family residences and one for general commercial uses. The project is expected to add an additional ADT of 400. The Ribbonwood Road is currently at 250 with an LOS of A. 400 Additional Daily Trips (ADT) is not expected to be a significant increase. The project will contribute to the Transportation Impact Fee (TIF). A noise protection easement will be applied to the entire area of parcels 1, 2, and 3 to mitigate the impact of noise to future residents from I-8 and Ribbonwood Road.

The proposed project is anticipated to increase traffic levels during the construction, but not during the operations and maintenance. No cumulative impacts due to traffic noise are anticipated.

- Grizzle – Tentative Map Parcel (20719). Subdivision of one lot into four parcels with a remainder parcel for single family residence development. MND determined there may be significant impacts. Parcels that have the potential to be exposed to agricultural uses and noise from such uses. The proposed project will add an additional 48 ADTs. Currently, the level of service along Old Highway 80 is A; and has an ADT of 1,200 and the addition of ADT of 48 is not considered substantial. The project will contribute to TIF. The proposed project is anticipated to increase traffic levels during the construction, but not during the operations and maintenance. No cumulative impacts due to traffic noise are anticipated.
- Ketchem Ranch – Major Use Permit, Rezone, General Plan Amendment, Specific Plan, Major Use Permit (5524, 06-019, 06-014, 06-003, 06-099). Mixed use project in Jacumba for 2,126 residential units and 272 townhomes, reclamation plan, elementary school, and park. General Plan amendment to change regional category from RDA to CT. MUP for wastewater treatment plant. County does not recommend approval, February 2007. NOP EIR, July 2007. Inactivity notification 60-day notice, November 2009. Extension to January 2010.

The above projects are not anticipated to have cumulative noise impacts combined with the proposed project. No cumulative noise impacts are identified.

3.12.5 CEQA Levels of Significance Before Mitigation

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

Construction and Decommissioning

Underground utility construction, tower base construction and batch plant operations are not predicted to result in construction noise impacts. Roadway construction has the potential to impact six adjacent parcels. The highest overall predicted traffic noise level is 99 L_{eq} at homes 34, 35, and 43. Six construction noise impacts have been identified at receptors closest to roadway construction and 47 receptors may be impacted due to the temporary noise due to the construction of the transmission line. These residences are in some instances as close as 10 feet from the construction buffer zone and will experience the highest noise levels from road construction and grading activities. Temporary impacts due to roadway and transmission line construction are considered significant.

Blasting will comply with the San Diego County Code 36.410, regarding impulsive noise of a 1-minute maximum sound level of 82 dBA for 75 percent of the minutes within a measurement period, with exceedances allowed for 25 percent of the minutes. Impacts due to blasting will be reduced by implementation of a blasting plan. Impacts are considered less than significant.

No other construction phase of the project is anticipated to experience noise impacts. A decommissioning plan will be developed in compliance with the standards and requirements for closing a site. All management plans, BMPs, and stipulations developed for the construction phase will be applied to similar activities during the decommissioning phase. Impacts are less than significant.

Operation and Maintenance

Determination of impact for operation project-related noise was performed in compliance with San Diego County Code of Regulatory Ordinances section 36.404. Wind turbine project-related noise levels range from 33 dBA to 49 dBA, the project would exceed maximum allowable noise limits for nighttime noise at two property boundaries, Home 1 and Home 2 by 2 and 4 dBs, respectively. Project-related noise without mitigation, using the current turbine layout, is predicted to exceed nighttime allowable noise limits at two adjacent property boundaries in the project-area. Operational project-related noise is not predicted to cause significant daytime airborne-noise impacts. Operational noise will be mitigated to comply with the San Diego County Code of Regulatory Ordinances Section 36.404 prior to construction.

Mitigation options that may be considered in final design include revising turbine layout, nighttime curtailment of select turbines, utilizing an alternate turbine manufacturer, and implementation of noise reduction technology. Prior to construction a noise report will be finalized to demonstrate compliance with the San Diego County Code of Regulatory Ordinances Section 36.404.

No impacts are identified due to the proposed substation, transmission lines, or operations-related traffic.

Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels

Construction and Decommissioning

Ground-borne vibration or noise levels may result from construction equipment**.** Other vibration-producing construction equipment proposed for use on the Tule Wind Project includes loaded trucks, roe hams, drill rigs and bull dozers. Most limits on construction vibration are based on minimizing the potential for damage to nearby structures. The project will adhere to the California Department of Transportation's (Caltrans) construction vibration damage thresholds. No vibration sensitive residential structures were identified within 15 feet of the transmission line construction limits, in addition to a blasting plan will be completed for each potential blasting area.

General areas or exact locations will be identified by results of a geotechnical investigation. Construction blasting will be managed with the preparation of a blasting plan for each site. Depending upon the results of the blasting plan, mitigation measures may include coordination with building occupants so that blasting occurs in their absence, or at other acceptable times, to avoid nuisance or annoyance complaints. Impacts are less than significant for ground-born vibration and ground-borne noise levels with the implementation of a blasting plan.

Decommissioning activities similar to those outlined in the construction phase would take place. All management plans, BMPs, and stipulations developed for the construction phase will be applied to similar activities during the decommissioning phase. Impacts are less than significant.

Operation and Maintenance

Operation and maintenance of the project is not expected to generate ground-borne vibration or ground-borne noise, thus, no impact is identified.

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Construction and Decommissioning

The ambient acoustic environment in the project area is dominated by noise from traffic on I-8, vehicular traffic on local roads, wind, and occasional aircraft overflights. Ambient sound level surveys throughout the project area demonstrated an acoustical environment comparable with a typical rural setting. The measured sound levels varied from 32 to 58 dBAs on a CNEL basis.

Construction of the project would involve the operation of many short-term uses of heavy equipment which may temporarily increase ambient noise levels existing over a period of 18 to 24 months. Noise associated with the construction phase of the project would include transport of workers and equipment to the construction site, and noise generated by construction activities.

Operation and Maintenance

Determination of impact for operation project-related noise was performed in compliance with San Diego County Code of Regulatory Ordinances section 36.404 (Appendix P). Without mitigation, the project would exceed maximum allowable noise limits for nighttime noise at two property boundaries, Home 1 and Home 2 by 2 and 4 dBA, respectively. Operational project-related noise is not predicted to cause significant daytime airborne-noise impacts. The exceedance of nighttime operational noise will be mitigated to comply with the San Diego County Code of Regulatory Ordinances Section 36.404 prior to construction. Impacts are less than significant.

A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Construction and Decommissioning

Construction and decommissioning of the project will result in temporary increases in ambient noise levels above existing levels. Compliance with the local general plan and noise ordinances, as well as, implementation of BMPs as outlined in **Table 2.0-6**, would ensure that the impacts would be less than significant.

Operation and Maintenance

The operation of the project will result in increases in nighttime ambient noise levels in the project vicinity due to the turbine operations, although the remaining project operations will not create an increase in ambient noise levels near sensitive receptors. The collector substation, transmission lines, and operational traffic, and are not anticipated to cause temporary or periodic increases in ambient noise levels to the project vicinity. The noise levels would remain constant, and has been addressed in permanent increases to noise levels for the project. Impacts considered are significant.

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

Construction, Operation and Maintenance, Decommissioning

The project is not within the vicinity of an active public airport or airport land use plan and will not have an impact.

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

Construction, Operation and Maintenance, Decommissioning

A private airstrip is located on Rough Acres Ranch off McCain Valley Road; however, it is currently and will remain non-operational. No impacts are identified.

3.12.6 Mitigation Measures

NS-1 Mitigation options that may be considered in final design include revising turbine layout, nighttime curtailment of select turbines, utilizing an alternate turbine manufacturer and implementation of noise reduction technology. Operational turbine noise will be mitigated to comply with the San Diego County Code of Regulatory Ordinances Section 36.404 prior to construction.

NS-2 A site specific noise mitigation plan will be developed and construction noise levels will be reduced to comply with San Diego County Code of Regulations Section 46.309. Mitigation of construction noise can be implemented through a number of different options. The most significant impact during roadway construction is 99 dBA L_{eq} at receptors 11A. Reduction of these high levels to 75 dBA L_{eq} is most likely going to take the form of a movable barrier, along with modifications to exhaust systems, and time constraints on the loudest pieces of machinery. Considering a 12-foot high exhaust stack on a typical dump truck, achieving a 20 dB reduction could require a barrier up to 24 feet high. Additional mitigation options may include limited equipment use.

3.12.7 CEQA Levels of Significance After Mitigation

Mitigation options that may be considered in final design include revising turbine layout, nighttime curtailment of select turbines, utilizing an alternate turbine manufacturer and implementation of noise reduction technology. Operational noise will be mitigated to comply with the San Diego County Code of Regulatory Section 36.4040 prior to construction. Implementations of mitigation measure NS-1 would reduce impacts to less than significant.

Implementation of the noise barrier in conjunction with the proposed BMPs is anticipated to reduce impacts due to the construction of roadways and transmission lines to a level of less than significant. Implementation of mitigation measure NS-2 would reduce impacts to a level of less than significant.

3.12.8 Comparison of Alternatives

In developing the alternatives to be addressed in this environmental document, the potential alternatives were evaluated in terms of their ability to meet the basic objectives of the project, while avoiding or reducing the environmental impacts of the project identified in Section 3.0, Environmental Analysis. The alternatives will contain all the same components and construction corridor as the proposed project except may vary in number and location.

No Project/No Action Alternative

Under the No Project/No Action Alternative, the proposed project would not be built. No noise would be generated from any phases of the proposed project. The noise levels would remain below the County's noise standards.

Fewer impacts are identified for this alternative than for the proposed project and other alternatives.

Alternate Transmission line Alternative #1

The Alternate Transmission Line Alternative #1 (T-line Alternative #1) would include all of the same components as the proposed project except for an alternate overhead 138 kV transmission line (T-line Alternative #1), as shown in **Figure 2.0-12**. The T-line Alternative #1 would be located parallel to, but in-lieu of, the proposed transmission line. T-line Alternative #1 would be located further west and run from either the proposed or deviant collector substation approximately 5.5 miles south to the Rough Acres Ranch (south of turbine G-19). From Rough Acres Ranch, the line would continue west to Ribbonwood Road. The line would continue south on Ribbonwood Road to Old Highway 80, and east along Old Highway 80 to the SDG&E proposed Rebuilt Boulevard Substation.

This alternative would increase the land disturbance by approximately 7.6 acres, from 772.7 acres to 780.3 acres, utilizing the deviant collector substation. The 138 kV transmission line would increase in distance from 9.7 miles to 11.7 miles and would increase the amount of transmission line poles from 116 poles to 152 poles, utilizing the deviant collector substation. The 34.5 kV overhead collector lines would remain the same distance of 9.4 miles, and would require the same amount of collector line poles (250), and the underground collector lines would also remain the same distance of 29.3 miles, utilizing the deviant collector substation.

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

Construction, Operation and Maintenance, and Decommissioning

Relocation of the transmission line for this alternative, as shown in **Figure 2.0-12,** would locate a portion of the transmission line along Ribbonwood Road, where there is a residence. Six receptors north of I-8 and 41 receptors south of I-8 have been identified due to the transmission line construction. Impacts are considered significant, although will be reduced with mitigation with the construction of a construction barrier.

Operation and maintenance noise levels for this alternative would be similar to those identified for the project. Impacts are less than significant.

Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

Construction, Operation and Maintenance, and Decommissioning

Groundborne vibration or groundborne noise levels under this alternative due to construction, operation and maintenance, and decommissioning would be similar to those identified for the proposed project. The moving of the transmission line does not result in any significant increase in ground-borne vibration or ground-borne noise levels compared to those identified for the project. Impacts are less than significant.

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Relocation of the transmission line for this alternative would not result in a substantial permanent increase in ambient noise levels to sensitive receptors above existing levels or beyond those discussed in Section 3.12.3 for the proposed project. Temporary construction and decommissioning activities will be mitigated and long term operation and maintenance of the proposed project with this alternative would not exceed San Diego County's noise standard outlined in **Table 3.12-5**.

A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Relocation of the transmission line under this alternative would not result in a substantial temporary or periodic increase in ambient noise levels to sensitive receptors above existing levels or beyond those discussed in Section 3.12.3 for the proposed project. Temporary construction and decommissioning activities and long term operation and maintenance of the proposed project with this alternative transmission line would not exceed San Diego County's noise standard outlined in **Table 3.12-5**.

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

Construction, Operation and Maintenance, and Decommissioning

This alternative is not located within an active airport land use plan or within two miles of a public airport. Therefore, this alternative would not expose people working in the project area to excessive noise levels. No impact is identified.

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

Construction, Operation and Maintenance, and Decommissioning

A private airstrip is located on Rough Acres Ranch off McCain Valley Road; however, it is currently and will remain non-operational. No impact is identified. The overall noise impacts of the Alternate Transmission Line #1 would be similar to those of the proposed project described in Section 3.3.3.

Alternate Transmission Line #2 and Collector Substation Alternative

The Alternate Transmission Line #2 and Collector Substation Alternative would include the alternate O&M/Substation facility co-located on Rough Acres Ranch (T17S R7E Sec9), the Alternate Transmission Line #2 (138 kV), as well as an alternate overhead collector system, as shown in **Figure 2.0-13**. This alternative would consist of two 34.5 kV lines connecting the turbines to the alternate collector substation location. All other elements of the project including the turbine locations, parking and laydown areas, roadway upgrades, and batch plant would remain as described in the proposed project. The Alternate Transmission Line #2 would run from the alternate collector substation south along McCain Valley Road, and then west along Old Highway 80 until reaching the SDG&E proposed Rebuilt Boulevard Substation.

This alternative would increase the land disturbance by 1.9 acres, from 772.7 acres to 774.6 acres. The 138 kV transmission line would decrease in distance as a result of this alternative from 9.7 miles to 3.8 miles and would decrease the amount of transmission line poles from 116 poles to 44 poles. The 34.5 kV overhead collector lines would increase in distance from 9.4 miles to 17 miles, and would increase the amount of collector line poles from 250 to 452 poles. The underground collector lines would decrease in distance from 29.3 miles to 28.9 miles.

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

Construction, Operation and Maintenance, and Decommissioning

Relocation of the transmission line for this alternative would not result in an increase in noise levels to sensitive receptors beyond those discussed in Section 3.12.3 for the proposed project. Under this alternative the transmission line would run along a portion of McCain Valley Road and then connect to the SDG&E proposed Rebuilt Boulevard Substation. This new alignment would not be near any sensitive receptors. The alternative location for the O&M/Substation facility, under this alternative, would be near Rough Acres Ranch, which is considered a sensitive receptor. However, any noise associated with the construction of the collector substation and O&M facility would be temporary and in compliance with the San Diego County's noise standard outlined in **Table 3.12-5**. Ongoing operation and maintenance under this alternative would not generate a greater level of noise than that identified for the project.

The alternate substation is located on private property, Rough Acres Ranch (Home 2). Substation noise at a distance of approximately 330 feet, 6 feet beyond the edge of the easement, will comply with San Diego County nighttime noise level limits. The alternate substation noise at the remainder of the property boundaries is 35 dBA or less, 10 dBs below the County nighttime sound level limits, and 15 dBA less for the daytime sound level limits. No impacts are identified for the alternative substation.

Cumulative project-related noise levels under the proposed configuration, utilizing the alternate substation, are dominated by wind turbine generated noise. Project substation noise at adjacent property boundaries are typically 10 dBs below wind turbine generated noise levels and therefore will not increase the cumulative project related noise level, with the exception of Homes 2, 36 and 39.

Project-related noise levels as Homes 2, 36, and 39 are influenced by both wind turbine noise and project substation noise as depicted in **Table 3.12-14**. Cumulative project-related noise levels, utilizing the alternative substation location, range from 45 to 50 dBA for nighttime L_{eq} dBA at two property boundaries, home 1 and 2, by 2 and 5 dBs respectively. Operational noise for this alternative is significant and has a greater noise impact than the proposed project.

Table 3.12-14. Alternate Substation - Property Line Airborne Noise Analysis

Noise Source Identification	Receptor	Noise Level L_{eq}, dBA	Noise Level L_{eq}, dBC
R12	Home_1	47	58
G19	Home_2	50	59
G19	Home_27	37	50
G19	Home_28	37	51
G19	Home_30	37	51
G17	Home_31	39	51
G14	Home_32	41	54
G19	Home_33	35	50
G19	Home_34	35	49
G19	Home_36	34	48
G19	Home_39	43	54
G13	Home_42	42	54
K12	Home_47	41	52

Source: Tule Wind Project Draft Noise Analysis, HDR Engineering, Inc. (August 2010)
Note: Receptor locations are based the maximum calculated sound pressure level at an adjacent property boundary.

Noise levels of decommissioning activities will not be above those approved for initial construction. Decommissioning operations are not expected to reach significant noise levels nor is any equipment expected to increase noise levels. Measures similar to those taken during construction will prevent a significant noise impact during decommissioning. Implementation of this alternative would result in the same impacts as the proposed project. Impacts are less than significant.

Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

Construction, Operation and Maintenance, and Decommissioning

Ground-borne vibration or ground-borne noise levels under this alternative due to construction, operation and maintenance, and decommissioning would be similar to those identified for the proposed project. The moving of the project components does not result in any significant increase in ground-borne vibration or ground-borne noise levels compared to those identified for the project. Impacts are less than significant.

A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Relocation of the transmission line for this alternative would not result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project beyond those discussed in Section 3.12.3 for the proposed project. Under this alternative the transmission line would run along a portion of McCain Valley Road and then connect to the SDG&E proposed Rebuilt Boulevard Substation. This new alignment would not be near any sensitive receptors. The alternative location for the O&M/Substation facility would be near Rough Acres Ranch, which is considered a sensitive receptor. However, any noise associated with the construction of the collector substation and

O&M facility would be in compliance with the San Diego County's noise standard outlined in **Table 3.12-5**. Ongoing operation and maintenance under this alternative would not generate a greater level of noise than that identified for the project. The same number of operations staff and trips would be required. The O&M/Substation facility will be sited at an appropriate distance from the sensitive receptors on Rough Acres Ranch. Impacts are less than significant.

Noise levels of decommissioning activities will not be above those approved for initial construction. Decommissioning operations are not expected to reach significant noise levels nor is any equipment expected to increase noise levels. Measures similar to those taken during construction will prevent a significant noise impact during decommissioning. Implementation of this alternative would result in the same impacts as the proposed project. Impacts are less than significant.

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Permanent noise increase for this alternative would be similar to the proposed project and would be associated with increased traffic on improved roadways and the operational sound of the turbines. These noise sources would be the same for this alternative as for the proposed project and impacts would be less than significant.

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 level

Construction, Operation and Maintenance, and Decommissioning

This alternative is not located within an active airport land use plan or within 2 miles of a public airport. Therefore, this alternative would not expose people working in the project area to excessive noise levels. No impact is identified.

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

Construction, Operation and Maintenance, and Decommissioning

A private airstrip is located on Rough Acres Ranch off McCain Valley Road; however, it is currently non-operational and will remain as such in the future. No impact is identified.

The overall noise impacts of the Alternate Transmission Line #2 and Collector Substation Alternative would be similar to those of the proposed project described in Section 3.3.3.

Alternate Transmission Line #3 and Collector Substation Alternative

The Alternate Transmission Line #3 and Collector Substation Alternative would include the alternate O&M/Substation facility co-located on Rough Acres Ranch (T17S R7E Sec9), the Alternate Transmission Line #3 (138-kV), as well as an alternate overhead collector system as shown in **Figure 2.0-14**. This alternative would consist of two 34.5 kV lines connecting the turbines to the alternate

collector substation. All other elements including the turbine locations, parking and laydown areas, roadway upgrades, and batch plant would remain as described in the proposed project. The Alternate Transmission Line #3 would run from the alternate collector substation west to Ribbonwood Road, continue south along Ribbonwood Road, and then east along Old Highway 80 until reaching the SDG&E proposed Rebuilt Boulevard Substation.

This alternative would increase the land disturbance by 7.3 acres, from 772.7 acres to 780.0 acres. The 138 kV transmission line would decrease in distance as a result of this alternative from 9.7 miles to 5.4 miles and would decrease the amount of transmission line poles from 116 poles to 60 poles. The 34.5 kV overhead collector lines would increase in distance from 9.4 miles to 17 miles, and would increase the amount of collector line poles from 250 to 452 poles. The underground collector lines would decrease in distance from 29.3 miles to 28.9 miles.

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

Construction, Operation and Maintenance, and Decommissioning

Relocation of the transmission line for this alternative, as shown in **Figure 2.0-14,** would bring a portion of the transmission line along Ribbonwood Road, where there is a residence. Temporary construction activities, including construction of the relocated transmission line would be conducted in a manner so as to not exceed San Diego County's noise standard outlined in **Table 3.12-5**.

The alternative location for the collector substation and O&M facility, under this alternative, would be near Rough Acres Ranch, which is considered a sensitive receptor. The alternate substation is located on private property, Rough Acres Ranch (Home 2). Substation noise at a distance of approximately 330 feet, 6 feet beyond the edge of the easement, will comply with San Diego County nighttime noise level limits. The alternate substation noise at the remainder of the property boundaries is 35 dBA or less, 10 dBs below the County nighttime sound level limits, and 15 dBA less for the daytime sound level limits. No impacts are identified for the alternative substation.

Noise levels from decommissioning activities will not be above those approved for initial construction. Decommissioning operations are not expected to reach significant noise levels nor is any equipment expected to increase noise levels. Measures similar to those taken during construction will prevent a significant noise impact during decommissioning. Implementation of this alternative would result in the same impacts as the proposed project with regard to construction, operation and maintenance and decommissioning.

Cumulative project-related noise levels under the proposed configuration, utilizing the alternate substation, are dominated by wind turbine generated noise. Project substation noise at adjacent property boundaries are typically 10 dBs below wind turbine generated noise levels and therefore will not increase the cumulative project related noise level, with the exception of Homes 2, 36 and 39.

Project-related noise levels as Homes 2, 36, and 39 are influenced by both wind turbine noise and project substation noise as depicted in **Table 3.12-14**. Cumulative project-related noise levels, utilizing the alternative substation location, range from 34 to 50 dBA at property boundaries within the noise study area. Operational noise for this alternative will exceed the county noise limits for nighttime noise. Impacts are significant and have a greater noise impact than the proposed project.

Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

Construction, Operation and Maintenance, and Decommissioning

Ground-borne vibration or ground-borne noise levels under this alternative due to construction, operation and maintenance would be similar to those identified for the proposed project. The moving of the transmission line or O&M/Substation Facility does not result in any significant increase in ground-borne vibration or ground-borne noise levels. Impacts are less than significant.

Decommissioning activities would not be characterized as creating excessive ground-borne vibrations or noise levels. All management plans, BMPs, and stipulations developed for the construction phase will be applied to similar activities during the decommissioning phase. Impacts are less than significant.

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Permanent noise increase for this alternative would be similar to the proposed project and would be associated with increased traffic on improved roadways and the operational sound of the turbines. These noise sources would be the same for this alternative as for the Alternative #2 and impacts would be less than significant.

A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Relocation of the transmission line for this alternative as shown in **Figure 2.0-14** would not result in an increase in noise levels to sensitive receptors in the vicinity of the project area beyond those discussed in Section 3.12.3 for the proposed project. The alternative location for the substation and O&M facility would be near Rough Acres Ranch, which is considered a sensitive receptor. However, any noise associated with the construction of the collector substation and O&M facility would be in compliance with the San Diego County's noise standard outlined in **Table 3.12-5**. Ongoing operation and maintenance under this alternative would not generate a greater level of noise than that identified for the project. The same number of operations staff and trips would be required. The collector substation and O&M facility will be sited at an appropriate distance from the sensitive receptors on Rough Acres Ranch.

Noise levels of decommissioning activities will not be above those approved for initial construction. Decommissioning operations are not expected to reach significant noise levels nor is any equipment expected to increase noise levels. Measures similar to those taken during construction will prevent a significant noise impact during decommissioning. Implementation of this alternative would result in the same impacts as the proposed project. Temporary construction activities and long term operation and maintenance of the proposed project would not exceed San Diego County's noise standards. Impacts are less than significant.

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

Construction, Operation and Maintenance, and Decommissioning

This alternative is not located within an active airport land use plan or within 2 miles of a public airport. Therefore, this alternative would not expose people working in the project area to excessive noise levels and no impact is identified.

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

Construction, Operation and Maintenance, and Decommissioning

A private airstrip is located on Rough Acres Ranch off McCain Valley Road; however, it is currently nonoperational and will remain as such in the future. No impacts are identified.

The overall noise impacts of the Alternate Transmission Line #3 and Collector Substation Alternative would be similar to those of the proposed project described in Section 3.3.3.

Operation and Maintenance Facility Location #1 Alternative

The O&M Facility Location #1 Alternative would be located on private property (T17S R7E Sec4), north of the alternate collector substation and located west of McCain Valley Road, as shown in **Figure 2.0-13**. This alternative would consist of separating the 5-acre O&M building site from the collector substation; however, both would remain on Rough Acres Ranch property. Alternate Transmission Line #2 would be utilized under this alternative as well as the Alternate Overhead Collector System consisting of two 34.5 kV lines connecting the turbines to the alternate collector substation. All other elements of the project including the turbine locations, parking and laydown areas, and batch plant would remain as described in the proposed project.

This alternative is estimated to have the same land disturbance impacts as the Alternate Transmission Line #2 and Collector Substation Alternative. However, by relocating the O&M building site to the northern portion of Rough Acres Ranch, this alternative would require an approximately 650-foot new access road to be constructed on the west of McCain Valley Road, thus necessitating an approximate 0.07 acres of permanently impacted area and a temporary impact of 0.55 acres. In comparison to the proposed project, this alternative would decrease the land disturbance by approximately 2.5 acres, from 772.7 acres to 775.2 acres. The 138 kV transmission line would decrease in distance as a result of this alternative from 9.7 miles to 3.8 miles and would decrease the amount of transmission line poles from 116 poles to 44 poles. The 34.5 kV overhead collector lines would increase in distance from 9.4 miles to 17 miles, and would increase the amount of collector line poles from 250 to 452 poles. The underground collector lines would decrease in distance from 29.3 miles to 28.9 miles.

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

Construction, Operation and Maintenance, and Decommissioning

Any noise associated with the construction of the O&M building would be in compliance with the San Diego County's noise standard outlined in **Table 3.12-5**. Construction noise for the O&M facility under this alternative would be similar to that identified for the project and would not be significant. Ongoing operation and maintenance under this alternative would not generate a greater level of noise than that identified for the project. The same number of operations staff and trips would be required.

Noise levels of decommissioning activities will not be above those approved for initial construction. Decommissioning operations are not expected to reach significant noise levels nor is any equipment expected to increase noise levels. Measures similar to those taken during construction will prevent a significant noise impact during decommissioning. Implementation of this alternative would result in the same impacts as the proposed project. Temporary construction activities and long term operation and maintenance of the proposed project would not exceed San Diego County's noise standards. Impacts are less than significant.

Exposure of persons to or generation of excessive groundborne vibration or groundborne noise level

Construction, Operation and Maintenance, and Decommissioning

Ground-borne vibration or ground-borne noise levels under this alternative due to construction, operation and maintenance would be similar to those identified for the proposed project. The relocation of the O&M building does not result in any significant increase in ground-borne vibration or ground-borne noise levels compared to those identified for the project.

Decommissioning activities would not be characterized as creating excessive ground-borne vibrations or noise levels. All management plans, BMPs, and stipulations developed for the construction phase will be applied to similar activities during the decommissioning phase. Impacts are less than significant.

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

The relocation of the O&M building will not create a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. Impacts are less than significant.

A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Relocation of the O&M building for this alternative as shown in **Figure 2.0-13** would not have a substantial temporary or periodic increase in ambient noise levels. Temporary construction and decommissioning activities and long term operation and maintenance of the proposed project would not exceed San Diego County's noise standard outlined in **Table 3.12-5**. Impacts are less than significant.

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

Construction, Operation and Maintenance, and Decommissioning

This alternative is not located within an active airport land use plan or within 2 miles of a public airport. Therefore, this alternative would not expose people working in the project area to excessive noise levels and no impact is identified for this issue area for this alternative.

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

Construction, Operation and Maintenance, and Decommissioning

A private airstrip is located on Rough Acres Ranch off McCain Valley Road; however, it is currently non-operational and will remain as such in the future. No impacts are identified.

The overall noise impacts of the Operation and Maintenance Facility Location #1 Alternative would be similar to those of the proposed project described in Section 3.3.3.

Operation and Maintenance Facility Location #2 Alternative

The O&M Facility Location #2 Alternative would be located on private property, (T17S R7E Sec 16), south of the alternate collector substation and located west of McCain Valley Road, as illustrated in **Figure 2.0-13**. This alternative would consist of separating the 5-acre O&M building site from the collector substation; however, both would remain on Rough Acres Ranch property. Alternate Transmission Line #2 would be utilized under this alternative as well as the Alternate Overhead Collector System consisting of two 34.5 kV lines connecting the turbines to the alternate collector substation. All other elements of the project including the turbine locations, parking and laydown areas, and batch plant would remain as described in the proposed project.

This alternative is estimated to have the same land disturbance impacts as the Alternate Transmission Line #2 and Collector Substation Alternative. However, by relocating the O&M building site to the southern portion of Rough Acres Ranch, this alternative would result in a very slight difference (of 1.0 acres of permanent impacts and 0.08 acres of temporary impacts resulting from the construction of new access roads than those described in **Table 2.0-10**. In comparison to the proposed project, this alternative would increase the land disturbance by approximately 2.0 acres; from 772.7 acres to 774.7 acres. The 138 kV transmission line would decrease in distance as a result of this alternative from 9.7 miles to 3.8 miles and would decrease the amount of transmission line poles from 116 poles to 44 poles. The 34.5 kV overhead collector lines would increase in distance from 9.4 miles to 17 miles, and would increase the amount of collector line poles from 250 to 452 poles. The underground collector lines would decrease in distance from 29.3 miles to 28.9 miles.

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

Construction, Operation and Maintenance, and Decommissioning

The location for the O&M building under this alternative would be near Rough Acres Ranch which is considered a sensitive receptor. However, any noise associated with the construction, operation and maintenance, and decommissioning of the O&M building would be in compliance with the San Diego County's noise standard outlined in **Table 3.12-5**. The same number of operations staff and trips would be required. Implementation of this alternative would result in the same impacts as the proposed project. Impacts are less than significant.

Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

Construction, Operation and Maintenance, and Decommissioning

Ground-borne vibration or ground-borne noise levels under this alternative due to construction, operation and maintenance, and decommissioning would be similar to those identified for the proposed project. The relocation of the O&M building does not result in any significant increase in ground-borne vibration or ground-borne noise levels. Impacts are less than significant.

A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

The construction, operation and maintenance, and decommissioning of the O&M building would not create a permanent noise increase The noise sources would be the same for this alternative as for the proposed project and impacts would be less than significant.

A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

Construction, Operation and Maintenance, and Decommissioning

Relocation of the O&M building for this alternative as shown in **Figure 2.0-13** would not result in an increase in noise levels in the vicinity of the project area beyond those discussed in Section 3.12.3 for the proposed project. Temporary construction and decommissioning activities and long term operation and maintenance of the proposed project would not exceed San Diego County's noise standard outlined in **Table 3.12-5**. Implementation of this alternative would result in the same impacts as the proposed project. Impacts are less that significant.

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

Construction, Operation and Maintenance, and Decommissioning

This alternative is not located within an active airport land use plan or within 2 miles of a public airport. Therefore, this alternative would not expose people working in the project area to excessive noise levels. No impact is identified.

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

Construction, Operation and Maintenance, and Decommissioning

A private airstrip is located on Rough Acres Ranch off McCain Valley Road; however, the airstrip is currently non-operational and will remain as such in the future. No impact is identified for this issue area for this alternative.

The overall noise impacts of the Operation and Maintenance Facility Location #2 Alternative would be similar to those of the proposed project described in Section 3.3.3.

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