

APPENDIX H

Noise Analysis



Noise Analysis for the
Quail Valley Subarea 4 Project
Menifee, California

Prepared for
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Acronyms and Abbreviations

Caltrans	California Department of Transportation
CalEEMod	California Emissions Estimator Model
CEQA	California Environmental Quality Act
City	City of Menifee
CNEL	community noise equivalent level
dB	Decibel
dB(A)	A-weighted decibel
District	Eastern Municipal Water District
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
in/sec	inch per second
L_{eq}	one-hour equivalent noise level
L_{max}	maximum equivalent noise level
L_{pw}	sound power level
LS	Lift Station
Municipal Code	Menifee Municipal Code
PPV	peak particle velocity
proposed project	Quail Valley Subarea 4 Project

Executive Summary

The Quail Valley Subarea 4 Project (proposed project) is located within the Quail Valley community in the city of Menifee, California. The proposed project site consists of a mix of developed and undeveloped land with single-family residences found on a grid of small neighborhood roads. The proposed project would construct approximately 10 miles of 8-inch and 12-inch polyvinyl chloride gravity main pipe, approximately 1.1 miles of force mains, 247 manholes, 24 connector pipes, 1 regional lift station (LS-1), and 4 smaller lift stations (LS-2, LS-3, LS-4, and LS-5) in order to provide sewer connections for residences that are currently served by septic systems.

This report evaluates potential noise and vibration impacts associated with construction and operation of the proposed project. This report evaluates the potential for noise to impact adjacent receivers from on-site sources and construction activity. A summary of the findings is provided below.

Construction Noise

Residential Uses

The Federal Transit Administration (FTA) considers a daytime exterior construction noise level of 80 A-weighted decibels average noise level [dB(A) L_{eq}] as a reasonable threshold for noise sensitive residential land use. Additionally, the City of Menifee (City) regulates noise in accordance with Sections 8.01.010 and 9.210.060(C) of the Menifee Municipal Code (Municipal Code). Construction within one-fourth mile from an occupied residence shall be permitted Monday through Saturday, except nationally recognized holidays, 6:30 a.m. to 7:00 p.m. There shall be no construction permitted on Sunday or nationally recognized holidays unless approval is obtained from the City Building Official or City Engineer. Construction noise levels at the residential receivers adjacent to LS-1 (Option 1), LS-2 (Option 2), LS-2, and LS-4 are not projected to exceed 80 dB(A) L_{eq} . Noise impacts due to construction activities in these areas would be less than significant. Noise levels would exceed 80 dB(A) L_{eq} at the residence located closest to LS-3 and at the residence located closest to LS-5. Mitigation measure NOI-1 would require the construction of a temporary 8-foot barrier along the eastern property boundary of LS-3 bordering a residential property and NOI-2 would require the construction of a temporary 6-foot barrier along the eastern property boundary of LS-5 bordering a residential property. These temporary barriers would reduce construction noise to a level less than significant.

For pipeline construction activities that would occur within the right-of-way, noise levels due to operation of an excavator would attenuate to 80 dB(A) L_{eq} at a distance of approximately 55 feet. Residential uses are located closer than 55 feet from the construction areas, and noise levels would have the potential to exceed 80 dB(A) L_{eq} at the residential uses located throughout the proposed project site without implementation of any noise reduction measures. Best management practices outlined in Section 2.5, Environmental Commitments, would be implemented by the project to reduce noise from all construction activities. Implementation of construction noise best management practices would reduce noise generated by all construction activities; however, the degree to which construction noise levels would be reduced cannot be known at the level of analysis. Due to the close

proximity of residential uses throughout the proposed project site, noise impacts associated with construction activities would remain significant and unavoidable.

Sensitive Wildlife Species

Potentially suitable coastal California gnatcatcher and the least Bell's vireo habitat was identified within and adjacent to the proposed project site. The noise level limit for these sensitive species is 60 dB(A) L_{eq} . This analysis identifies the potential habitat areas that could be impacted by construction noise. If coastal California gnatcatcher or least Bell's vireo are present within these areas, noise impacts during the breeding season would be potentially significant. Mitigation measures identified in the Biological Resources Report (BIO-6b and BIO-7b) would reduce these impacts to a level less than significant.

Construction-Related Traffic Noise

Working, hauling, and delivery trips would be generated during project construction. Based on California Emissions Estimator Model modeling prepared as part of the Air Quality Analysis, it was calculated that the proposed project would generate up to 30 daily worker trips and 21 daily hauling trips. These trips would be added to the roadway network during the duration of the construction activities. It was calculated that construction-related vehicle trips would generate a noise level of approximately 53 community noise equivalent level (CNEL) at 20 feet from a roadway centerline. The Menifee General Plan Noise Element establishes land use compatibility levels for community noise environments. For low-density residential land uses, the normally acceptable and conditionally acceptable noise levels are 60 CNEL and 70 CNEL, respectively. Noise levels would be well less than the compatibility standards and impacts would be less than significant.

Operational Noise

Operational noise would result from the periodic emergency generator testing at the lift stations. All other lift station equipment would be in underground wells and would not generate significant noise levels. The below-ground pipeline would not generate noise during operation. Noise may also be associated with occasional vehicle maintenance trips, but these trips would be negligible.

As calculated in this analysis, noise levels due to the periodic testing of the emergency generators are not anticipated to exceed the City's stationary noise standard of 65 dB(A) L_{eq} at the adjacent residential receivers or the noise level limit of 60 dB(A) L_{eq} at the adjacent habitat areas. Testing would only occur during the daytime hours. In order to ensure that noise levels do not exceed those modeled in this analysis, the emergency generator must meet the performance requirements specified in mitigation measure NOI-3. With implementation of mitigation measure NOI-3, noise impacts due to emergency generator testing would be reduced to a level less than significant.

Vibration

Construction equipment could include equipment such as loaded trucks, excavators, small dozers, and loaders. Vibration levels from these pieces of equipment would generate vibration levels with a peak particle velocity (PPV) ranging from 0.035 to 0.076 inch per second (in/sec) PPV at 25 feet. A vibration level of 0.076 in/sec PPV at 25 feet would be 0.2 in/sec at 10 feet. Equipment would operate within the right-of-way and at the lift station sites. The right-of-way in the proposed project site is 20 feet, and equipment would not operate as close as 10 feet from a structure. Therefore, vibration levels are not anticipated to exceed 0.2 in/sec PPV and construction vibration impacts would be less than significant.

1.0 Introduction

This report evaluates the significance of potential noise and vibration impacts that may be generated by the proposed Quail Valley Subarea 4 Project (proposed project). This report characterizes existing conditions at the proposed project site, identifies applicable rules and regulations, and assesses noise and vibration impacts from construction and operation of the proposed project. The significance of potential impacts is assessed based on noise standards established by the Eastern Municipal Water District (District), the City of Menifee (City), and the Federal Transit Administration (FTA).

1.1 Noise Terminology

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease. Additionally, in technical terms, sound levels are described as either a “sound power level” or a “sound pressure level,” which while commonly confused, are two distinct characteristics of sound.

Both share the same unit of measure, the dB. However, sound power, expressed as L_{pw} , is the energy converted into sound by the source. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an eardrum or microphone and is the sound pressure level. Noise measurement instruments only measure sound pressure, and noise level limits used in standards are generally sound pressure levels.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the “A-weighted” noise scale is used for measurements and standards involving the human perception of noise. Noise levels using A-weighted measurements are designated with the notation dB(A).

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. The noise descriptors used for this study are the one-hour equivalent noise level (L_{eq}) and the maximum equivalent noise level (L_{max}). The L_{max} is the maximum generated noise level while the L_{eq} is the average noise level over a specified period of time, typically one-hour. Sound from a small, localized source (approximating a “point” source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site (such as parking lots or smooth bodies of water) receives no additional ground attenuation, and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. A soft site (such as soft dirt, grass, or scattered bushes and trees) receives an additional ground attenuation value of 1.5 dB(A) per doubling of distance. Thus, a point source over a soft site would attenuate at 7.5 dB(A) per doubling of distance.

Human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 dB(A) barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation [Caltrans] 2013).

1.2 Vibration Fundamentals

Vibration is oscillatory movement of mass (typically a solid) over time. It is described in terms of frequency and amplitude and, unlike sound, can be expressed as displacement, velocity, or acceleration. For environmental studies, vibration is often studied as a velocity that, akin to the discussion of sound pressure levels, can also be expressed in dB as a way to cast a large range of quantities into a more convenient scale and with respect to a reference quantity. Vibration impacts to buildings are generally discussed in terms of inch per second (in/sec) peak particle velocity (PPV), which will be used herein to discuss vibration levels for ease of reading and comparison with relevant standards. Vibration can also be annoying and thereby impact occupants of structures, and vibration of sufficient amplitude can disrupt sensitive equipment and processes (Caltrans 2020), such as those involving the use of electron microscopes and lithography equipment. Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities where sudden releases of subterranean energy or powerful impacts of tools on hard materials occur. Depending on their distances to a sensitive receptor, operation of large bulldozers, graders, loaded dump trucks, or other heavy construction equipment and vehicles on a construction site also have the potential to cause high vibration amplitudes.

2.0 Project Description

2.1 Project Background and History

The Quail Valley community is situated within the service area of the District. Quail Valley has experienced ongoing failures of private septic systems that pose a threat to public health and water quality, both within the community and downstream in Canyon Lake. As a vital water source, residential area, and recreational destination, Canyon Lake serves the public in multiple capacities.

In response to these challenges, the District and other key stakeholders—including Riverside County, the California Department of Public Health, the Elsinore Valley Municipal Water District, the City of Canyon Lake, and the City of Menifee—have collaboratively explored long-term solutions. The goal of this multi-agency effort is to implement a comprehensive, community-wide sewer collection system that would protect water resources, improve public health, and enhance the overall quality of life for Quail Valley residents.

In 2005, the District completed the Quail Valley Sewer Improvements Alternatives Study, which divided the community into nine subareas and provided planning level cost estimates for each subarea. The proposed project would consist of improvements within Quail Valley Subarea 4, which represents the second phase of the overall sewer infrastructure effort, following upgrades associated with Subarea 9 that began in 2019.

2.2 Project Objectives

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15124(b), the following primary objectives support the purpose of the proposed project, assist the lead agency in developing a reasonable range of alternatives to be evaluated in this report, and ultimately aid decision-makers in preparing findings and overriding considerations, if necessary. The proposed project objectives are as follows:

- Establish a robust and comprehensive wastewater collection and conveyance system that provides consistent and reliable service to all Quail Valley Subarea 4 residences consistent with established District standards; and
- Safeguard public health, public water resources, and enhance the overall well-being of the Quail Valley and Canyon Lake communities.

2.3 Project Location

The proposed project is located within the Quail Valley community in the city of Menifee, California (Figure 1). It encompasses Subarea 4, which is one of nine subareas within the Quail Valley community (Figure 2). Subarea 4 lies approximately 1.5 miles north of Newport Road and 2.8 miles west of Interstate 215 in southwestern Riverside County, California. The proposed project site consists of a mix of developed and undeveloped land with single-family residences found on a grid of small neighborhood roads (Figure 3). In total, Subarea 4 contains 1,368 lots, approximately 525 of which are currently served by septic systems.

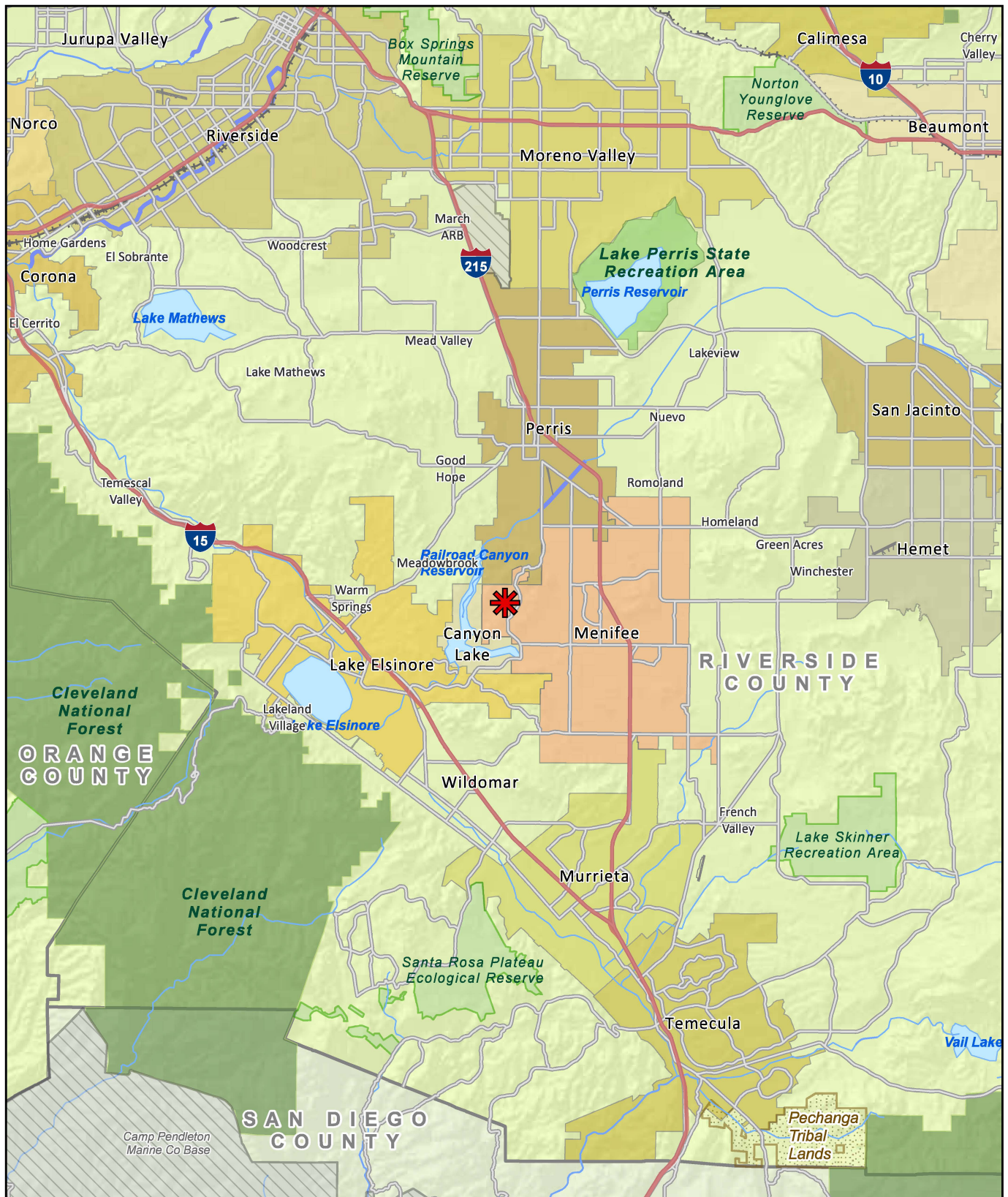
2.4 Project Description

The proposed project would construct approximately 10 miles of 8-inch and 12-inch polyvinyl chloride gravity main pipe, approximately 1.1 miles of force mains, 247 manholes, 24 connector pipes, 1 regional lift station (LS-1), and 4 smaller lift stations (LS-2, LS-3, LS-4, and LS-5). LS-1 would convey the majority of wastewater flows originating from Subarea 4. To connect Subarea 4 to LS-1, 24 connector pipes would be installed to link streets, thereby facilitating gravity flows. To accomplish this, connector pipes would be required to traverse private properties.

Gravity flows cannot be fully achieved in the northwest portion of Subarea 4 due to varied topography. To adjust to this, lift stations LS-2 through LS-5 would pump wastewater via a shared force main to Collection Manhole 2, located at the intersection of La Bertha Lane and Mountain View Place, before ultimately discharging to LS-1. From LS-1, flows would be pumped to Collection Manhole 1 located at the intersection of Wells Place and Goetz Road. Collection Manhole 1 would connect to sewer infrastructure in Goetz Road (Goetz Road Sewer Backbone). The Goetz Road Sewer Backbone Project underwent its own environmental review in 2024. It is expected to be approved by the District Board of Directors [to be provided]. Should the Goetz Road Sewer Backbone Project not be approved by the District, sewer flows would connect to existing infrastructure within Goetz Road.

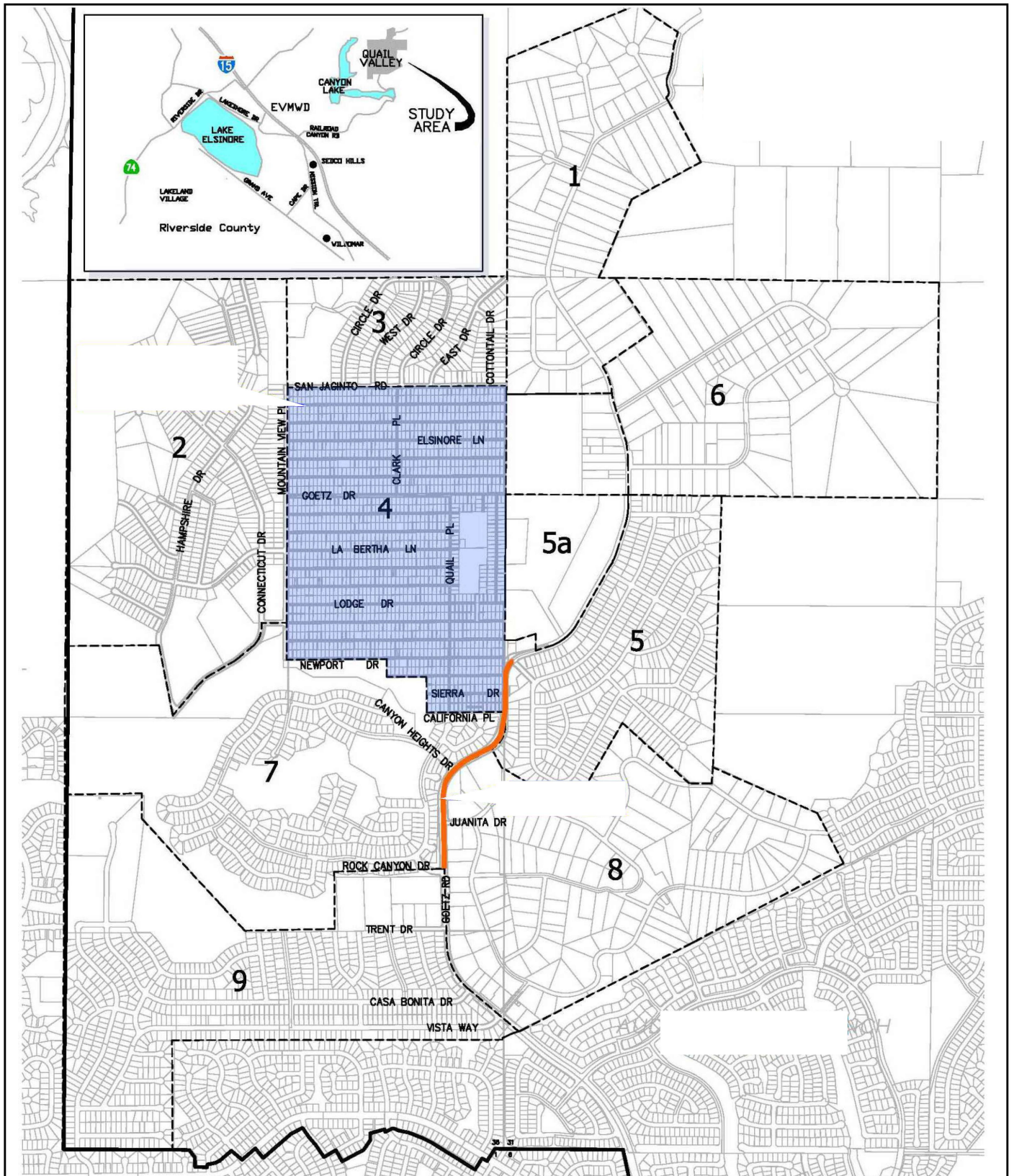
2.4.1 Project Phasing

Construction is planned to be carried out in eight phases, to be implemented over an approximately 20-year period. Figure 4 shows the proposed project phases and lift station locations, while Table 1 summarizes the sewer system elements by phase. Construction phasing may be adjusted based on grant funding availability, stakeholder participation, and implementation of the District's Capital Improvement Program.



 Project Location

FIGURE 1
Regional Location



- Sewer Subarea Basin Boundary
- EMWD Service Area Boundary
- Goetz Road Sewer Backbone
- Subarea 4

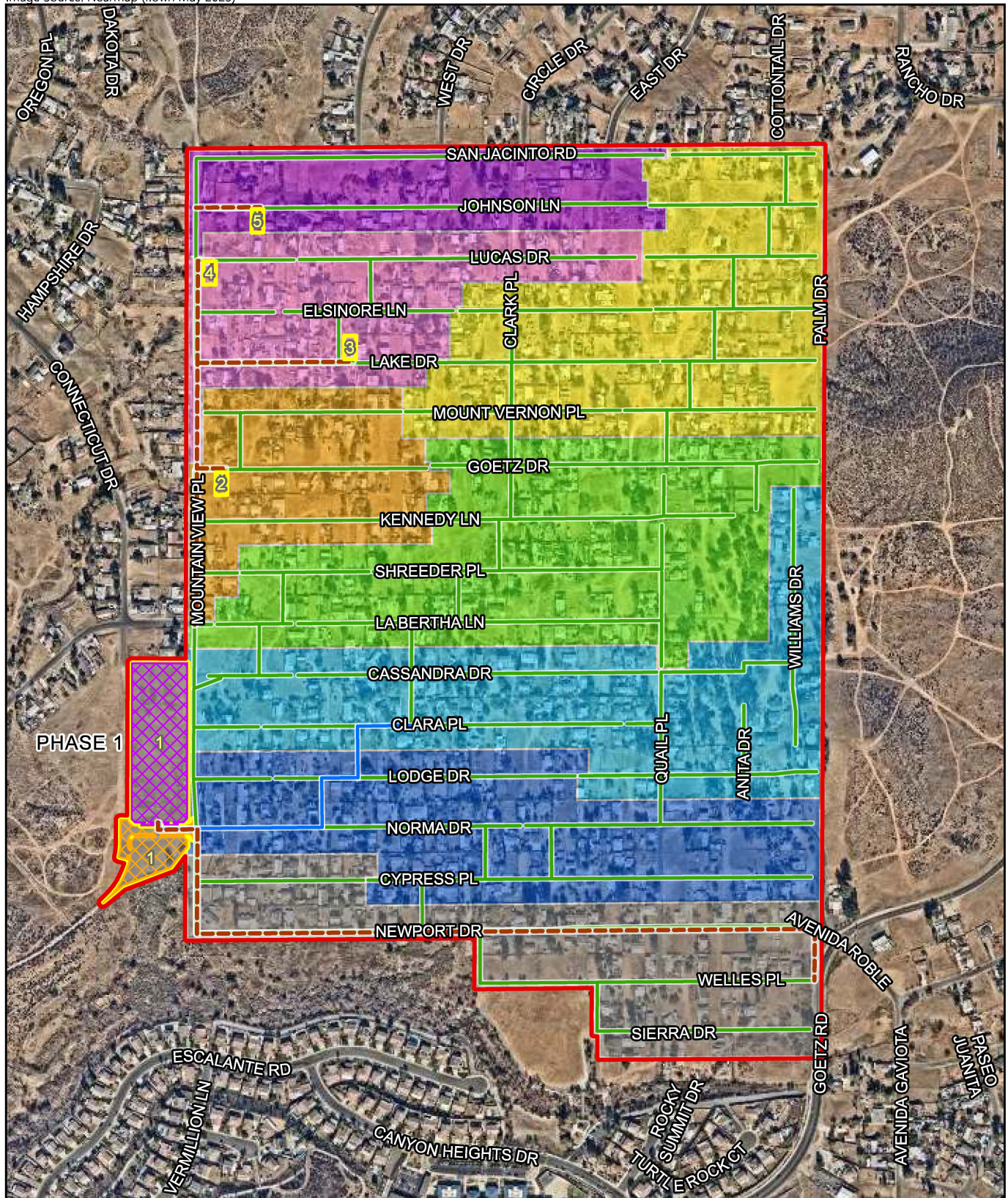


FIGURE 2
Quail Valley Subareas



- Project Boundary
- LS-1 Option 1
- LS-1 Option 2

0 Feet 600



- Project Boundary
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

- Sewer Force Main
- 12" Gravity Sewer
- 8" Gravity Sewer

Phase

- | | |
|---|--|
| 1 | 5 |
| 2 | 6 |
| 3 | 7 |
| 4 | 8 |



FIGURE 4
Proposed Project

Table 1
Sewer System Elements by Phase

Phase	Length of Sewer (linear feet)	Length of Force Main (linear feet)	Lift Stations (LS)	Number of Manholes	Number of Septic Systems
Phase 1	6,568	3,421	LS-1	27	80
Phase 2	7,504	0	-	29	84
Phase 3	8,426	0	-	42	86
Phase 4	8,740	0	-	45	83
Phase 5	8,631	0	-	45	75
Phase 6	3,994	994	LS-2	18	36
Phase 7	4,770	1,598	LS-3, LS-4	24	53
Phase 8	4,280	283	LS-5	17	28

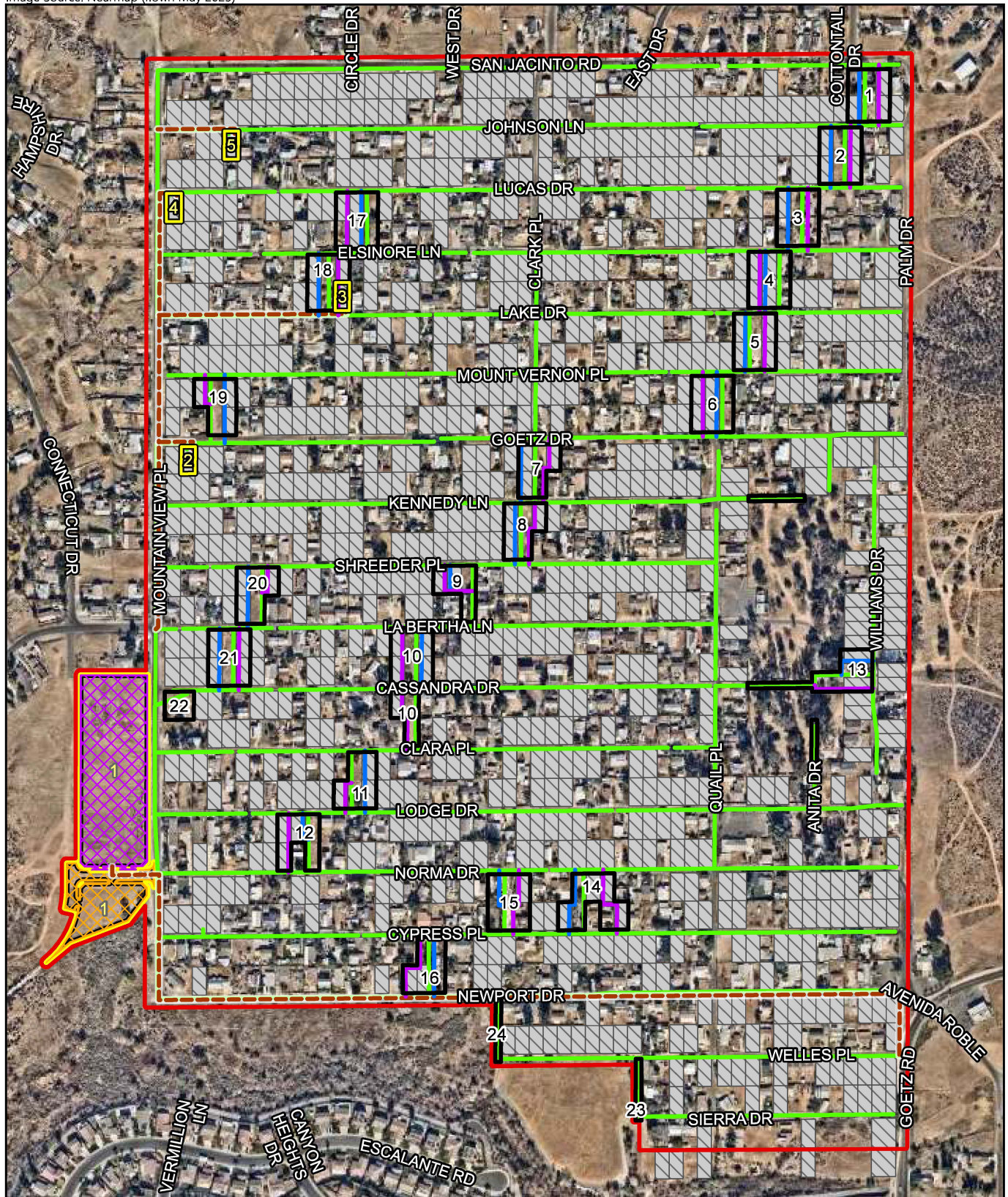
2.4.2 Regional Lift Station (LS-1) Options

The proposed project identifies two potential site options for LS-1. The two site options were chosen based on the location to sewer infrastructure, terrain, size, and accessibility. The site chosen requires adequate space to accommodate station facilities, designated areas for chemical storage, and access for maintenance vehicles. Although the lift station options are located immediately west of the boundaries of Subarea 4, both would be constructed and designed to serve the proposed project. The two sites include the following:

- Option 1 is located southwest of the intersection of Norma Drive and Mountain View Place. The site is currently undeveloped and would require acquisition of assessor parcel number 351-200-006.
- Option 2 is located northwest of the intersection of Norma Drive and Mountain View Place. The site is currently undeveloped and would require acquisition of assessor parcel number 350-020-025.

2.4.3 Property Acquisitions and Easements

To maximize use of a gravity system and minimize the need for lift stations, pipelines would be strategically routed between parallel streets via undeveloped parcels. The 24 connector pipes would cross undeveloped parcels the District intends to acquire or gain access to by acquiring ownership or obtaining sewer easements. In cases where property acquisition or easements are not feasible, alternative routing scenarios for the connector pipes could be implemented. Figure 5 identifies potential property acquisition or easement needs and the various routing options. In the event property acquisition/easement is infeasible, the design would need to be modified in the detailed design phase to adjust to this limitation.



- | | |
|--|---|
| Project Boundary | Property Acquisition or Easement Needs |
| Lift Station (LS) | Gravity Sewer w/Connector Pipe Option 1 |
| LS-1 Option 1 | Connector Pipe Option 2 |
| LS-1 Option 2 | Connector Pipe Option 3 |
| Vacant Lots | Sewer Force Main |



The District would need to acquire properties for development of the five proposed lift stations. Table 2 lists the parcels that the District anticipates would need to be acquired for the proposed lift stations. The final lift station locations would ultimately depend on successful property acquisition and would be finalized during each phase.

Table 2 Property Acquisition Needs for Lift Station Sites	
Lift Station	Property Acquisition Needs (assessor parcel number)
LS-1 Option 1 ¹	351-200-006
LS-1 Option 2	350-020-025
LS-2	350-221-002
LS-3	350-191-039
LS-4	350-113-001
LS-5	350-112-005
¹ Alternative 2 in the Preliminary Design Report	

2.4.4 Construction Access and Staging

Narrow street widths within the proposed project site present construction access and staging challenges. While excavation equipment is expected to fit within the existing right-of-way, navigating around obstacles such as electrical poles with light fixtures, and mailboxes constrains access. The interior streets rights-of-way are all 20 feet wide and one-way access; thus, street closures would be required during construction. Special excavation equipment may be required when excavating in locations with shallow bedrock subsurface conditions.

Temporary staging and stockpiling of materials during construction is expected to occur within the street right-of-way. When construction is inactive, excavation equipment and pipe materials would be relocated to a designated staging and spoils area. Properties identified for acquisition could also serve as staging and spoils locations. It is possible that some or all of these staging properties could be graded. Grading and erosion control plans would be required for these stockpile areas. These easements would accommodate staging needs, though spoil storage would not be permitted.

2.4.5 Septic Tank Conversion

Construction and operation of the lift stations and sewer system is required prior to initiating septic sewer conversions. The District would need right-of-entry agreements prior to constructing sewer laterals and abandoning existing septic tanks. The conversion process involves several key steps to ensure continued service for homeowners while adhering to environmental and safety standards:

- Trench to the property line;
- Locate, trench, and expose the lateral between the house and septic tank, which involves trenching and removing obstructions, such as existing hard-surface paving, vegetations, landscaping, planters, access gate, fencing/block wall, etc.;

- For some laterals and septic tanks that are under existing structures, alternative lateral alignment would be designed and property owner's approval obtained;
- Install a 4-inch Schedule 40 polyvinyl chloride sewer lateral;
- Backfill trench and restore in kind obstructions mentioned above;
- Pump out all water and puncture the septic tank;
- Fill the emptied tank with concrete; and
- Obtain inspection and approval of the abandonment from the County of Riverside.

If the septic tank conversion for existing residences cannot proceed within 12 months of completion of the District's wastewater collection system due to the absence of a right-of-entry agreement, the parcel owner would be responsible for coordinating the design, construction, and associated costs of septic tank abandonment and connection to the main sewer line stub.

2.5 Environmental Commitments

Environmental commitments consist of physical design features and operational practices that are integral to the proposed project. Environmental commitments apply to the proposed project and to subsequent phase-specific projects, as applicable.

Environmental commitments represent inherent characteristics of the proposed project that avoid or reduce the potential for environmental impacts. Accordingly, these commitments are assumed in the impact analysis and are considered in determining the significance of environmental effects.

2.5.1 Construction Noise Best Management Practices

The following best management practices related to noise would be implemented during construction:

1. the District shall conduct construction activities between 6:30 a.m. to 7:00 p.m., Monday through Saturday, in accordance with the City Municipal Code Sections 8.01.010 and 9.210.060(C).
2. Prior to construction, the District, in coordination with the construction contractor, shall provide written notification to all properties within 300 feet of the Quail Valley Subarea 4 Project informing occupants of the type and duration of construction activities. Prior to construction commencement, the District program manager shall establish a noise complaint process to allow for resolution of noise problems. This process shall be clearly described in the notifications.
3. Stationary noise-generating equipment shall be located as far from sensitive receptors as possible. Such equipment shall also be oriented to minimize noise that would be directed toward sensitive receptors. Whenever possible, other non-noise generating equipment

(e.g., roll-off dumpsters) shall be positioned between the noise source and sensitive receptors.

4. Equipment and staging areas shall be located as far from sensitive receptors as possible. At the staging location, equipment and materials shall be kept as far from adjacent sensitive receptors as possible.
5. Construction vehicles and equipment shall be maintained in the best possible working order; operated by an experienced, trained operator; and shall utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds).
6. Unnecessary idling of internal combustion engines shall be prohibited. In practice, this would require turning off equipment if it would idle for five or more minutes.
7. Electrically powered equipment shall be used instead of pneumatic or internal combustion powered equipment, where feasible.
8. The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.

3.0 Applicable Standards

The District, as a public agency, is not subject to other jurisdictional agencies' established noise standards. Likewise, as a public agency, the District is not subject to the City or County of Riverside ordinances and would not be required to obtain variances. The District has not established an applicable noise standard of its own for permanent or temporary ambient noise levels. However, the District follows a "good neighbor" approach to adhering to local noise standards. The noise standards of the FTA and the City are used for the purposes of evaluating the significance of the proposed project's noise levels for the purposes of this analysis under both CEQA and NEPA.

3.1 Federal

Federal noise policies and programs are developed by federal agencies of the U.S. Department of Transportation through its various operating agencies, i.e., the Federal Aviation Administration, the FTA, and the Federal Highway Administration (FHWA). According to the FTA, project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. The FTA considers a daytime exterior construction noise level of 80 dB(A) L_{eq} as a reasonable threshold for noise sensitive residential land use (FTA 2018).

3.2 City of Meniffee

3.2.1 Municipal Code

The City regulates construction noise by establishing allowable hours in its Municipal Code.

Section 8.01.010, Hours of Construction, of the City's Municipal Code states the following:

Any construction within the city located within one-fourth mile from an occupied residence shall be permitted Monday through Saturday, except nationally recognized holidays, 6:30 a.m. to 7:00 p.m. There shall be no construction permitted on Sunday or nationally recognized holidays unless approval is obtained from the City Building Official or City Engineer.

The City also regulates noise through Section 9.210.060, Noise Control Regulation, of the Municipal Code. Section 9.210.060(C) states the following:

- C. Construction-Related Exemptions. Exceptions may be requested from the standards set forth in Section 9.210.060 of this chapter and may be characterized as construction-related, single event or continuous events exceptions.
 - 1. Private construction projects, with or without a Building Permit, located one-quarter of a mile or more from an inhabited dwelling.
 - 2. Private construction projects, with or without a building permit, located within one-quarter of a mile from an inhabited dwelling, shall be permitted Monday through Saturday, except nationally recognized holidays, 6:30 a.m. to 7:00 p.m., or specified in Section 8.01.010. There shall be no construction permitted on Sunday or nationally recognized holidays unless approval is obtained from the City Building Official or City Engineer.
 - 3. Construction-related exceptions. If construction occurs during off hours or exceeds noise thresholds, an application for a construction-related exception shall be made using the temporary use application provided by the Community Development Director in Chapter 9.105 of this Title. For construction activities on Sunday or nationally recognized holidays, Section 8.01.010 of this Code shall prevail.

Section 9.210.060(D) of the Municipal Code states the following:

- D. General Sound Level Standards. No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior and interior sound level on any other occupied property to exceed the sound level standards set forth in Table 9.210.060-1, Stationary Source Noise Standards.

These standards are summarized in Table 3.

Table 3 City of Menifee Stationary Source Noise Standards		
	Interior Standards	Exterior Standards
10:00 p.m. to 7:00 a.m.	40 dB(A) L_{eq} (10-minute)	45 dB(A) L_{eq} (10-minute)
7:00 a.m. to 10:00 p.m.	55 dB(A) L_{eq} (10-minute)	65 dB(A) L_{eq} (10-minute)
SOURCE: City of Menifee Municipal Code Section 9.210.060(D).		

3.2.2 General Plan

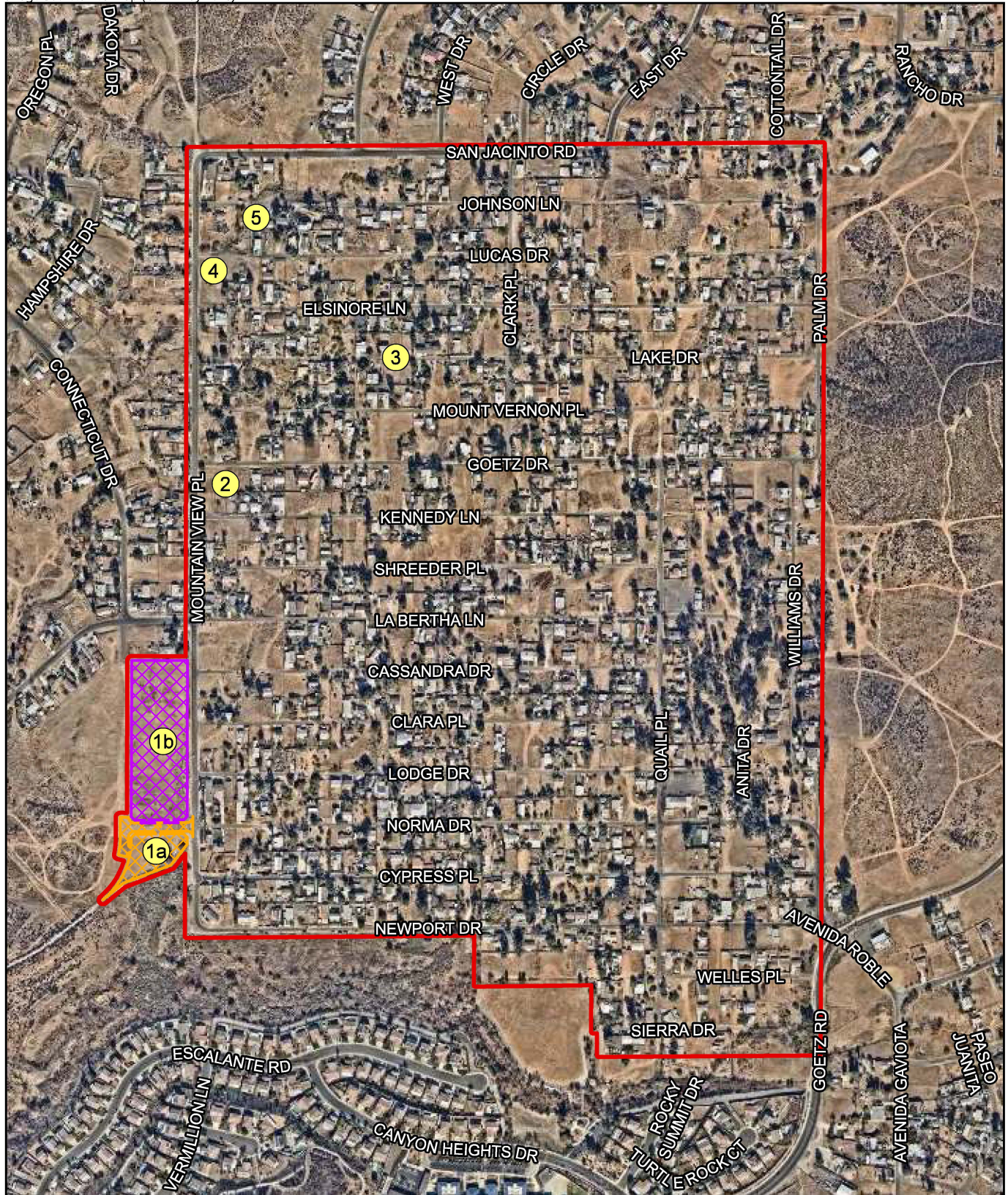
The Noise Element of the City's General Plan outlines the City's planning policies and objectives to prevent future noise incompatibilities. The City's noise compatibility standards for residential uses were used to analyze impacts associated with off-site construction-related traffic. Single-family residential land uses are considered normally acceptable with noise levels up to 60 community noise equivalent level (CNEL), conditionally acceptable with noise levels up to 70 CNEL, normally unacceptable with noise levels up to 75 CNEL, and clearly unacceptable with noise levels above 75 CNEL (City of Menifee 2013).

4.0 Existing Conditions

Existing noise levels at the proposed project site were measured on July 23, 2025, using one Larson-Davis LxT Sound Expert Sound Level Meter, serial number 3896. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Time History Period:	5 seconds

The meter was calibrated before and after the measurements. The meter was set 5 feet above the ground level for each measurement. Noise measurements were taken to obtain typical ambient noise levels at the proposed project site and in the vicinity. The weather was warm and sunny. Six 15- to 60-minute measurements were taken at each of the lift station locations. Measurement 1a was located at LS-1 Option 1, measurement 1b was located at LS-1 Option 2, and measurements 2 through 5 were located at LS-2 through LS-5, respectively. Noise sources at each of the measurement locations are typical of rural residential neighborhoods and included occasional vehicles on neighborhood roadways, aircraft flyovers, barking dogs, roosters, and chickens. The measurement locations are shown on Figure 6, and detailed data is presented in Attachment 1. Measured noise levels are summarized in Table 4.



-  Project Boundary
-  LS-1 Option 1
-  LS-1 Option 2
-  Measurements

FIGURE 6
Noise Measurement Locations

Table 4 Noise Measurements				
Measurement	Location	Time (Duration)	Noise Sources	L _{eq}
1a	LS-1 Option 1	10:23 a.m. – 10:53 a.m. (30 minutes)	Vehicle traffic on Mountain View Place, aircraft, dogs, roosters, bird vocalizations	49.8
1b	LS-1 Option 2	11:02 a.m. – 12:02 p.m. (60 minutes)	Vehicle traffic on Mountain View Place, aircraft, dogs, roosters, bird vocalizations	48.0
2	LS-2	12:46 p.m. – 1:16 p.m. (30 minutes)	Vehicle traffic on Mountain View Place, aircraft, dogs, roosters, bird vocalizations	49.3
3	LS-3*	1:24 p.m. – 1:39 p.m. (15 minutes)	Aircraft, chickens	41.3
4	LS-4	2:29 p.m. – 2:59 p.m. (30 minutes)	Vehicle traffic on Mountain View Place, aircraft	48.2
5	LS-5	2:01 p.m. – 2:16 p.m. (15 minutes)	Vehicle traffic on Mountain View Place, aircraft	42.4
NOTE: Noise measurement data is contained in Attachment 1.				
*Measurement 3 was located four lots east of LS-3; however, noise levels at each location are considered equivalent.				

5.0 Analysis Methodology

Noise level predictions and contour mapping for the proposed lift station sites were developed using noise modeling software, SoundPlan Essential, version 4.1 (Navcon Engineering 2018). SoundPLAN calculates noise propagation based on the International Organization for Standardization method (ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors). The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The model outputs can be developed as noise level contour maps or noise levels at specific receivers. In all cases, receivers were modeled at five feet above ground elevation, which represents the average height of the human ear.

5.1 Construction Noise Analysis

Noise impacts from construction are a function of the noise generated by equipment, the location and sensitivity of nearby land uses, and the timing and duration of the noise generating activities. Table 5 presents a list of noise generation levels for various types of equipment anticipated to be used for construction of the proposed project. The duty cycle is the amount of time that equipment generates the reported noise level during typical, standard equipment operation. The noise levels and duty cycles summarized in Table 5 are based on measurements and studies conducted by FHWA and the FTA.

Table 5
Typical Construction Equipment Noise Levels

Equipment	Maximum Noise Level at 50 Feet [dB(A) L_{max}]	Typical Duty Cycle	Maximum Average Hourly Noise Level [dB(A) L_{eq}]
Backhoe/Loader	80	40%	76
Compressor	80	40%	76
Concrete Saw	90	20%	83
Crane	81	16%	73
Dozer	85	40%	81
Excavator	85	40%	81
Generator	82	50%	79
Water Truck ¹	84	40%	80
Utility Truck ^{2,3}	78	5%	65

SOURCE: FHWA 2006, 2008, FTA 2018.

dB(A) = A-weighted decibels; L_{max} = maximum equivalent noise level; L_{eq} = one-hour equivalent noise level

¹Water truck noise assumed to be comparable to tractor noise.

²Utility truck noise assumed to be comparable to flat-bed truck noise.

³The dump truck and utility truck duty cycle was adjusted to 5 percent to represent the time this equipment is arriving at and departing from the site. Engines would be idle all other times.

For construction of the regional lift station (LS-1 Options 1 and 2), the simultaneous use of an excavator, loader, and dozer, would generate a combined sound power level of 116.3 dB(A) L_{pw} . This noise level was modeled as an area source covering the entire parcels. For the smaller lift station sites (LS-2 through LS-5, due to site constraints, it was assumed that one piece of construction equipment would be active at a given time. The use of an excavator which generates a sound power level of 112.7 dB(A) L_{pw} was modeled as an area source over the footprints of LS-2 through LS-5. Noise contour mapping and noise levels at specific receiver locations were modeled using SoundPLAN.

Other construction activities would occur within the right-of-way to install the sewer pipeline. Construction noise from a linear project, such as a pipeline project, is assessed from the centerline of the alignment and work area. Maximum noise levels would occur when the construction equipment is nearest to a noise sensitive receiver. Although construction equipment may temporarily be located at the point on the alignment nearest to a receiver, equipment would move along the alignment throughout the day. Therefore, the distance from a receiver to the centerline of the alignment is not the same as the average distance during a given day from the receiver to construction equipment. Thus, average noise levels correlate to the area of active construction. Narrow street widths within the proposed project site present construction access and staging challenges. While excavation equipment is expected to fit within the existing right-of-way, navigating around obstacles such as electrical poles with light fixtures, and mailboxes constrains access. The interior streets rights-of-way are all 20 feet wide and one-way access. Due to these site constraints, it was assumed that one piece of construction equipment would be active at a given time and location. The use of an excavator which generates an average hourly noise level of 81 dB(A) L_{eq} was modeled. Due to the complex nature of the construction area, rather than generating SoundPLAN

contours for the pipeline, noise levels were calculated using an attenuation rate of 6 dB(A) for every doubling of distance.

5.2 Construction-Related Traffic Noise Analysis

Based on California Emissions Estimator Model (CalEEMod) modeling prepared as part of the Air Quality Analysis, it was calculated that the proposed project would generate up to 30 daily worker trips and 21 daily hauling trips. These trips would be added to the roadway network during the duration of the construction activities. Traffic noise associated with these trips was modeled using the FHWA Traffic Noise Prediction Model algorithms and reference levels. Traffic noise levels were calculated at 20 feet from the centerline of the roadways to determine the noise level associated with the proposed project. The model uses various input parameters, such as traffic volumes, vehicle mix, distribution, and speed. For the proposed project site, a speed of 25 miles per hour and a vehicle classification mix of 59 percent automobiles and 41 percent heavy trucks was modeled based on the worker and hauling trips calculated by CalEEMod. These trips would only occur during the daytime hours. The analysis of the noise environment considered that the topography was flat with no intervening terrain between sensitive land uses and roadways. Because modeled predicted noise levels do not account for obstructions, they are higher than those that would actually occur. In actuality, buildings and other obstructions along the roadways would shield distant receivers from the traffic noise.

5.3 Operational Noise Analysis

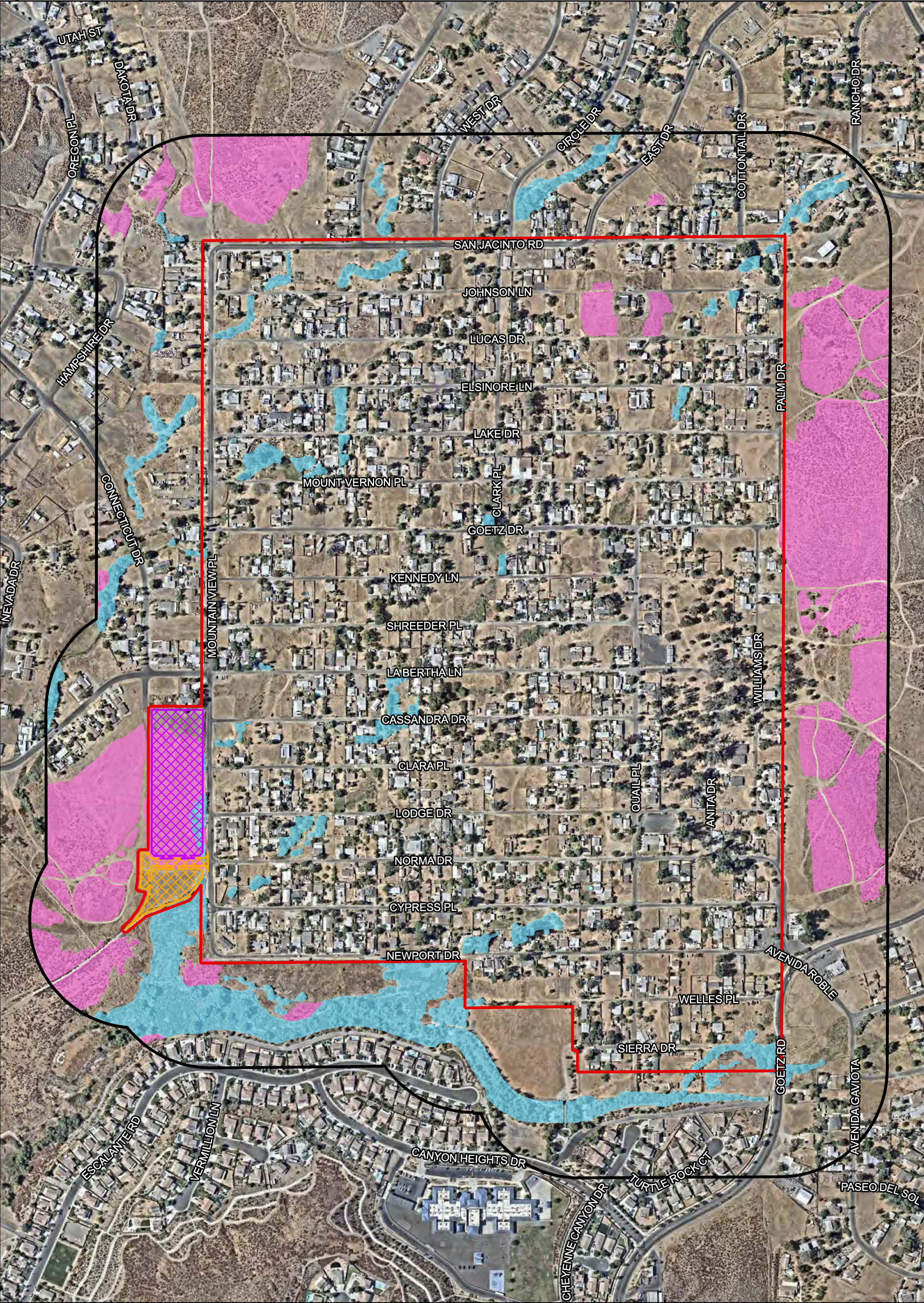
Operational noise would result from the periodic emergency generator testing at the lift stations. All other lift station equipment would be in underground wells and would not generate significant noise levels. The below-ground pipeline would not generate noise during operation. Noise may also be associated with occasional vehicle maintenance trips, but these trips would be negligible.

Noise levels associated with the backup emergency generators were modeled assuming it would be equipped with a Level 3 sound enclosure that results in maximum noise levels of 73 dB(A) L_{eq} at 23 feet. The standby generator would only be used in emergencies when power is cut from the fire station. However, generator maintenance would include periodic testing. It was assumed that the generator would run for 15 minutes during daytime hours only for testing purposes. A testing average hourly sound power level of 91.9 dB(A) L_{pw} was modeled. Modeled noise levels took into account the barriers that would be constructed at each lift station site.

6.0 Future Acoustical Environment and Impacts

6.1 Construction Noise

Residential uses and sensitive species habitat (Figure 7) are located through the proposed project site. The following summarizes the construction noise impacts associated with (1) human residential receivers and (2) sensitive bird species.



- | | |
|------------------|---|
| Project Boundary | Project Boundary |
| Survey Area | Coastal California Gnatcatcher Potentially Suitable Habitat |
| LS-1 Option 1 | Least Bell's Vireo Potentially Suitable Habitat |
| LS-1 Option 2 | |

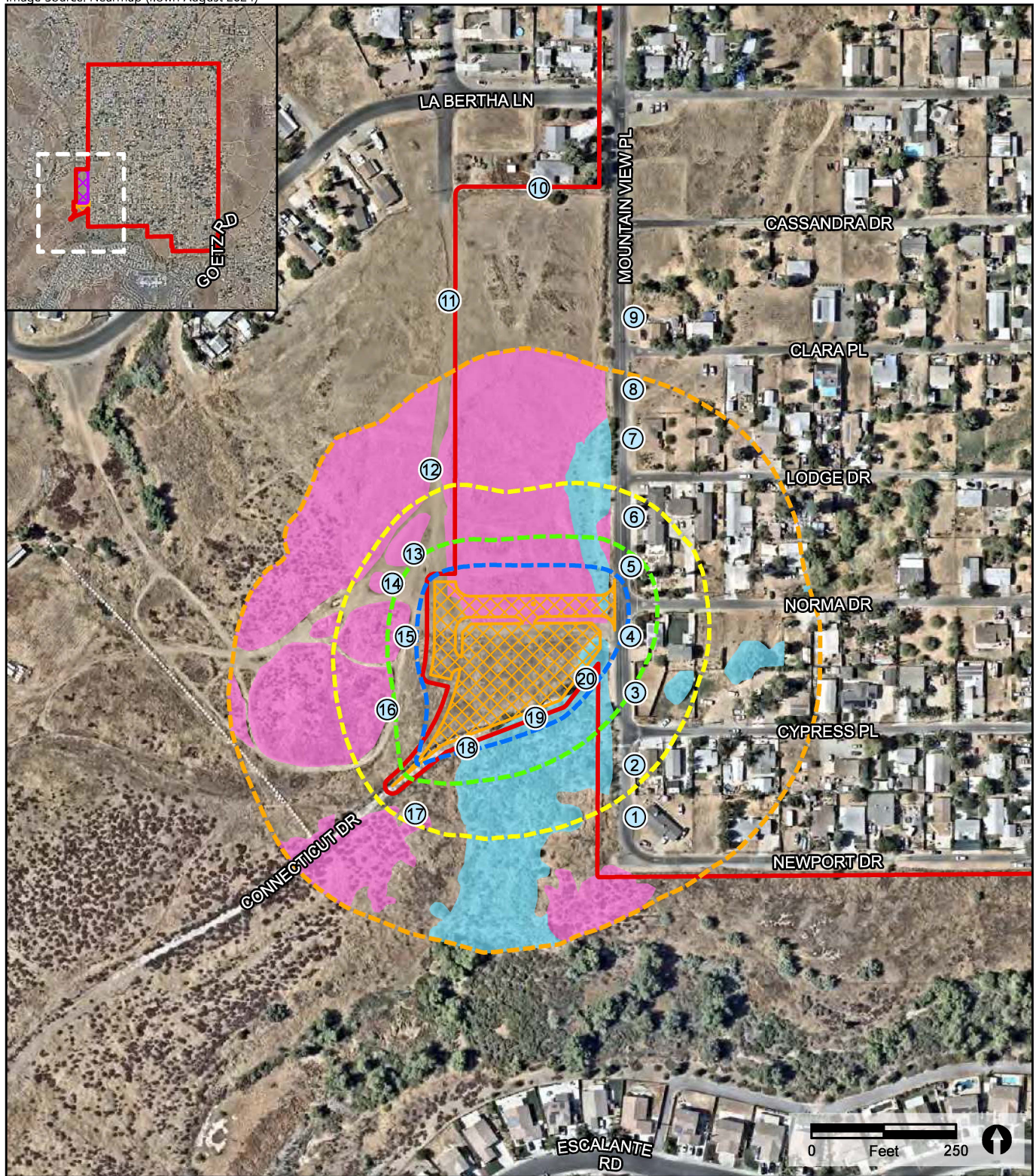
FIGURE 7
Biological Survey Area

6.1.1 Residential Uses

The construction noise level limit at residential property lines is 80 dB(A) L_{eq} . Construction noise levels associated with construction of the proposed project were calculated using methodology discussed in Section 5.1. Noise levels were modeled at specific receiver locations adjacent to the proposed lift stations using SoundPLAN. The results are summarized in Table 6. Modeled receiver locations and lift station construction noise contours are shown in Figures 8a through 8f. SoundPLAN data is provided in Attachment 2.

Table 6 Construction Noise Levels			
Receiver	Land Use	Noise Level Limit [dB(A) L_{eq}]	Construction Noise Level [dB(A) L_{eq}]
Lift Station 1 Option 1			
1	Residential	80	64
2	Residential	80	66
3	Residential	80	70
4	Residential	80	74
5	Residential	80	71
6	Residential	80	66
7	Residential	80	62
8	Residential	80	60
9	Residential	80	58
10	Residential	80	56
11	Habitat	60	58
12	Habitat	60	64
13	Habitat	60	69
14	Habitat	60	69
15	Habitat	60	73
16	Habitat	60	69
17	Habitat	60	66
18	Habitat	60	76
19	Habitat	60	77
20	Habitat	60	77
Lift Station 1 Option 2			
1	Residential	80	58
2	Residential	80	59
3	Residential	80	62
4	Residential	80	65
5	Residential	80	70
6	Residential	80	70
7	Residential	80	71
8	Residential	80	71
9	Residential	80	70
10	Residential	80	72
11	Habitat	60	72
12	Habitat	60	70

Table 6 Construction Noise Levels			
Receiver	Land Use	Noise Level Limit [dB(A) L_{eq}]	Construction Noise Level [dB(A) L_{eq}]
13	Habitat	60	66
14	Habitat	60	64
15	Habitat	60	62
16	Habitat	60	59
17	Habitat	60	57
18	Habitat	60	59
19	Habitat	60	61
20	Habitat	60	63
Lift Station 2			
1	Residential	80	77
2	Residential	80	70
3	Residential	80	71
4	Residential	80	67
5	Habitat	60	70
Lift Station 3			
1	Residential	80	80
2	Residential	80	85
3	Residential	80	78
4	Habitat	60	86
5	Habitat	60	85
6	Residential	80	73
Lift Station 4			
1	Habitat	60	83
2	Residential	80	68
3	Residential	80	68
4	Residential	80	72
Lift Station 5			
1	Residential	80	84
2	Residential	80	78
3	Habitat	60	79
4	Residential	80	71
5	Residential	80	77
6	Habitat	60	83
dB(A) L_{eq} = A-weighted decibels equivalent noise level			
Bold = Exceeds threshold			



Project Boundary

LS-1 Option 1

Receivers

Sensitive Habitat Noise Impacts

Coastal California Gnatcatcher Habitat

Least Bell's Vireo Habitat

Construction Noise Contours

60 dB(A) L_{eq}

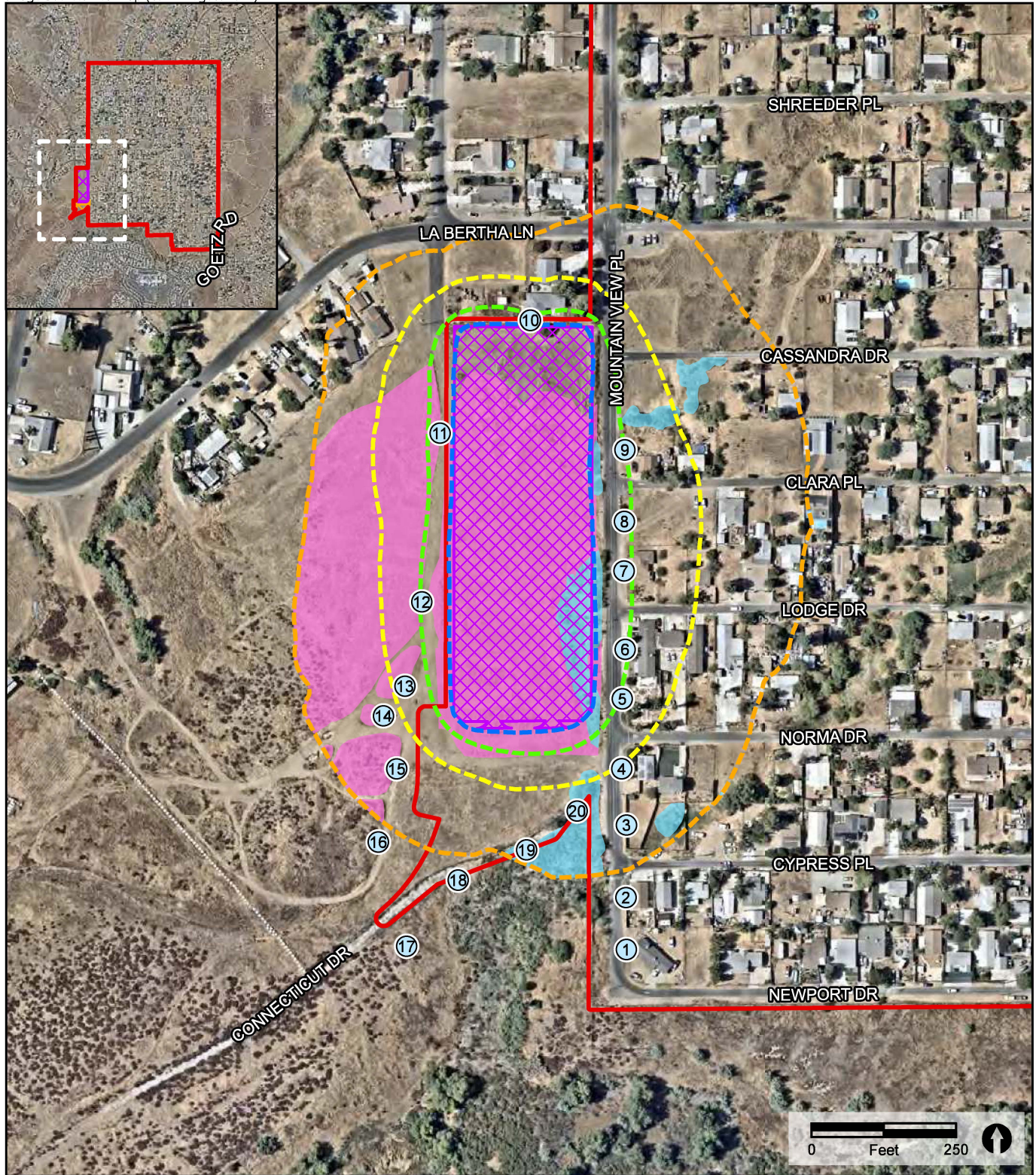
65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

FIGURE 8a

Construction Noise
Contours – Lift Station 1 Option 1



Project Boundary

LS-1 Option 2

Receivers

Sensitive Habitat Noise Impacts

Coastal California Gnatcatcher Habitat

Least Bell's Vireo Habitat

Construction Noise Contours

60 dB(A) L_{eq}

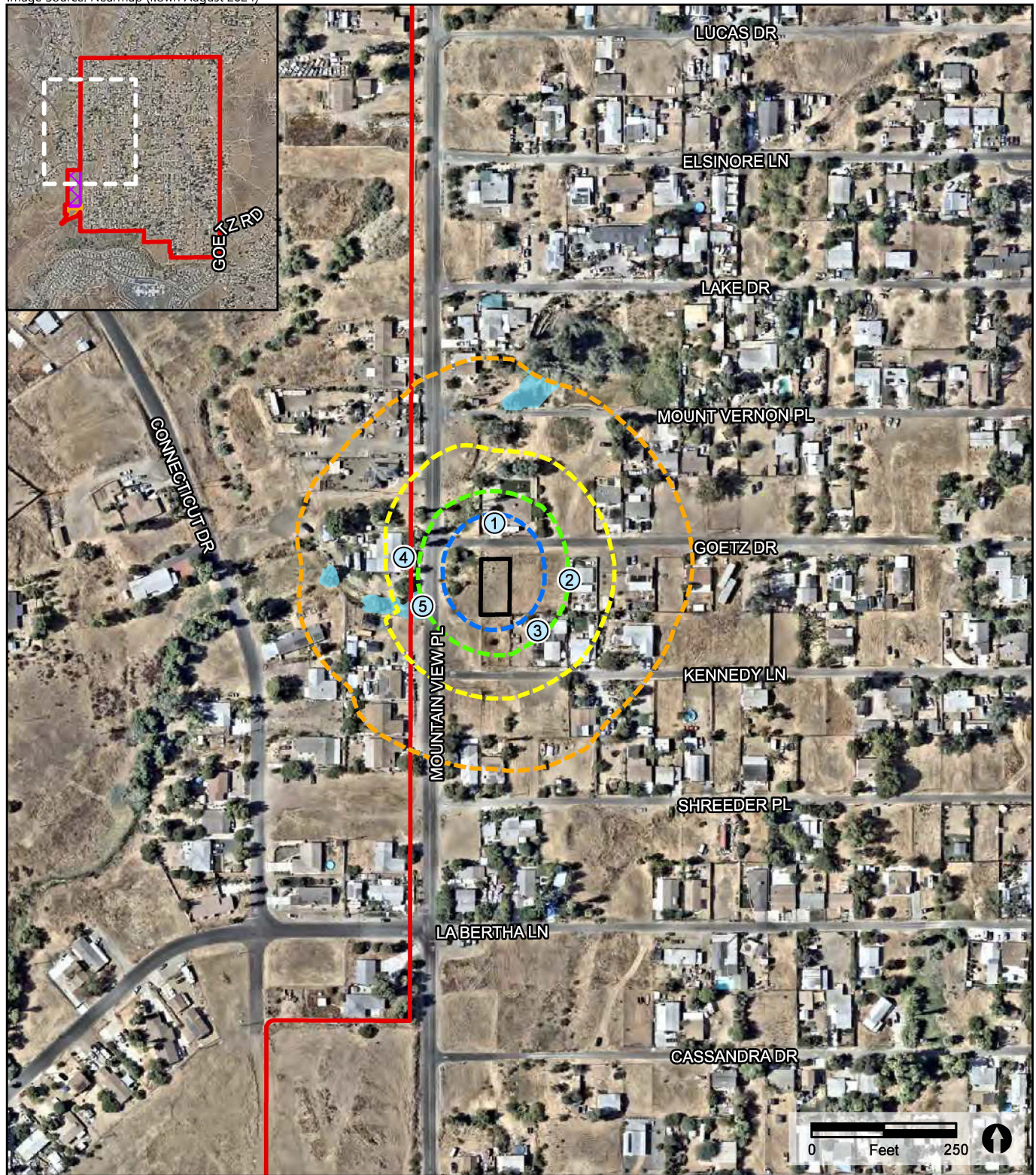
65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

FIGURE 8b

Construction Noise
Contours – Lift Station 1 Option 2



Project Boundary

Lift Station

● Receivers

Sensitive Habitat Noise Impacts

Least Bell's Vireo Habitat

Construction Noise Contours

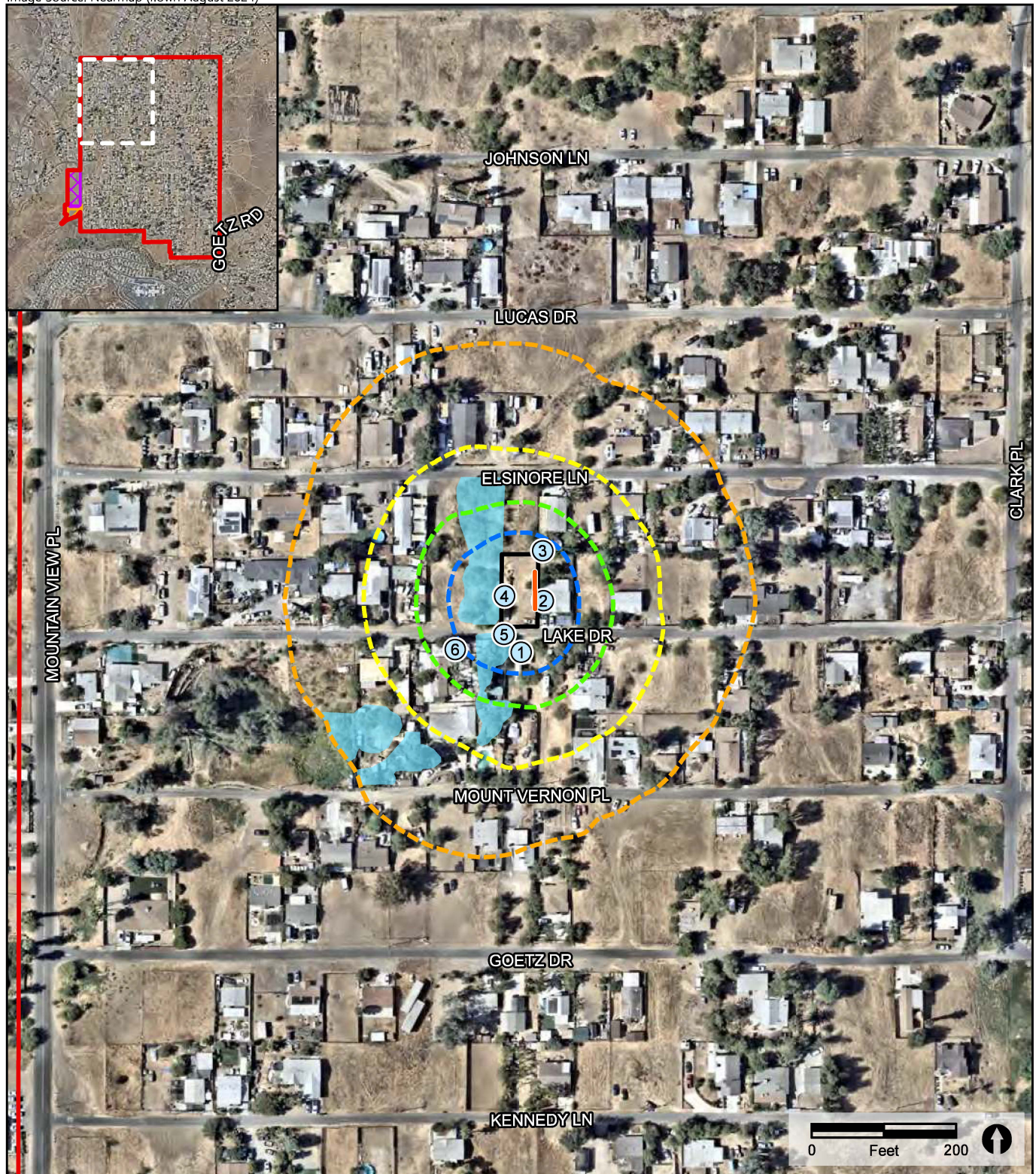
--- 60 dB(A) L_{eq}

--- 65 dB(A) L_{eq}

--- 70 dB(A) L_{eq}

--- 75 dB(A) L_{eq}

FIGURE 8c
Construction Noise
Contours – Lift Station 2



Project Boundary

Lift Station

Receivers

8-foot Temporary Barrier

Sensitive Habitat Noise Impacts

Least Bell's Vireo Habitat

Construction Noise Contours

60 dB(A) L_{eq}

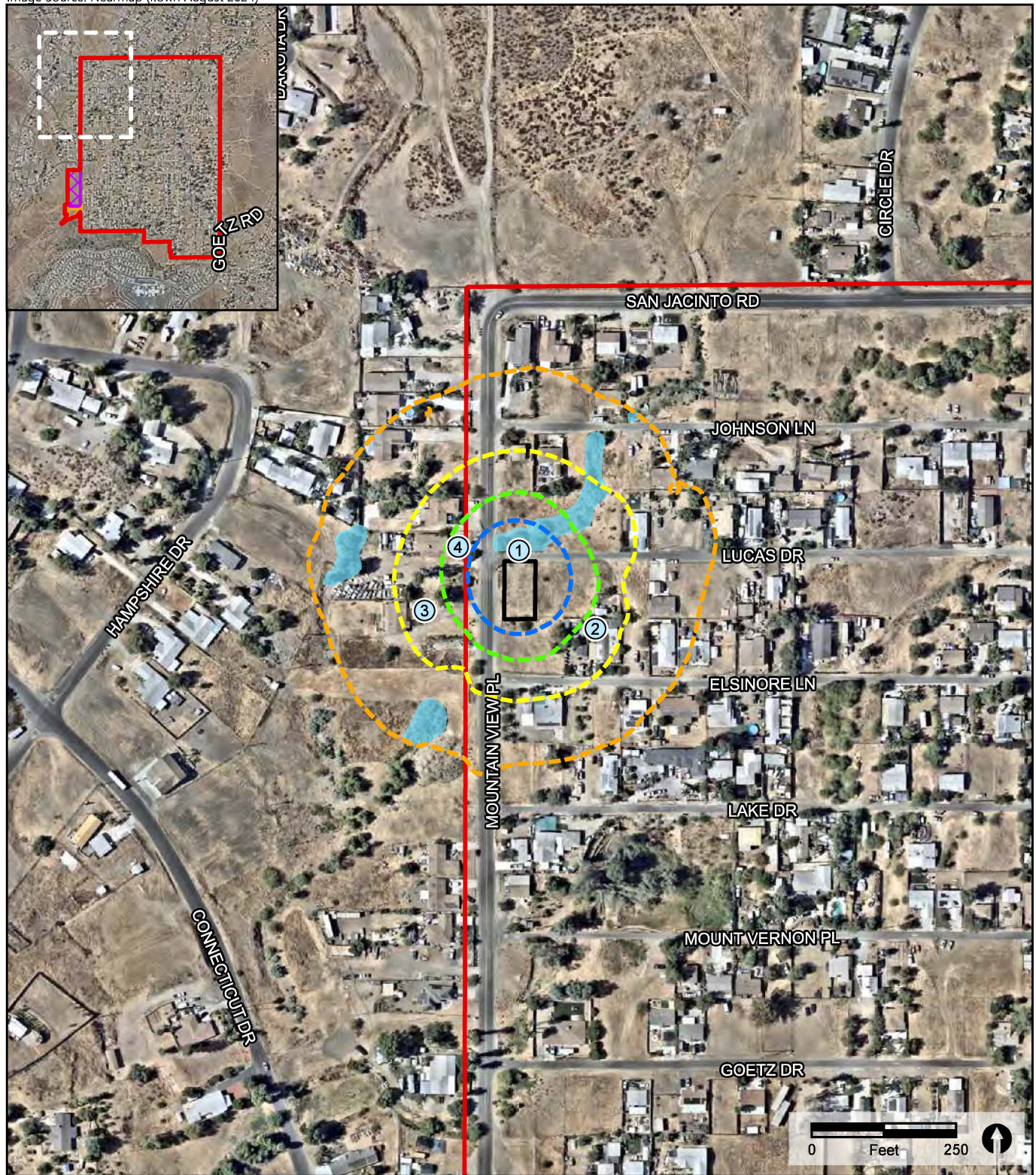
65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

FIGURE 8d

Construction Noise
Contours – Lift Station 3



Project Boundary

Lift Station

Receivers

Sensitive Habitat Noise Impacts

Least Bell's Vireo Habitat

Construction Noise Contours

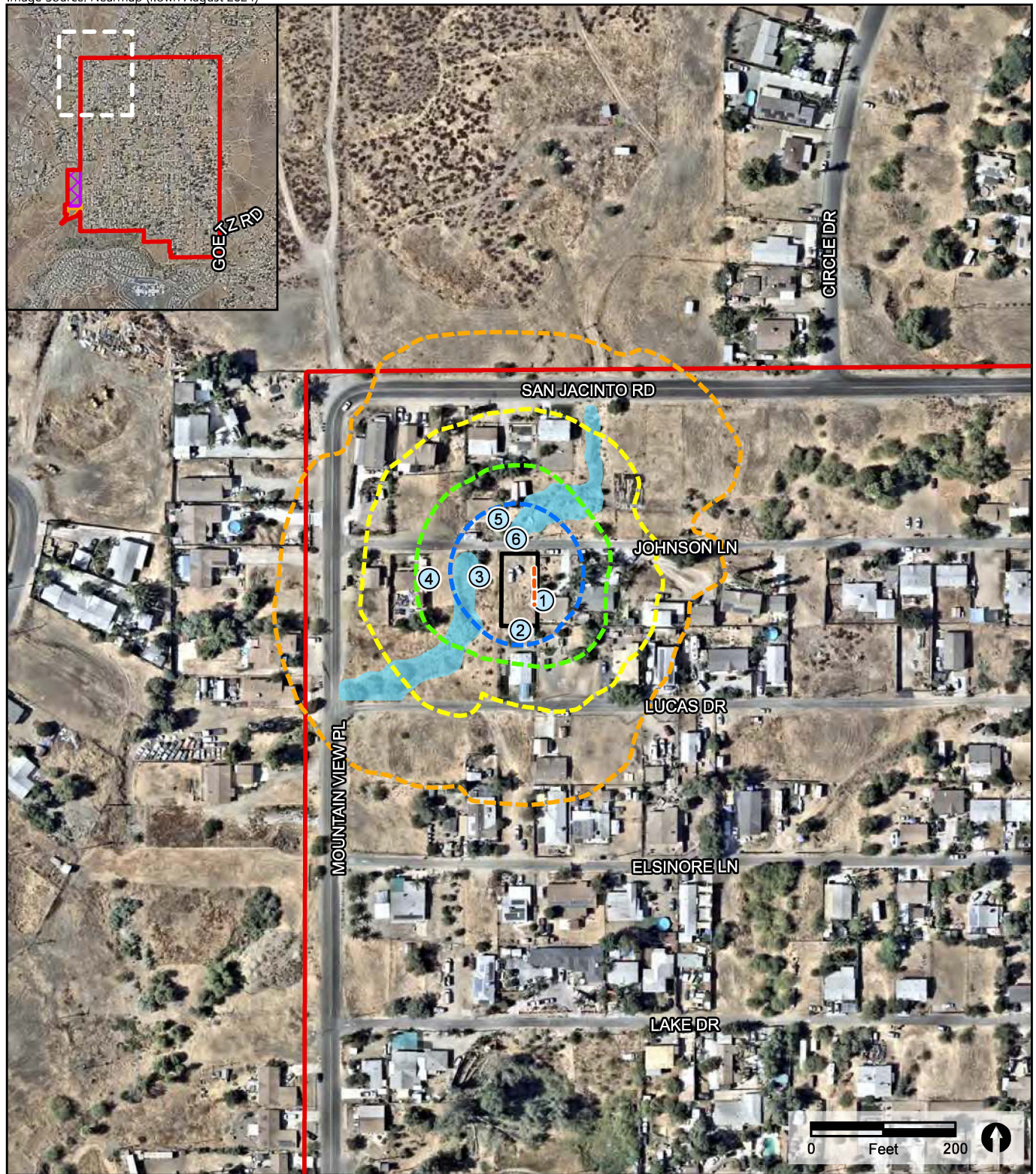
60 dB(A) L_{eq}

65 dB(A) L_{eq}

70 dB(A) L_{eq}

75 dB(A) L_{eq}

FIGURE 8e
Construction Noise
Contours – Lift Station 4



Project Boundary

Lift Station

● Receivers

- - - 6-foot Temporary Barrier

Construction Noise Contours

- - - 60 dB(A) L_{eq}

- - - 65 dB(A) L_{eq}

- - - 70 dB(A) L_{eq}

- - - 75 dB(A) L_{eq}

FIGURE 8f

Construction Noise
Contours – Lift Station 5

As shown in Table 6, noise levels at the residential receivers adjacent to LS-1 (Option 1), LS-1 (Option 2), LS-2, and LS-4 are not projected to exceed 80 dB(A) L_{eq} . Noise impacts due to construction activities in these areas would be less than significant. Noise levels would exceed 80 dB(A) L_{eq} at the residence located closest to LS-3 (Receiver 2) (**Impact NOI-1**) and at the residence located closest to LS-5 (Receiver 1) (**Impact NOI-2**). Noise barriers were modeled at each of these locations. It was found that an 8-foot barrier would reduce construction noise levels at LS-3 to less than 80 dB(A) L_{eq} (see Figure 8d) and a 6-foot barrier would reduce construction noise levels at LS-5 to less than 80 dB(A) L_{eq} (see Figure 8f). These barriers would be required as mitigation (mitigation measures NOI-1 and NOI-2) in order to reduce potential construction noise impacts to residential receivers. Additionally, although noise levels are not anticipated at other lift station locations, due to the close proximity of residential uses to active construction throughout the proposed project site, best management practices to reduce noise at all lift station sites are recommended.

For pipeline construction activities that would occur within the right-of-way, noise levels due to operation of an excavator would attenuate to 80 dB(A) L_{eq} at a distance of approximately 55 feet. As discussed in Section 5.1, there are narrow street widths within the proposed project site. The interior streets rights-of-way are all 20 feet wide and one-way access. Residential uses are therefore located closer than 55 feet from the construction areas, and noise levels would have the potential to exceed 80 dB(A) L_{eq} at the residential uses located throughout the proposed project site without implementation of any noise reduction measures. As discussed in Section 2.5, the project would implement environmental commitments that would become conditions of approval. These features include construction noise best management practices (see Section 2.5.1). However, the degree to which construction noise levels would be reduced cannot be known at a program level of analysis. Due to the close proximity of residential uses throughout the project areas, noise impacts associated with pipeline construction activities would remain a temporary significant impact (**Impact NOI-3**).

NOI-1: Lift Station 3 (LS-3) Temporary Construction Barrier. Prior to the commencement of construction activities at Lift Station 3 (LS-3), a temporary 8-foot barrier along the eastern property boundary bordering a residential property shall be constructed as identified in Figure 8d. The barrier must be solid and free of cracks or holes and may be constructed of materials such as plywood. The temporary barrier shall be identified on the construction plans for Lift Station 3 (LS-3).

NOI-2: Lift Station 5 (LS-5) Temporary Construction Barrier. Prior to the commencement of construction activities at Lift Station 5 (LS-5), a temporary 6-foot barrier along the eastern property boundary bordering a residential property shall be constructed as identified in Figure 8f. The barrier must be solid and free of cracks or holes and may be constructed of materials such as plywood. The temporary barrier shall be identified on the construction plans for Lift Station 5 (LS-5).

Implementation of mitigation measures NOI-1 and NOI-2 would reduce lift station construction noise impacts to a level less than significant. Implementation of construction noise best management practices outlined in Section 2.5.1 would reduce noise generated by all construction activities, however, the degree to which construction noise levels would be reduced cannot be known at the level of analysis. Due to the close proximity of residential uses throughout the proposed project site, noise impacts associated with construction activities would remain significant and unavoidable.

6.1.2 Sensitive Wildlife Species

Biological surveys were conducted as part of the Biological Resources Report prepared for the proposed project (RECON 2026). The biological resources survey was conducted within a survey area that is defined as all areas within 500 feet of the potential project components and work areas (see Figure 7). No sensitive wildlife species were detected within the biological survey area or proposed project site during the general biological survey. However, potentially suitable habitat for these sensitive species was identified. For the purposes of this noise analysis, the species of concern are the coastal California gnatcatcher and the least Bell's vireo.

Coastal California Gnatcatcher. The coastal California gnatcatcher is federally listed as threatened, a California Department of Fish and Wildlife species of special concern, and a Western Riverside Multiple Species Habitat Conservation Program covered species. The biological survey area and proposed project site both support potentially suitable habitat for coastal California gnatcatcher. The proposed project site supports a small patch of disturbed Riversidean sage scrub potentially capable of supporting this species within the area proposed for the regional lift station LS-1 (Option 2). Suitable coastal California gnatcatcher habitat within the biological survey area is also present and includes California buckwheat and Riversidean sage scrub, but most of these stands also contain high density of non-native grasses and weeds. The stands of habitat within the biological survey area are further surrounded by open space, much of it similar scrub habitat to the southeast and southwest of the biological survey area, indicating that the suitable habitat within the biological survey area may be connected to larger stands of suitable habitat in the region. Due to the presence of suitable vegetation, albeit somewhat disturbed, and the fact that this habitat is contiguous with larger blocks of habitat, coastal California gnatcatcher has a moderate potential to occur within the biological survey area.

Least Bell's Vireo. The least Bell's vireo is federally and state listed as endangered, and a Multiple Species Habitat Conservation Program covered species. The biological survey area and proposed project site both support potentially suitable habitat for least Bell's vireo. The unnamed tributary along the southern edge of the biological survey area supports mature willows that are over 30 feet in height. There is also dense to moderately dense understory containing immature riparian shrubs and trees along this tributary, providing excellent cover. The vegetation along this tributary also contains some more open areas between mature trees where foraging may occur. Within the proposed project site, there are only a few small stands of willows within the smaller tributaries flowing through the subdivision, but there are non-native riparian woodlands and tamarisk scrub that may be used on occasion by this species. As such, there is a moderate potential for this species to occur within the proposed project site, and a high potential for it to occur within the unnamed tributary along the southern edge of the biological survey area.

Nesting birds may be adversely affected by high noise levels through either interference with nest-tending activities and/or interference or "masking" of auditory communication. The noise level limit for these sensitive species is 60 dB(A) L_{eq} , or the ambient noise level if greater than 60 dB(A) L_{eq} . As shown in Table 4, measured existing ambient noise levels ranged from 41.3 to 49.8 dB(A) L_{eq} , thus the applicable noise limit is 60 dB(A) L_{eq} .

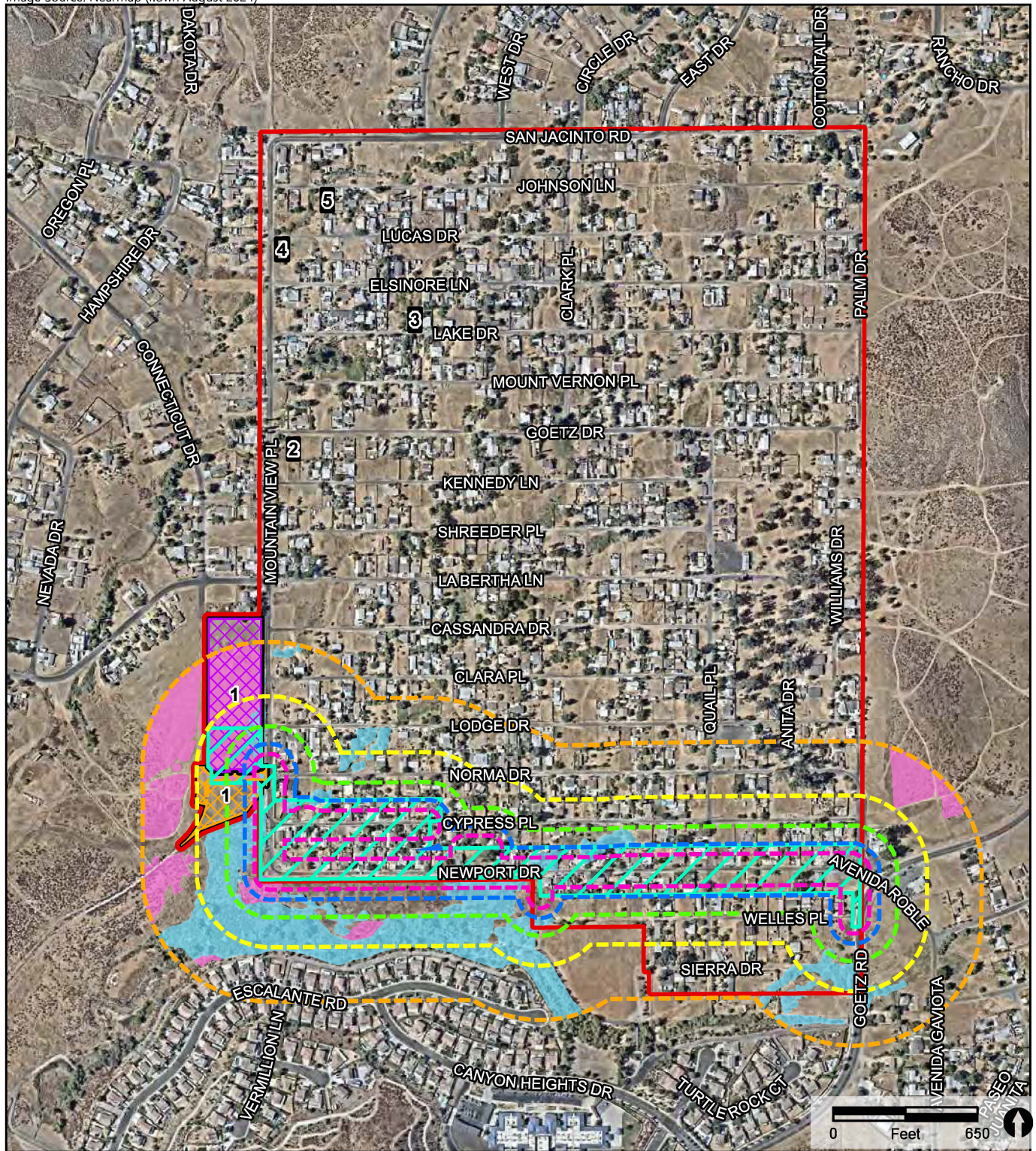
Construction noise levels associated with proposed project construction were calculated using methodology discussed in Section 5.1. Noise levels were modeled at specific receiver locations

adjacent to the proposed lift stations, and buffer distances from the construction areas to the 60 dB(A) L_{eq} contour were calculated for each of the lift station sites as well as the right-of-way pipeline construction areas. The potential habitat areas that would exceed 60 dB(A) L_{eq} due to construction activities at the proposed lift station sites are shown in Figures 8a through 8f, and the potential habitat areas that would exceed 60 dB(A) L_{eq} due to construction activities within the right-of-way area for each phase are shown in Figures 9a through 9i. As shown in Table 6 and Figures 8a through 8f, construction noise levels are anticipated to exceed 60 dB(A) L_{eq} in the habitat areas adjacent to each of the lift stations. Additionally, as shown in Figures 9a through 9i, pipeline construction noise levels are anticipated to exceed 60 dB(A) L_{eq} within approximately 560 feet of activities occurring within Phase 1A through Phase 8. If coastal California gnatcatcher or least Bell's vireo are present within these areas, construction noise generated during the breeding season would be potentially significant (**Impact BIO-3**). The following mitigation measure provided in the Biological Resources Report would be required (RECON 2026):

BIO-6b: Coastal California Gnatcatcher Mitigation. If construction activities are proposed within 500 feet of an occupied nest, a biological monitor shall be required to observe the behavior of breeding coastal California gnatcatchers where accessible. The construction supervisor shall be notified if the construction activities appear to be altering the birds' normal breeding behavior, work will be halted if necessary and as determined by the qualified biologist, and the nest avoidance buffer shall be expanded and/or work activities shall be modified until there is no discernible disturbance to the nest occupants. No construction activities will be allowed within 500 feet of an occupied nest until additional minimization measures have been performed. For habitat that is accessible, such measures may include retaining a qualified acoustician to determine ambient noise levels and Project-related noise levels at the edge of the occupied habitat. Noise levels at the edge of the occupied habitat shall not exceed an hourly average of 60 decibels (dB[A]), or a 3 dB(A) increase in noise levels if ambient noise levels exceed 60 dB(A). If Project-related noise levels at the edge of the occupied habitat are above 60 dB(A) or the 3 dB(A) increase in noise occurs or the habitat is not accessible for measuring the noise levels, additional minimization measures shall be taken to reduce Project-related noise levels to an acceptable level as determined by the biological monitor. Measures may include, but are not limited to, limitations on the use of certain equipment, placement of equipment, restrictions on the simultaneous use of equipment, use of noise barriers, or other noise attenuation methods as deemed appropriate by the biologist and acoustician. If the biological monitor determines the construction activities are posing a potential risk to the nest after implementing the additional minimization measures, the noise generating construction activities shall cease until alternative methods are applied or the breeding season is over. The biological monitor shall prepare written documentation of all gnatcatcher monitoring activities at the end of each monitoring day, and a compiled monitoring report at the completion of construction activities, both of which shall be submitted to the District.

BIO-7b: Least Bell's Vireo Mitigation. If construction activities are proposed within 500 feet of an occupied nest, a biological monitor shall be required to observe the behavior of breeding least Bell's vireo where accessible. The construction supervisor shall be notified if the construction activities appear to be altering the birds' normal breeding behavior, work will be halted if necessary and as determined by the qualified biologist, and the nest avoidance

buffer shall be expanded and/or work activities shall be modified until there is no discernible disturbance to the nest occupants. No construction activities will be allowed within 500 feet of an occupied nest until additional minimization measures have been performed. For habitat that is accessible, such measures may include retaining a qualified acoustician to determine ambient noise levels and Project-related noise levels at the edge of the occupied habitat. Noise levels at the edge of the occupied habitat shall not exceed an hourly average of 60 decibels (dB[A]), or a 3 dB(A) increase in noise levels if ambient noise levels exceed 60 dB(A). If Project-related noise levels at the edge of the occupied habitat are above 60 dB(A) or the 3 dB(A) increase in noise occurs or the habitat is not accessible for measuring the noise levels, additional minimization measures shall be taken to reduce Project-related noise levels to an acceptable level as determined by the biological monitor. Measures may include, but are not limited to, limitation on the use of certain equipment, placement of equipment, restrictions on the simultaneous use of equipment, use of noise barriers, or other noise attenuation methods as deemed appropriate by the biologist and acoustician. If the biological monitor determines the construction activities are posing a potential risk to the nest after implementing the additional minimization measures, the noise generating construction activities shall cease until alternative methods are applied or the breeding season is over. The biological monitor shall prepare written documentation of all monitoring activities at the completion of construction activities, which shall be submitted to the District.



- Project Boundary
- Phase 1A
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

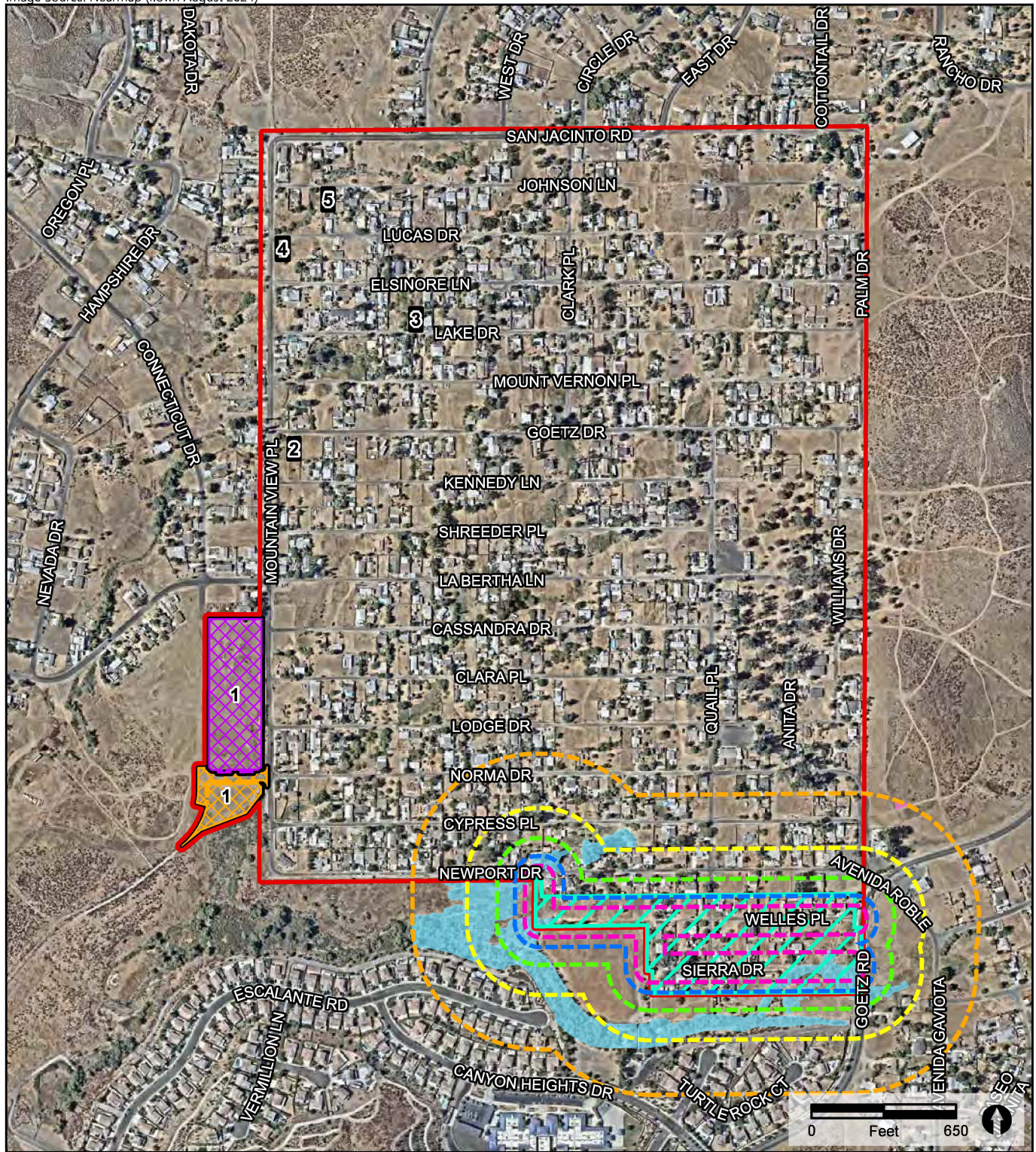
Sensitive Habitat Noise Impacts

- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9a
Construction Noise
Contours – Phase 1A



- Project Boundary
- Phase 1B
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

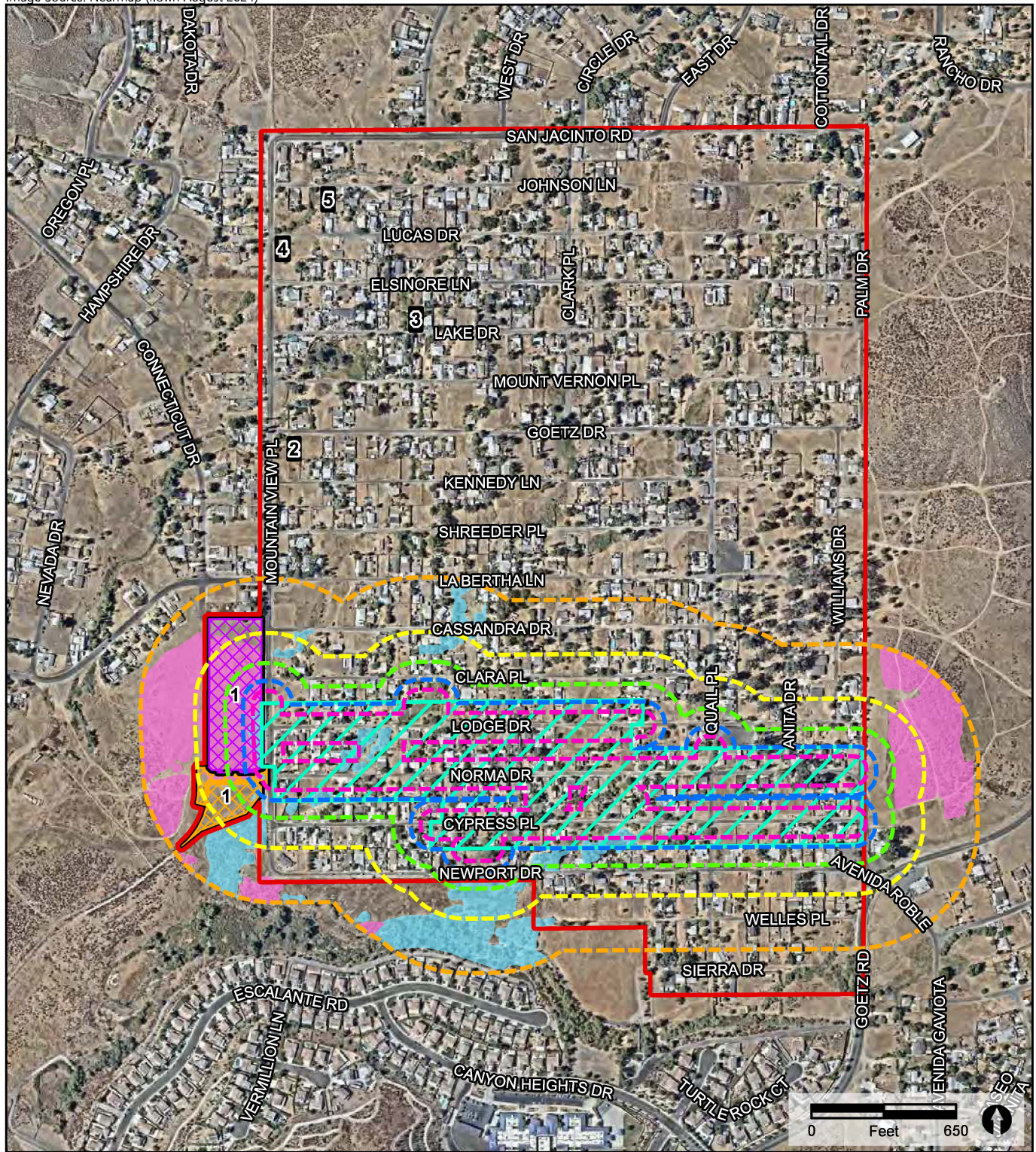
Sensitive Habitat Noise Impacts

- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9b
Construction Noise
Contours – Phase 1B



- Project Boundary
- Phase 2
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

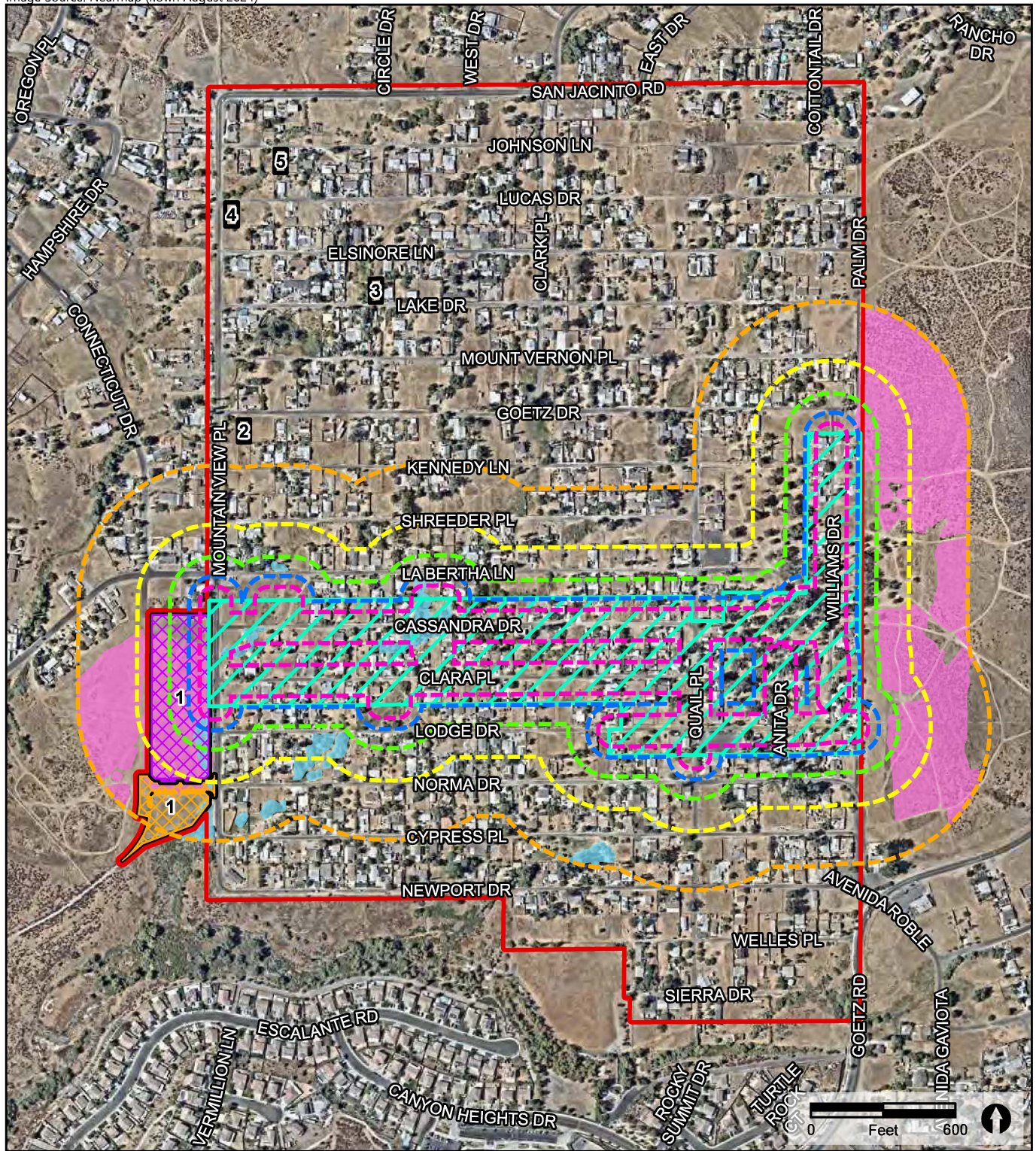
Sensitive Habitat Noise Impacts

- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9c
Construction Noise
Contours – Phase 2



- Project Boundary
- Phase 3
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

Sensitive Habitat Noise Impacts

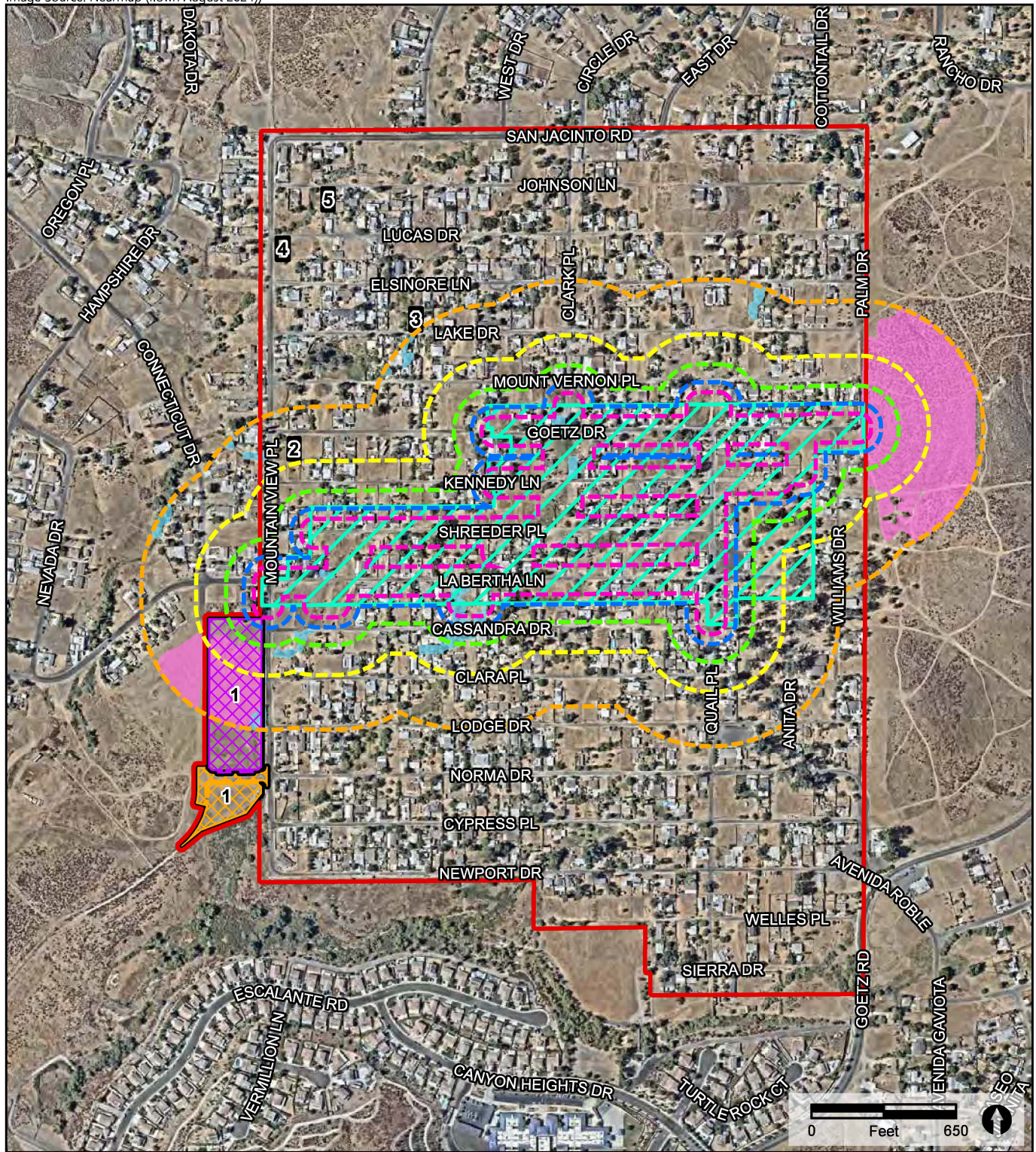
- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9d

Construction Noise
Contours – Phase 3



- Project Boundary
- Phase 4
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

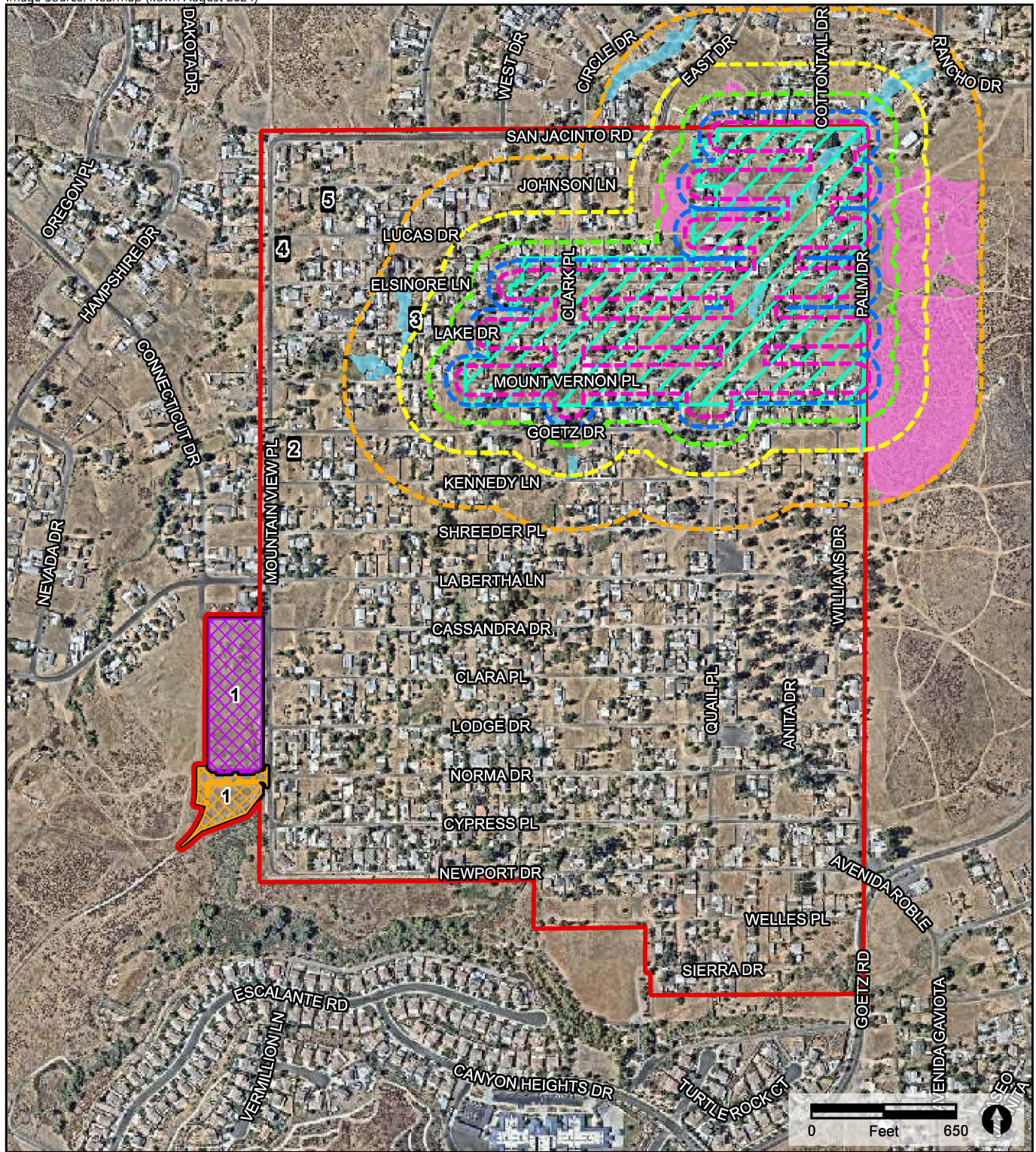
Sensitive Habitat Noise Impacts

- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9e
Construction Noise
Contours – Phase 4



- Project Boundary
- Phase 5
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

Sensitive Habitat Noise Impacts

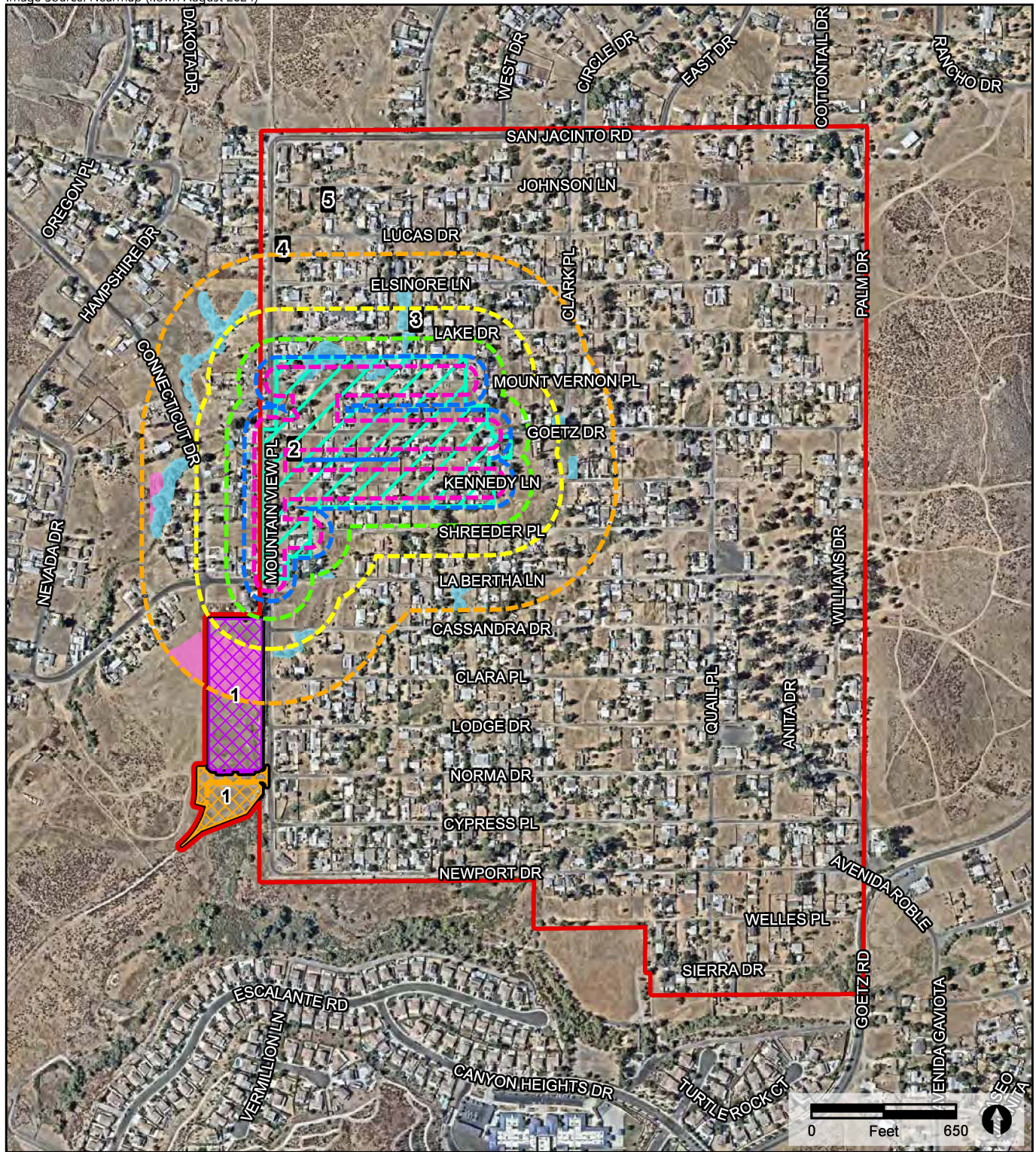
- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9f

Construction Noise
Contours – Phase 5



- Project Boundary
- Phase 6
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

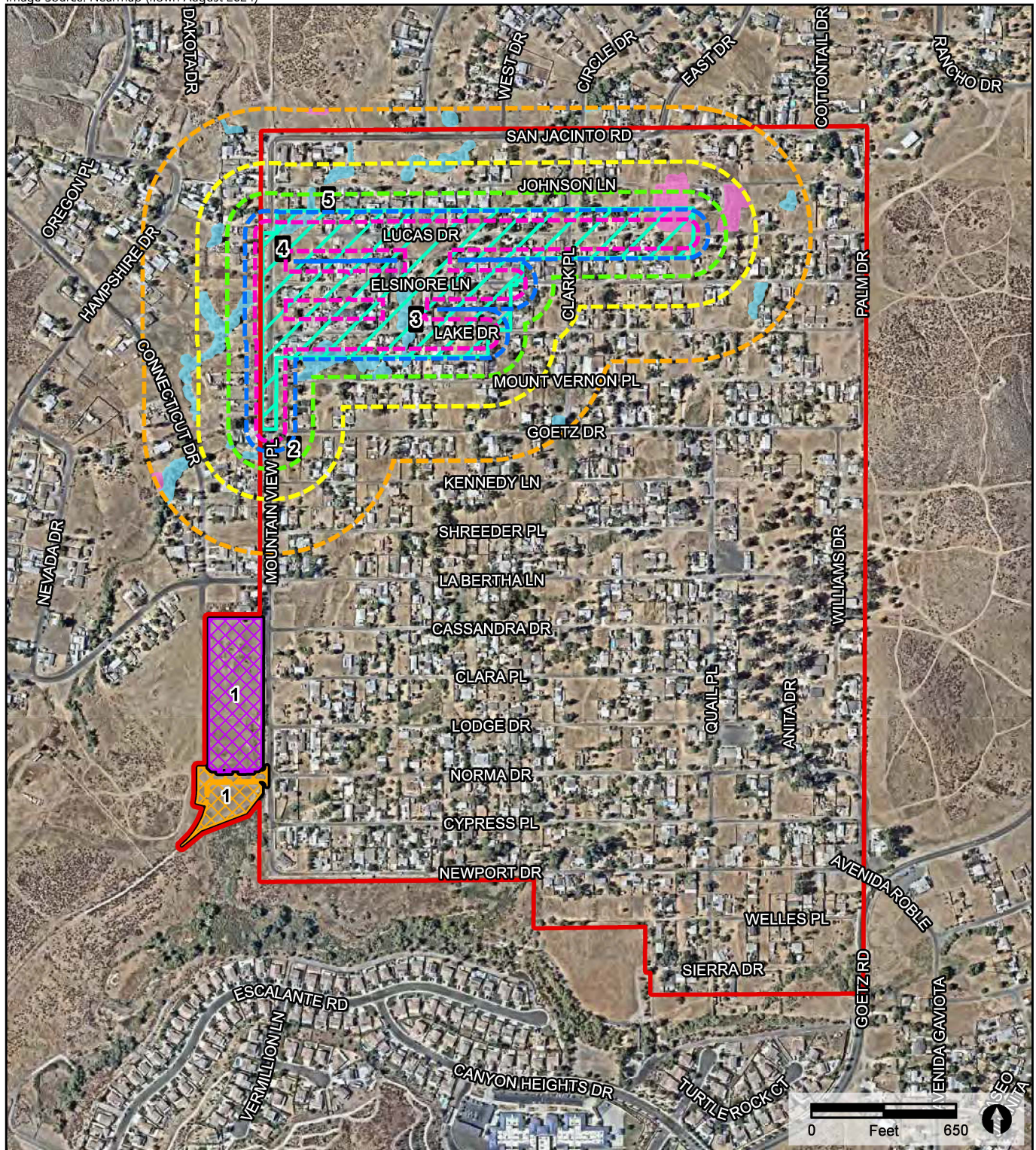
Sensitive Habitat Noise Impacts

- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9g
Construction Noise
Contours – Phase 6



- Project Boundary
- Phase 7
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

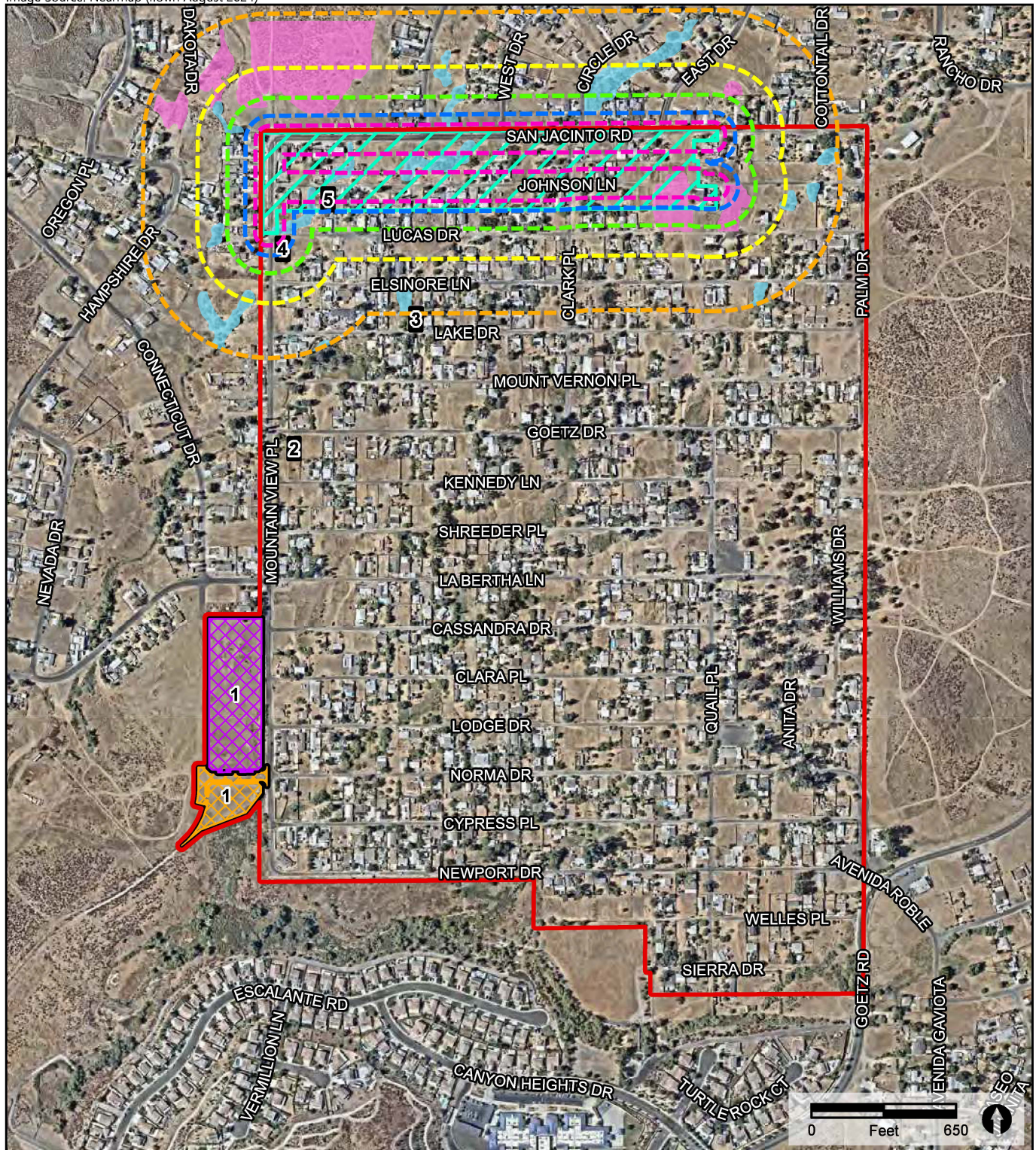
Sensitive Habitat Noise Impacts

- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9h
Construction Noise
Contours – Phase 7



- Project Boundary
- Phase 8
- Lift Station (LS)
- LS-1 Option 1
- LS-1 Option 2

Sensitive Habitat Noise Impacts

- Coastal California Gnatcatcher Habitat
- Least Bell's Vireo Habitat

Construction Noise Contours

- 60 dB(A) L_{eq}
- 65 dB(A) L_{eq}
- 70 dB(A) L_{eq}
- 75 dB(A) L_{eq}
- 80 dB(A) L_{eq}

FIGURE 9i

Construction Noise
Contours – Phase 8

6.2 Construction-Related Traffic Noise

As discussed in Section 5.2 above, based on CalEEMod modeling prepared as part of the Air Quality Analysis (RECON 2025), it was calculated that the proposed project would generate up to 30 daily worker trips and 21 daily hauling trips. These trips would be added to the roadway network during the duration of the construction activities. Noise levels associated with these trips were calculated using the parameters discussed in Section 5.2. It was calculated that construction-related vehicle trips would generate a noise level of approximately 53 CNEL at 20 feet from a roadway centerline. Calculations are provided in Attachment 3. The Menifee General Plan Noise Element establishes land use compatibility levels for community noise environments. For single-family residential land uses, the normally acceptable and conditionally acceptable noise levels are 60 CNEL and 70 CNEL, respectively. Noise levels would be well less than the compatibility standards and impacts would be less than significant.

6.3 Operational Noise

As discussed in Section 5.3 above, the primary operational noise source would be the periodic testing of the emergency generators located at each lift station site. Noise levels were modeled at specific receiver locations adjacent to the proposed lift stations using SoundPLAN. Modeled noise levels took into account the barriers that would be constructed at each lift station site. The results are summarized in Table 7. Modeled receiver locations and lift station operational noise contours are shown in Figures 10a through 10f. SoundPLAN data is provided in Attachment 4.

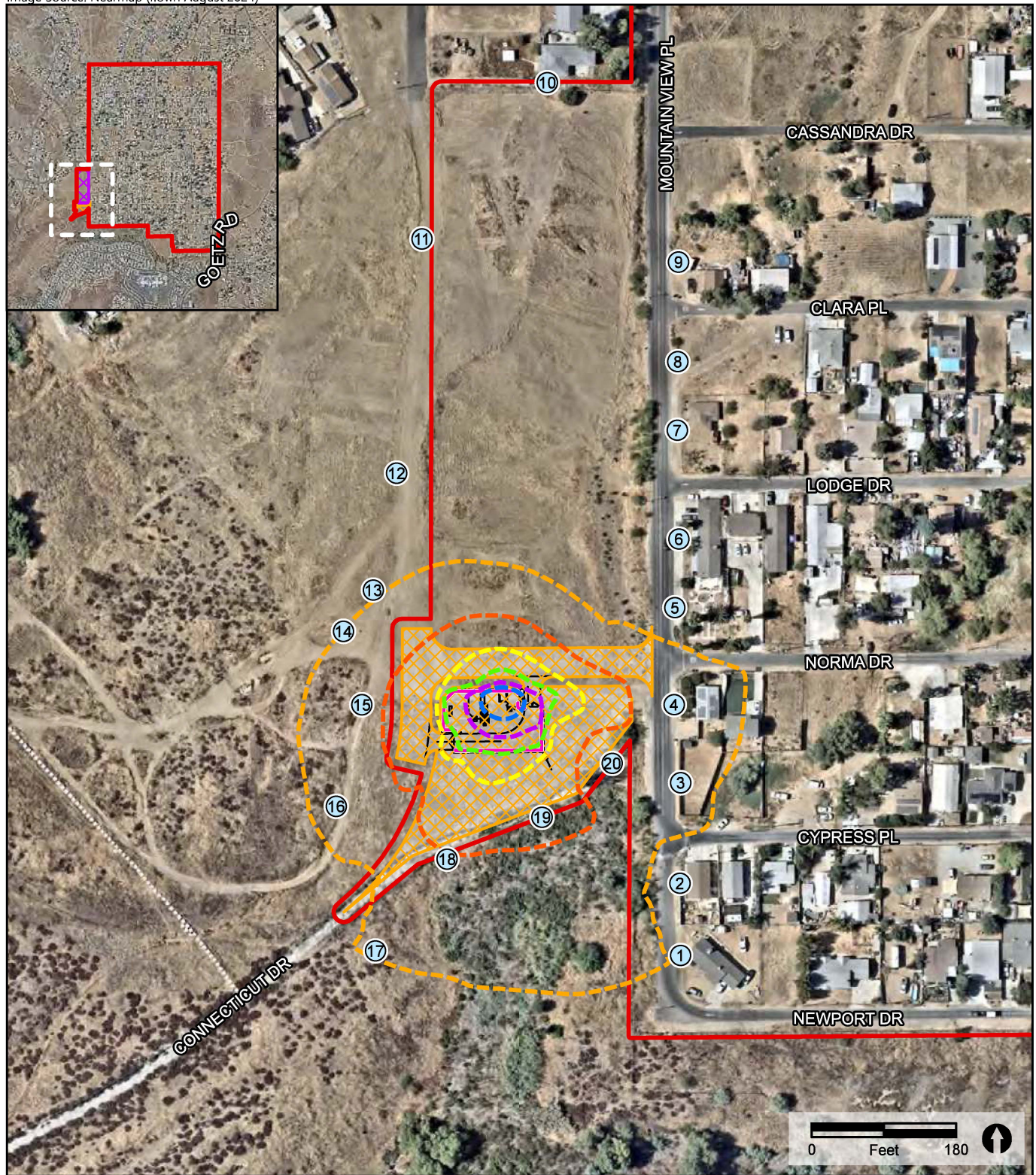
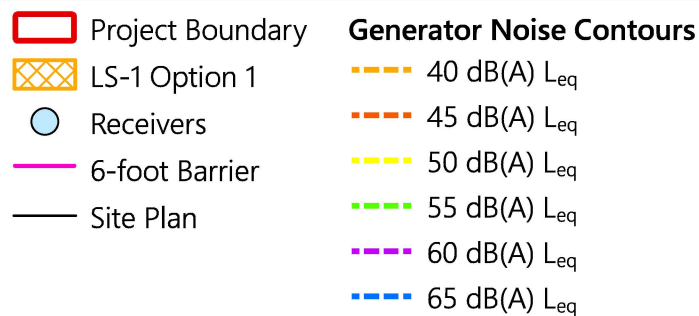
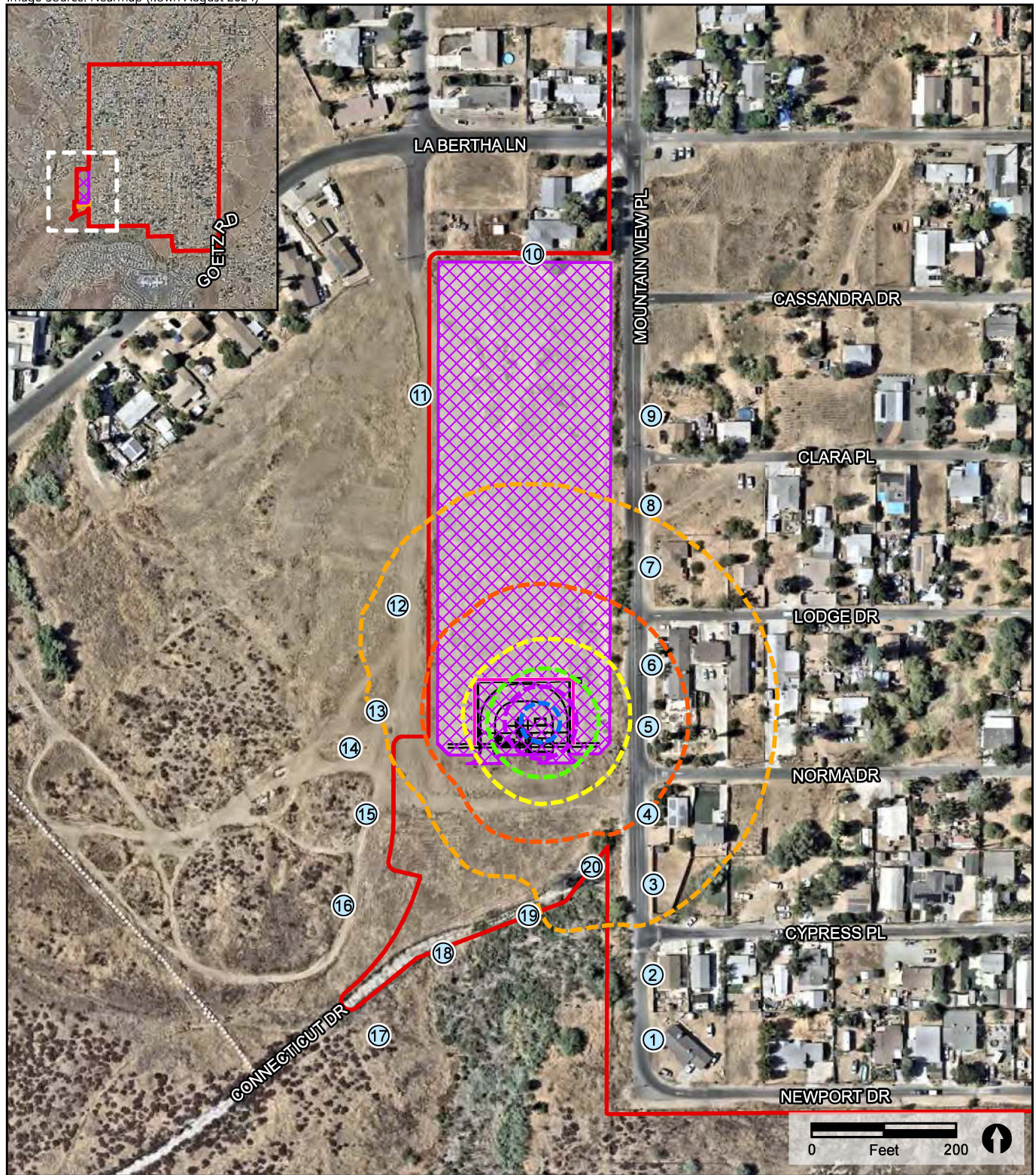


FIGURE 10a
Generator Noise
Contours – Lift Station 1 Option 1



- | | |
|---|---|
| Project Boundary | Generator Noise Contours |
| LS-1 Option 2 | 40 dB(A) L_{eq} |
| Receivers | 45 dB(A) L_{eq} |
| 6-foot Barrier | 50 dB(A) L_{eq} |
| Site Plan | 55 dB(A) L_{eq} |
| | 60 dB(A) L_{eq} |
| | 65 dB(A) L_{eq} |

FIGURE 10b
Generator Noise
Contours – Lift Station 1 Option 2

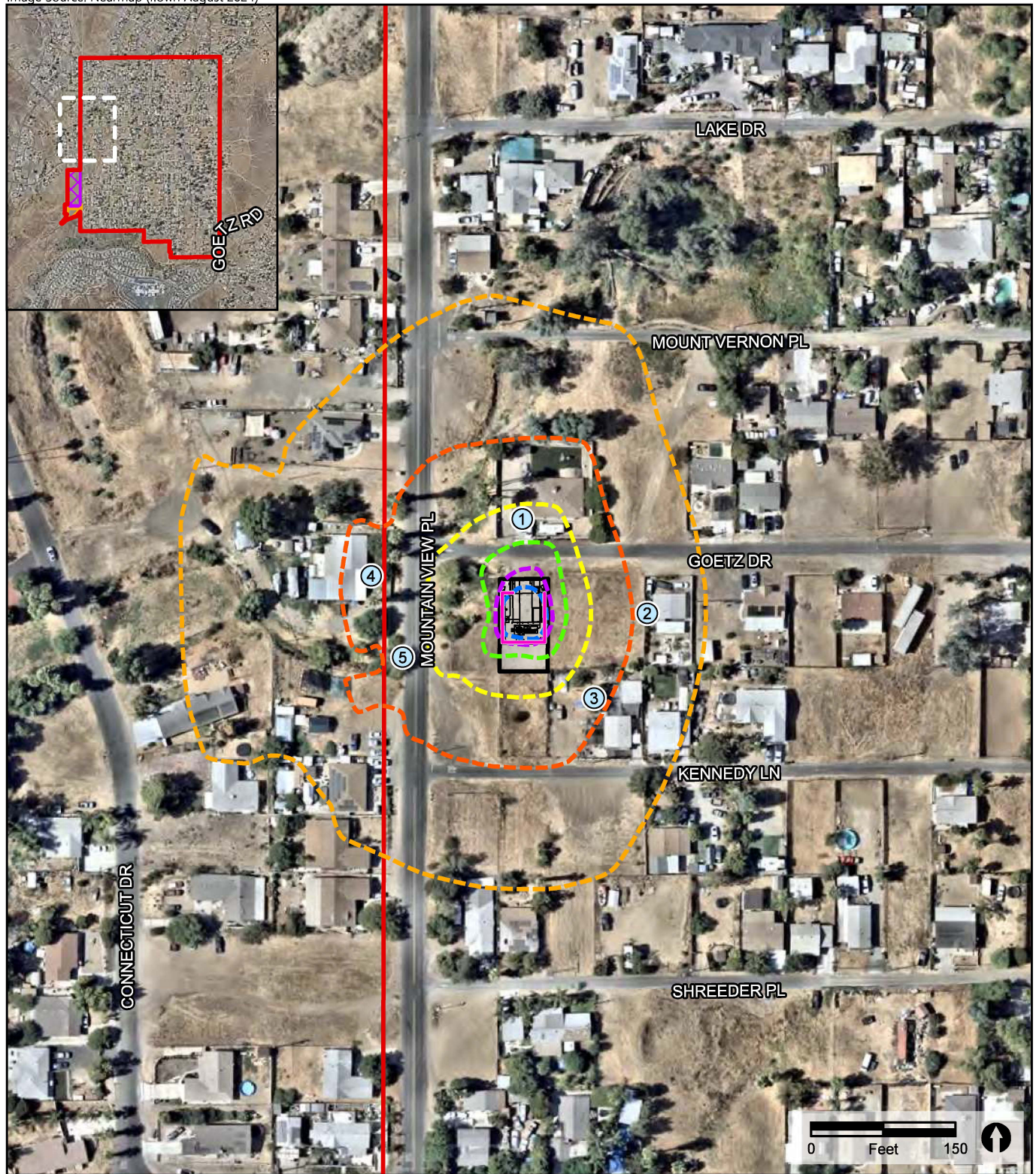
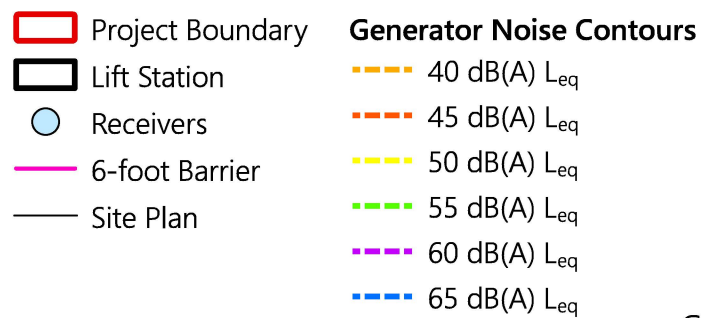


FIGURE 10c
Generator Noise
Contours – Lift Station 2

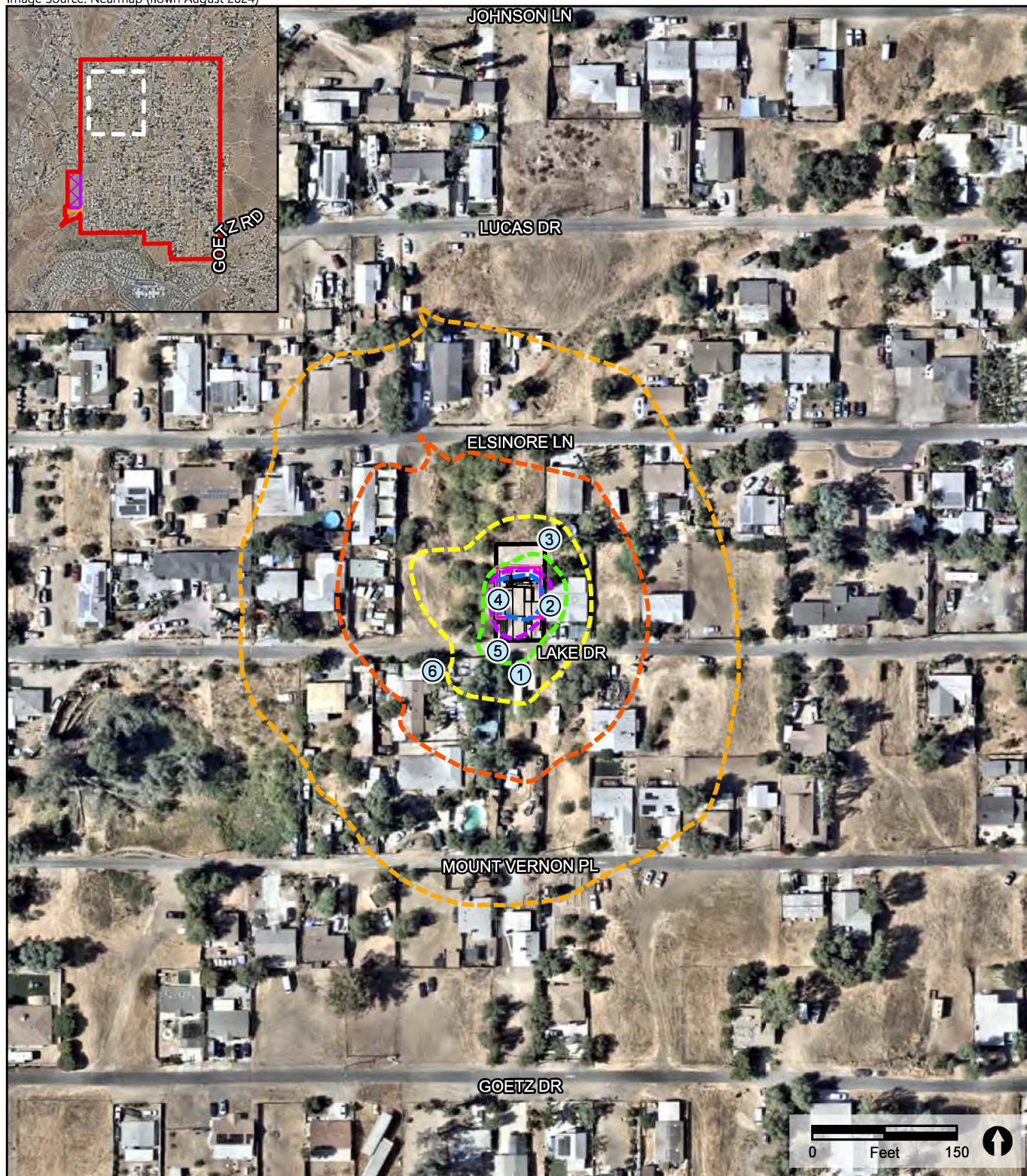
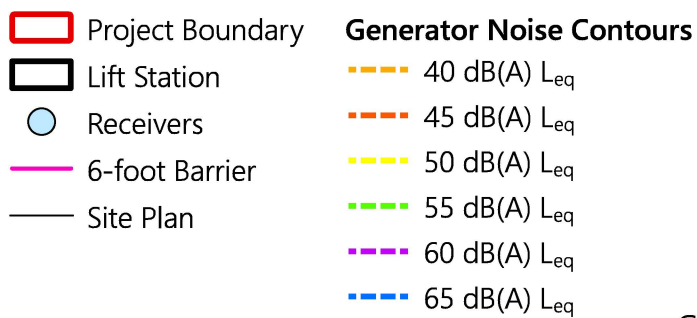


FIGURE 10d
Generator Noise
Contours – Lift Station 3

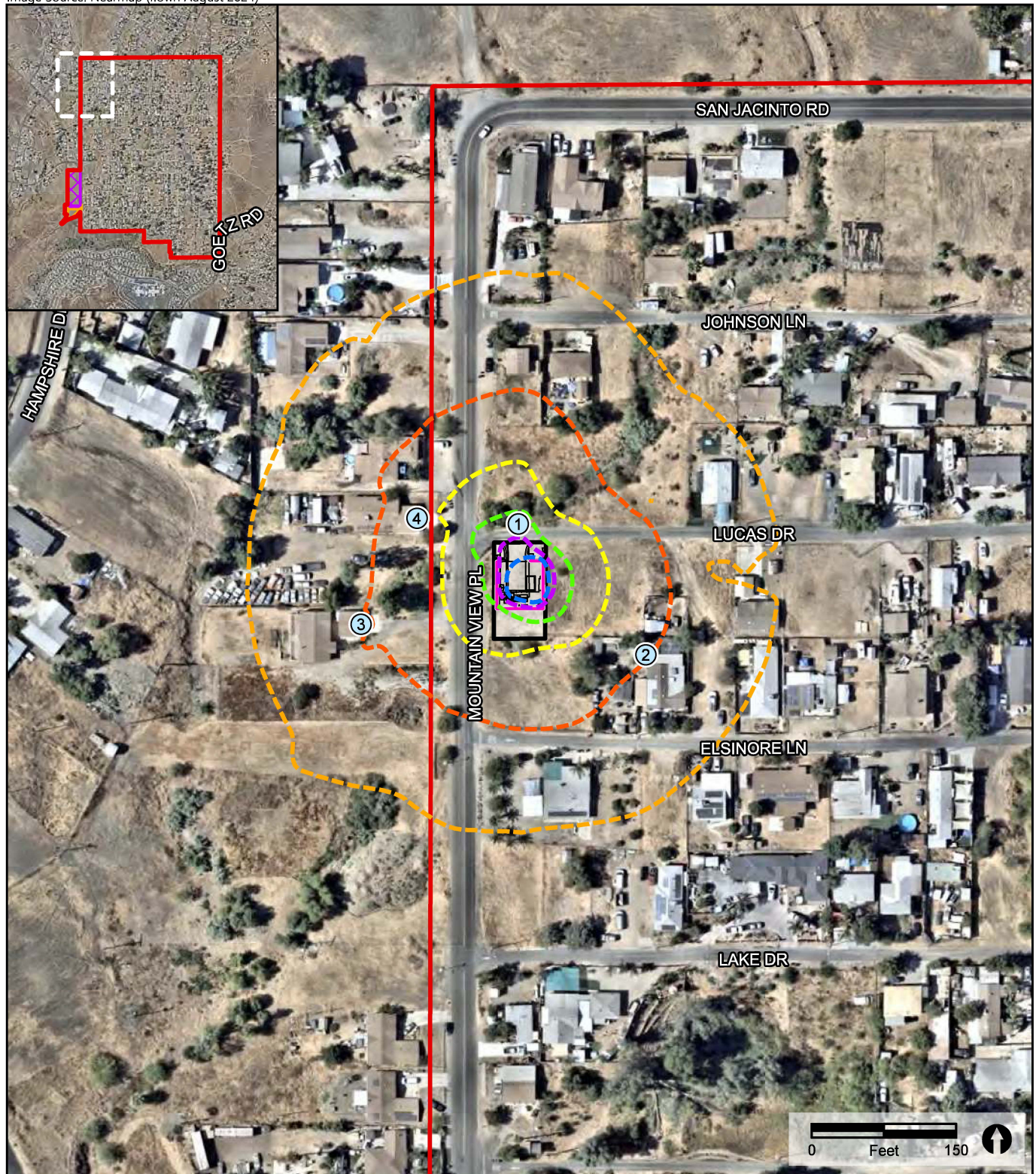
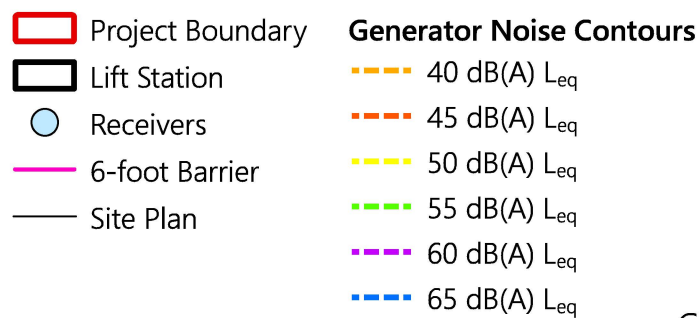


FIGURE 10e
Generator Noise
Contours – Lift Station 4

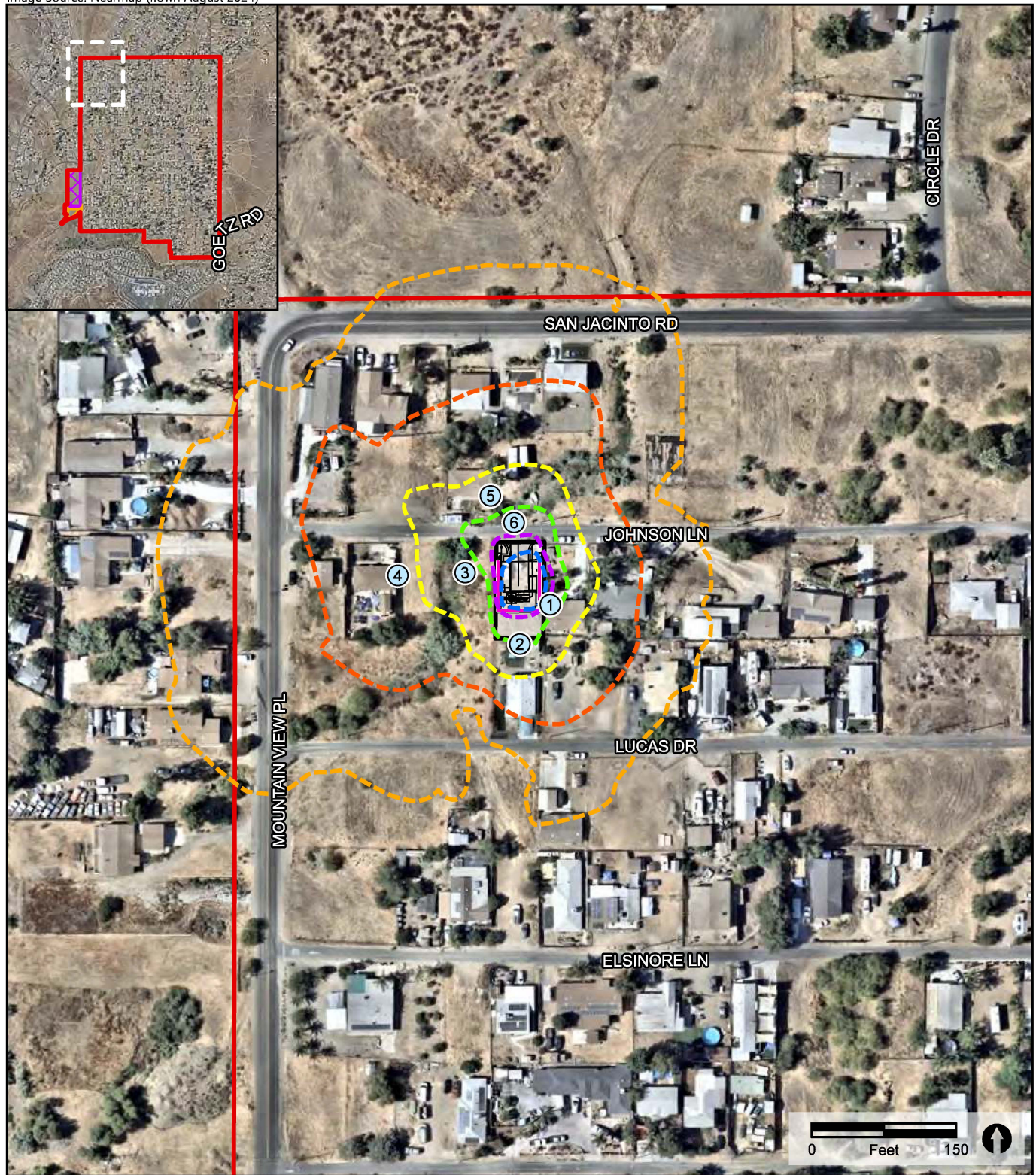
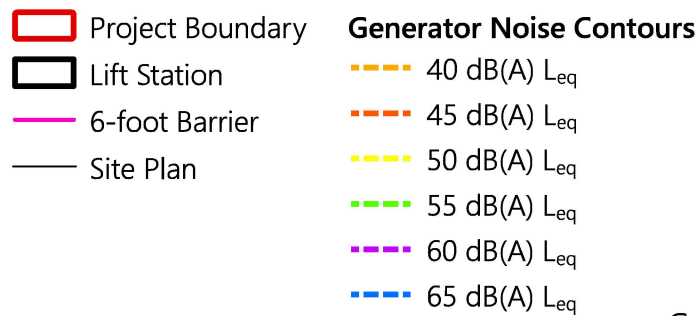


FIGURE 10f
Generator Noise
Contours – Lift Station 5

Table 7 Operational Noise Levels			
Receiver	Land Use	Noise Level Limit [dB(A) L_{eq}]	Emergency Generator Testing Noise Level [dB(A) L_{eq}]
Lift Station 1 Option 1			
1	Residential	65	38
2	Residential	65	39
3	Residential	65	40
4	Residential	65	43
5	Residential	65	38
6	Residential	65	36
7	Residential	65	33
8	Residential	65	31
9	Residential	65	29
10	Residential	65	27
11	Habitat	60	26
12	Habitat	60	35
13	Habitat	60	40
14	Habitat	60	40
15	Habitat	60	44
16	Habitat	60	41
17	Habitat	60	40
18	Habitat	60	44
19	Habitat	60	47
20	Habitat	60	40
Lift Station 1 Option 2			
1	Residential	65	37
2	Residential	65	38
3	Residential	65	42
4	Residential	65	45
5	Residential	65	47
6	Residential	65	47
7	Residential	65	42
8	Residential	65	40
9	Residential	65	37
10	Residential	65	33
11	Habitat	60	35
12	Habitat	60	41
13	Habitat	60	38
14	Habitat	60	36
15	Habitat	60	36
16	Habitat	60	34
17	Habitat	60	34
18	Habitat	60	35
19	Habitat	60	39
20	Habitat	60	43

Table 7 Operational Noise Levels			
Receiver	Land Use	Noise Level Limit [dB(A) L_{eq}]	Emergency Generator Testing Noise Level [dB(A) L_{eq}]
Lift Station 2			
1	Residential	65	52
2	Residential	65	44
3	Residential	65	46
4	Residential	65	46
5	Habitat	60	48
Lift Station 3			
1	Residential	65	54
2	Residential	65	62
3	Residential	65	53
4	Habitat	60	55
5	Habitat	60	57
6	Residential	65	48
Lift Station 4			
1	Habitat	60	58
2	Residential	65	45
3	Residential	65	44
4	Residential	65	47
Lift Station 5			
1	Residential	65	59
2	Residential	65	53
3	Habitat	60	53
4	Residential	65	49
5	Residential	65	52
6	Habitat	60	58
dB(A) L_{eq} = A-weighted decibels equivalent noise level			

As shown in Table 7, noise levels due to the periodic testing of the emergency generators are not anticipated to exceed the City's stationary noise standard of 65 dB(A) L_{eq} at the adjacent residential receivers or the noise level limit of 60 dB(A) L_{eq} at the adjacent habitat areas. Testing would only occur during the daytime hours. Without emergency generator sound enclosures, noise levels would exceed those shown in Table 7 and impacts would be significant (**Impact NOI-4**). In order to ensure that noise levels do not exceed those modeled in this analysis, the emergency generator must meet the performance requirements specified in mitigation measure NOI-3. With implementation of mitigation measure NOI-3, noise impacts due to emergency generator testing would be reduced to a level less than significant.

NOI-3: Emergency Generator Sound Enclosure. The emergency backup generators located at each lift station site shall be equipped with a Level 3 sound enclosure that results in noise levels not exceeding 73 dB(A) at 23 feet (7 meters).

6.4 Vibration

Construction would have the potential to result in varying degrees of temporary ground vibration, depending on the specific construction equipment used and operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration may be imperceptible at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and damage to nearby structures at the highest levels. Vibration perception would occur at structures, as people do not perceive vibrations without vibrating structures.

Human reaction to vibration is dependent on the environment the receiver is in as well as individual sensitivity. For example, vibration outdoors is rarely noticeable and generally not considered annoying. Typically, humans must be inside a structure for vibrations to become noticeable and/or annoying. Based on several federal studies, the threshold of perception is 0.035 in/sec PPV, with 0.24 in/sec PPV being a distinctly perceptible (Caltrans 2020). Vibration standards have been developed by the FTA and are used in this analysis to assess potential building damage caused by vibration associated with construction activities. FTA guidelines show that a vibration level of up to 0.5 in/sec PPV is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For non-engineered timber and masonry buildings, the criterion for building damage caused by construction vibration is 0.2 in/sec in PPV.

Construction equipment could include equipment such as loaded trucks, excavators, small dozers, and loaders. Vibration levels from these pieces of equipment would generate vibration levels with a PPV ranging from 0.035 to 0.076 in/sec PPV at 25 feet. A vibration level of 0.076 in/sec PPV at 25 feet would be 0.2 in/sec at 10 feet. Equipment would operate within the right-of-way and at the lift station sites. The right-of-way in the proposed project site is 20 feet, and equipment would not operate as close as 10 feet from a structure. Therefore, vibration levels are not anticipated to exceed 0.2 in/sec PPV and construction vibration impacts would be less than significant.

Once operational, the proposed project would not include the use of any stationary equipment that would generate substantial vibration levels. Therefore, the proposed project would not expose persons to or generate excessive groundborne vibration or groundborne noise, and impacts would be less than significant.

7.0 References Cited

California Department of Transportation (Caltrans)
2013 Technical Noise Supplement. November.

2020 Transportation and Construction Vibration Guidance Manual. April.

Federal Transit Administration (FTA)
2018 Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. Prepared by John A. Volpe National Transportation Systems Center. September.

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2006 Roadway Construction Noise Model User's Guide. FHWA-HEP-05-054, SOT-VNTSC-FHWA-05-01. Final Report. January.

2008 Roadway Construction Noise Mode, V1.1. Washington, DC.

Menifee, City of

2013 General Plan. <https://www.cityofmenifee.us/221/General-Plan>.

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2018 SoundPLAN Essential version 4.1.

RECON Environmental, Inc. (RECON)

2025 Air Quality Analysis for the Quail Valley Subarea 4 Project, Menifee, California. October 30.

2026 Biological Resources Report for the Quail Valley Subarea 4 Project, Menifee, California. January 23.

ATTACHMENTS

ATTACHMENT 1

Noise Measurement Data

Summary			
File Name on Meter	LxT_Data.035.s		
File Name on PC	LxT_0003896-20250723 102327-LxT_Data.035.ldbin		
Serial Number	0003896		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User			
Location	LS-1 Option 1		
Job Description	10667 Quail Valley Subarea 4		
Note			

Measurement			
Description			
Start	2025-07-23	10:23:27	
Stop	2025-07-23	10:53:48	
Duration		00:30:20.3	
Run Time		00:30:00.7	
Pause		00:00:19.6	
Pre-Calibration	2025-07-23	10:10:18	
Post-Calibration		None	
Calibration Deviation		---	

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
Overload	144.2 dB			
	A	C	Z	
Under Range Peak	100.2	97.2	102.2 dB	
Under Range Limit	37.4	37.1	44.1 dB	
Noise Floor	28.3	27.9	35.0 dB	

Results

LAeq	49.8					
LAE	82.3					
EA	19.052 μPa²h					
EA8	304.720 μPa²h					
EA40	1.524 mPa²h					
LApeak (max)	2025-07-23	10:27:57	87.4 dB			
LASmax	2025-07-23	10:42:47	70.2 dB			
LASmin	2025-07-23	10:25:57	32.5 dB			
SEA	-99.9 dB					
LAS > 60.0 dB (Exceedance Counts / Duration)	3		30.6 s			
LAS > 70.0 dB (Exceedance Counts / Duration)	1		1.1 s			
LApeak > 135.0 dB (Exceedance Counts / Duration)	0		0.0 s			
LApeak > 137.0 dB (Exceedance Counts / Duration)	0		0.0 s			
LApeak > 140.0 dB (Exceedance Counts / Duration)	0		0.0 s			
LCeq	60.5 dB					
LAeq	49.8 dB					
LCeq - LAeq	10.7 dB					
LAleq	53.0 dB					
LAeq	49.8 dB					
LAleq - LAeq	3.2 dB					
	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	49.8		60.5			
LS(max)	70.2	2025/07/23 10:42:47				
LS(min)	32.5	2025/07/23 10:25:57				
LPeak(max)	87.4	2025/07/23 10:27:57				
Overload Count	0					
Overload Duration	0.0 s					

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5 dB	
Threshold	90	80 dB	
Criterion Level	90	90 dB	
Criterion Duration	8	8 h	

Results		
Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	37.7	37.7 dB

Statistics	
LA5.00	52.4 dB
LA10.00	49.1 dB
LA33.30	43.3 dB
LA50.00	41.0 dB
LA66.60	38.6 dB
LA90.00	35.4 dB

Summary			
File Name on Meter	LxT_Data.036.s		
File Name on PC	LxT_0003896-20250723 110154-LxT_Data.036.ldbin		
Serial Number	0003896		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User			
Location	LS-1 Option 2		
Job Description	10667 Quail Valley Subarea 4		
Note			

Measurement			
Description			
Start	2025-07-23	11:01:54	
Stop	2025-07-23	12:02:06	
Duration		01:00:12.0	
Run Time		01:00:00.9	
Pause		00:00:11.1	
Pre-Calibration	2025-07-23	10:10:13	
Post-Calibration		None	
Calibration Deviation		---	

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
Overload	144.2 dB			
	A	C	Z	
Under Range Peak	100.2	97.2	102.2 dB	
Under Range Limit	37.4	37.1	44.1 dB	
Noise Floor	28.3	27.9	35.0 dB	

Results

LAeq	48.0					
LAE	83.5					
EA	25.132 μPa²h					
EA8	201.003 μPa²h					
EA40	1.005 mPa²h					
LApeak (max)	2025-07-23	12:01:11	85.4		dB	
LASmax	2025-07-23	11:51:14	68.2		dB	
LASmin	2025-07-23	11:34:33	31.1		dB	
SEA	-99.9		dB			
LAS > 60.0 dB (Exceedance Counts / Duration)	6		32.8		s	
LAS > 70.0 dB (Exceedance Counts / Duration)	0		0.0		s	
LApeak > 135.0 dB (Exceedance Counts / Duration)	0		0.0		s	
LApeak > 137.0 dB (Exceedance Counts / Duration)	0		0.0		s	
LApeak > 140.0 dB (Exceedance Counts / Duration)	0		0.0		s	
LCeq	59.6		dB			
LAeq	48.0		dB			
LCeq - LAeq	11.6		dB			
LAleq	51.1		dB			
LAeq	48.0		dB			
LAleq - LAeq	3.1		dB			
	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	48.0		59.6			
LS(max)	68.2	2025/07/23 11:51:14				
LS(min)	31.1	2025/07/23 11:34:33				
LPeak(max)	85.4	2025/07/23 12:01:11				
Overload Count	0					
Overload Duration	0.0		s			

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5 dB	
Threshold	90	80 dB	
Criterion Level	90	90 dB	
Criterion Duration	8	8 h	

Results		
Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	39.0	39.0 dB

Statistics	
LA5.00	54.1 dB
LA10.00	51.6 dB
LA33.30	43.7 dB
LA50.00	39.5 dB
LA66.60	36.7 dB
LA90.00	33.4 dB

Summary			
File Name on Meter	LxT_Data.037.s		
File Name on PC	LxT_0003896-20250723 124538-LxT_Data.037.ldbin		
Serial Number	0003896		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User			
Location	LS-2		
Job Description	10667 Quail Valley Subarea 4		
Note			

Measurement			
Description			
Start	2025-07-23 12:45:38		
Stop	2025-07-23 13:15:54		
Duration	00:30:15.8		
Run Time	00:30:05.5		
Pause	00:00:10.3		
Pre-Calibration	2025-07-23 10:10:13		
Post-Calibration	None		
Calibration Deviation	---		

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
Overload	144.2 dB			
	A	C	Z	
Under Range Peak	100.2	97.2	102.2 dB	
Under Range Limit	37.4	37.1	44.1 dB	
Noise Floor	28.3	27.9	35.0 dB	

Results						
LAeq			49.3			
LAE			81.9			
EA			17.016 μPa²h			
EA8			271.427 μPa²h			
EA40			1.357 mPa²h			
LApeak (max)	2025-07-23	12:52:30			85.5	dB
LASmax	2025-07-23	12:55:19			63.2	dB
LASmin	2025-07-23	12:47:08			33.4	dB
SEA			-99.9		dB	
LAS > 60.0 dB (Exceedance Counts / Duration)			4			9.9 s
LAS > 70.0 dB (Exceedance Counts / Duration)			0			0.0 s
LApeak > 135.0 dB (Exceedance Counts / Duration)			0			0.0 s
LApeak > 137.0 dB (Exceedance Counts / Duration)			0			0.0 s
LApeak > 140.0 dB (Exceedance Counts / Duration)			0			0.0 s
LCeq			57.1		dB	
LAeq			49.3		dB	
LCeq - LAeq			7.8		dB	
LAleq			54.2		dB	
LAeq			49.3		dB	
LAleq - LAeq			5.0		dB	
			A		C	
			dB	Time Stamp	dB	Time Stamp
			dB	Time Stamp	dB	Time Stamp
Leq			49.3		57.1	
LS(max)			63.2	2025/07/23 12:55:19		
LS(min)			33.4	2025/07/23 12:47:08		
LPeak(max)			85.5	2025/07/23 12:52:30		
Overload Count			0			
Overload Duration			0.0 s			

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5 dB	
Threshold	90	80 dB	
Criterion Level	90	90 dB	
Criterion Duration	8	8 h	

Results		
Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	37.3	37.3 dB

Statistics	
LA5.00	55.4 dB
LA10.00	53.8 dB
LA33.30	47.4 dB
LA50.00	43.3 dB
LA66.60	40.3 dB
LA90.00	35.9 dB

Summary			
File Name on Meter	LxT_Data.038.s		
File Name on PC	LxT_0003896-20250723 132335-LxT_Data.038.ldbin		
Serial Number	0003896		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User			
Location	LS-3 (4 lots to the east)		
Job Description	10667 Quail Valley Subarea 4		
Note			

Measurement			
Description			
Start	2025-07-23 13:23:35		
Stop	2025-07-23 13:38:49		
Duration	00:15:14.1		
Run Time	00:15:03.1		
Pause	00:00:11.0		
Pre-Calibration	2025-07-23 10:10:13		
Post-Calibration	None		
Calibration Deviation	---		

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
Overload	144.2 dB			
	A	C	Z	
Under Range Peak	100.2	97.2	102.2 dB	
Under Range Limit	37.4	37.1	44.1 dB	
Noise Floor	28.3	27.9	35.0 dB	

Results						
LAeq			41.3			
LAE			70.8			
EA			1.349 μPa²h			
EA8			43.012 μPa²h			
EA40			215.062 μPa²h			
LApeak (max)	2025-07-23	13:23:40			83.3	dB
LASmax	2025-07-23	13:23:40			55.2	dB
LASmin	2025-07-23	13:32:53			33.1	dB
SEA			-99.9		dB	
LAS > 60.0 dB (Exceedance Counts / Duration)			0		0.0 s	
LAS > 70.0 dB (Exceedance Counts / Duration)			0		0.0 s	
LApeak > 135.0 dB (Exceedance Counts / Duration)			0		0.0 s	
LApeak > 137.0 dB (Exceedance Counts / Duration)			0		0.0 s	
LApeak > 140.0 dB (Exceedance Counts / Duration)			0		0.0 s	
LCeq			55.0		dB	
LAeq			41.3		dB	
LCeq - LAeq			13.7		dB	
LAleq			47.9		dB	
LAeq			41.3		dB	
LAleq - LAeq			6.6		dB	
			A		C	
			dB		Time Stamp	
			Time Stamp		dB	
			dB		Time Stamp	
Leq			41.3		55.0	
LS(max)			55.2		2025/07/23 13:23:40	
LS(min)			33.1		2025/07/23 13:32:53	
LPeak(max)			83.3		2025/07/23 13:23:40	
Overload Count			0			
Overload Duration			0.0		s	

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5 dB	
Threshold	90	80 dB	
Criterion Level	90	90 dB	
Criterion Duration	8	8 h	

Results		
Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	26.2	26.2 dB

Statistics	
LA5.00	46.7 dB
LA10.00	45.0 dB
LA33.30	40.1 dB
LA50.00	37.3 dB
LA66.60	35.3 dB
LA90.00	33.9 dB

Summary			
File Name on Meter	LxT_Data.040.s		
File Name on PC	LxT_0003896-20250723 142858-LxT_Data.040.ldbin		
Serial Number	0003896		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User			
Location	LS-4		
Job Description	10667 Quail Valley Subarea 4		
Note			

Measurement			
Description			
Start	2025-07-23 14:28:58		
Stop	2025-07-23 14:59:08		
Duration	00:30:09.3		
Run Time	00:30:01.1		
Pause	00:00:08.2		
Pre-Calibration	2025-07-23 10:10:13		
Post-Calibration	None		
Calibration Deviation	---		

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
Overload	144.2 dB			
	A	C	Z	
Under Range Peak	100.2	97.2	102.2 dB	
Under Range Limit	37.4	37.1	44.1 dB	
Noise Floor	28.3	27.9	35.0 dB	

Results						
LAeq	48.2					
LAE	80.7					
EA	13.128 μPa²h					
EA8	209.925 μPa²h					
EA40	1.050 mPa²h					
LApeak (max)	2025-07-23 14:42:52			84.8 dB		
LASmax	2025-07-23 14:52:21			64.1 dB		
LASmin	2025-07-23 14:33:34			32.2 dB		
SEA	-99.9 dB					
LAS > 60.0 dB (Exceedance Counts / Duration)	11				36.2 s	
LAS > 70.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LApeak > 135.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LApeak > 137.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LApeak > 140.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LCeq	63.0 dB					
LAeq	48.2 dB					
LCeq - LAeq	14.8 dB					
LALeq	51.0 dB					
LAeq	48.2 dB					
LALeq - LAeq	2.9 dB					
	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	48.2		63.0			
LS(max)	64.1	2025/07/23 14:52:21				
LS(min)	32.2	2025/07/23 14:33:34				
LPeak(max)	84.8	2025/07/23 14:42:52				
Overload Count	0					
Overload Duration	0.0 s					

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5 dB	
Threshold	90	80 dB	
Criterion Level	90	90 dB	
Criterion Duration	8	8 h	

Results		
Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	36.1	36.1 dB

Statistics		
LA5.00	55.9 dB	
LA10.00	50.8 dB	
LA33.30	39.9 dB	
LA50.00	36.7 dB	
LA66.60	35.1 dB	
LA90.00	33.4 dB	

Summary			
File Name on Meter	LxT_Data.039.s		
File Name on PC	LxT_0003896-20250723 140043-LxT_Data.039.ldbin		
Serial Number	0003896		
Model	SoundTrack LxT®		
Firmware Version	2.404		
User			
Location	LS-5		
Job Description	10667 Quail Valley Subarea 4		
Note			

Measurement			
Description			
Start	2025-07-23 14:00:43		
Stop	2025-07-23 14:16:07		
Duration	00:15:23.5		
Run Time	00:15:02.9		
Pause	00:00:20.6		
Pre-Calibration	2025-07-23 10:10:13		
Post-Calibration	None		
Calibration Deviation	---		

Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamplifier	PRMLxT1			
Microphone Correction	Off			
Integration Method	Linear			
Overload	144.2 dB			
	A	C	Z	
Under Range Peak	100.2	97.2	102.2 dB	
Under Range Limit	37.4	37.1	44.1 dB	
Noise Floor	28.3	27.9	35.0 dB	

Results						
LAeq	42.4					
LAE	71.9					
EA	1.736 μPa²h					
EA8	55.365 μPa²h					
EA40	276.824 μPa²h					
LApeak (max)	2025-07-23 14:15:45			84.4 dB		
LASmax	2025-07-23 14:13:59			59.0 dB		
LASmin	2025-07-23 14:09:26			32.4 dB		
SEA	-99.9 dB					
LAS > 60.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LAS > 70.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LApeak > 135.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LApeak > 137.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LApeak > 140.0 dB (Exceedance Counts / Duration)	0				0.0 s	
LCeq	59.3 dB					
LAeq	42.4 dB					
LCeq - LAeq	16.9 dB					
LAleq	46.8 dB					
LAeq	42.4 dB					
LAleq - LAeq	4.5 dB					
	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	42.4		59.3			
LS(max)	59.0	2025/07/23 14:13:59				
LS(min)	32.4	2025/07/23 14:09:26				
LPeak(max)	84.4	2025/07/23 14:15:45				
Overload Count	0					
Overload Duration	0.0 s					

Dose Settings			
Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5 dB	
Threshold	90	80 dB	
Criterion Level	90	90 dB	
Criterion Duration	8	8 h	

Results		
Dose	-99.94	-99.94 %
Projected Dose	-99.94	-99.94 %
TWA (Projected)	-99.9	-99.9 dB
TWA (t)	-99.9	-99.9 dB
Lep (t)	27.3	27.3 dB

Statistics		
LA5.00	48.2 dB	
LA10.00	45.3 dB	
LA33.30	38.7 dB	
LA50.00	36.9 dB	
LA66.60	35.6 dB	
LA90.00	34.1 dB	

ATTACHMENT 2

SoundPLAN Data – Lift Station Construction Noise

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Construction

Source name	Reference	Noise	Corrections		
		Level dB(A)	Cwall dB(A)	CI dB(A)	CT dB(A)
Construction - LS1Opt1	Lw/unit	116.3	-	-	-
Construction - LS1Opt2	Lw/unit	116.3	-	-	-
Construction - LS2	Lw/unit	112.7	-	-	-
Construction - LS3	Lw/unit	112.7	-	-	-
Construction - LS4	Lw/unit	112.7	-	-	-
Construction - LS5	Lw/unit	112.7	-	-	-

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Construction

No.	Coordinates		Height	Receiver	Noise Limit	LS-1 Option 1	LS-1 Option 2
	X	Y				Noise Level	Noise Level
	(meters)		(meters)		dB(A)	dB(A)	dB(A)
1	476904.16	3729086.90	458.62	Residential	80	63.8	57.6
2	476903.71	3729114.30	457.75	Residential	80	65.9	59.1
3	476903.71	3729152.47	457.72	Residential	80	69.5	61.6
4	476901.02	3729182.11	457.84	Residential	80	73.6	64.7
5	476901.02	3729218.94	458.95	Residential	80	71.4	69.5
6	476902.36	3729244.99	460.47	Residential	80	66.4	70.4
7	476901.46	3729286.31	460.53	Residential	80	62.2	70.8
8	476901.46	3729312.36	461.35	Residential	80	60.4	70.7
9	476901.46	3729350.08	462.55	Residential	80	58.3	70.0
10	476851.16	3729417.90	473.33	Residential	80	55.5	72.3
11	476804.01	3729358.17	467.84	Habitat	60	57.7	71.8
12	476795.03	3729269.24	466.69	Habitat	60	63.7	70.3
13	476786.49	3729224.78	464.46	Habitat	60	69.0	66.3
14	476775.26	3729209.06	463.14	Habitat	60	69.0	63.5
15	476782.45	3729181.22	462.14	Habitat	60	73.0	62.4
16	476773.02	3729142.59	459.52	Habitat	60	69.0	59.3
17	476788.29	3729087.80	457.01	Habitat	60	65.8	56.9
18	476815.24	3729122.83	456.66	Habitat	60	75.7	59.1
19	476851.16	3729139.00	456.41	Habitat	60	77.4	60.5
20	476877.66	3729159.66	457.17	Habitat	60	77.4	62.9

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Construction

No.	Coordinates		Height (meters)	Receiver	Noise Limit dB(A)	LS-2
	X (meters)	Y (meters)				Noise Level dB(A)
1	476925.47	3729681.45	465.64	Residential	80	77.3
2	476965.26	3729651.84	467.62	Residential	80	69.9
3	476948.60	3729624.85	467.56	Residential	80	71.2
4	476877.74	3729663.07	463.78	Residential	80	67.2
5	476887.90	3729637.38	465.68	Habitat	60	69.8

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Construction

No.	Coordinates		Height	Receiver	Noise Limit	LS-3 without Barrier	LS-3 with Barrier	Difference
	X	Y				Noise Level	Noise Level	
	(meters)		(meters)		dB(A)	dB(A)	dB(A)	dB(A)
1	477091.06	3729800.14	471.04	Residential	80	79.6	79.7	0.1
2	477100.27	3729821.94	473.20	Residential	80	85.1	78.6	-6.5
3	477099.84	3729843.00	472.58	Residential	80	78.0	77.8	-0.1
4	477083.90	3729823.83	470.96	Habitat	60	86.2	86.4	0.2
5	477083.77	3729807.59	470.78	Habitat	60	85.0	85.0	0.1
6	477063.23	3729801.09	472.07	Residential	80	73.3	73.5	0.2

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Construction

No.	Coordinates		Height (meters)	Receiver	Noise Limit dB(A)	LS-4
	X (meters)	Y (meters)				Noise Level dB(A)
1	476908.10	3729942.35	468.28	Habitat	60	83.4
2	476948.73	3729901.27	476.41	Residential	80	68.2
3	476858.56	3729910.27	467.80	Residential	80	67.5
4	476876.03	3729943.92	468.93	Residential	80	72.0

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Construction

No.	Coordinates		Height	Receiver	Noise Limit	LS-5 without Barrier	LS-5 with Barrier	Difference
	X	Y				Noise Level	Noise Level	
	(meters)		(meters)		dB(A)	dB(A)	dB(A)	dB(A)
1	476978.74	3729984.79	473.85	Residential	80	83.8	79.9	-3.9
2	476969.22	3729972.23	475.41	Residential	80	78.3	78.3	0
3	476951.72	3729994.68	469.67	Habitat	60	79.1	79.2	0.2
4	476930.45	3729993.66	470.83	Residential	80	71.1	71.4	0.3
5	476959.56	3730019.06	470.43	Residential	80	76.8	76.8	0
6	476967.10	3730010.72	470.59	Habitat	60	83.0	83.0	0

ATTACHMENT 3

FHWA RD-77-108 – Construction-Related Traffic Noise Increase Calculations

FHWA RD-77-108
Traffic Noise Prediction Model

Data Input Sheet

Project Name : Quail Valley Subarea 4
Project Number : 10667
Modeled Condition : Construction-related traffic

Surface Refelction: CNEL
Assessment Metric: Hard
Peak ratio to ADT: 10.0
Traffic Desc. (Peak or ADT) : ADT

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
1	Project access roadways		51	25	20	58.82	0.00	41.18	100.00	0.00	0.00	

FHWA RD-77-108
Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Quail Valley Subarea 4
Project Number : 10667
Modeled Condition : Construction-related traffic
Assessment Metric: Hard

Segment	Roadway	Segment	Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
			Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
1	Project access roadways		35.0	0.0	52.7	52.8	0	0	1	4	12	38

ATTACHMENT 4

SoundPLAN Data – Lift Station Emergency Generator Testing Noise

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Emergency Generator Testing

Source name	Reference	Noise	Corrections		
		Level dB(A)	Cwall dB(A)	CI dB(A)	CT dB(A)
Generator - LS1Opt1	Lw/unit	91.4	-	-	-
Generator - LS1Opt2	Lw/unit	91.4	-	-	-
Generator - LS2	Lw/unit	91.4	-	-	-
Generator - LS3	Lw/unit	91.4	-	-	-
Generator - LS4	Lw/unit	91.4	-	-	-
Generator - LS5	Lw/unit	91.4	-	-	-

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Emergency Generator Testing

No.	Coordinates		Height	Receiver	Noise Limit	LS-1 Option 1	LS-1 Option 2
	X	Y				Noise Level	Noise Level
	(meters)		(meters)		dB(A)	dB(A)	dB(A)
1	476904.16	3729086.90	458.62	Residential	65	37.7	36.5
2	476903.71	3729114.30	457.75	Residential	65	39.0	38.3
3	476903.71	3729152.47	457.72	Residential	65	39.7	41.5
4	476901.02	3729182.11	457.84	Residential	65	43.0	44.9
5	476901.02	3729218.94	458.95	Residential	65	38.2	46.5
6	476902.36	3729244.99	460.47	Residential	65	35.8	46.6
7	476901.46	3729286.31	460.53	Residential	65	32.6	42.0
8	476901.46	3729312.36	461.35	Residential	65	31.1	39.6
9	476901.46	3729350.08	462.55	Residential	65	29.2	36.8
10	476851.16	3729417.90	473.33	Residential	65	27.4	32.8
11	476804.01	3729358.17	467.84	Habitat	60	25.8	35.1
12	476795.03	3729269.24	466.69	Habitat	60	35.3	41.0
13	476786.49	3729224.78	464.46	Habitat	60	39.5	38.4
14	476775.26	3729209.06	463.14	Habitat	60	40.1	35.7
15	476782.45	3729181.22	462.14	Habitat	60	43.5	36.3
16	476773.02	3729142.59	459.52	Habitat	60	41.3	33.9
17	476788.29	3729087.80	457.01	Habitat	60	40.2	34.0
18	476815.24	3729122.83	456.66	Habitat	60	44.1	35.0
19	476851.16	3729139.00	456.41	Habitat	60	46.5	38.9
20	476877.66	3729159.66	457.17	Habitat	60	39.5	42.8

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Emergency Generator Testing

No.	Coordinates		Height (meters)	Receiver	Noise Limit dB(A)	LS-2
	X (meters)	Y (meters)				Noise Level dB(A)
1	476925.47	3729681.45	465.64	Residential	65	51.6
2	476965.26	3729651.84	467.62	Residential	65	43.7
3	476948.60	3729624.85	467.56	Residential	65	46.3
4	476877.74	3729663.07	463.78	Residential	65	46.3
5	476887.90	3729637.38	465.68	Habitat	60	48.2

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Emergency Generator Testing

No.	Coordinates		Height	Receiver	Noise Limit	LS-3
	X	Y				Noise Level
	(meters)		(meters)		dB(A)	dB(A)
1	477091.06	3729800.14	471.04	Residential	65	53.7
2	477100.27	3729821.94	473.20	Residential	65	62.3
3	477099.84	3729843.00	472.58	Residential	65	52.8
4	477083.90	3729823.83	470.96	Habitat	60	55.1
5	477083.77	3729807.59	470.78	Habitat	60	56.7
6	477063.23	3729801.09	472.07	Residential	65	47.6

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Emergency Generator Testing

No.	Coordinates		Height (meters)	Receiver	Noise Limit dB(A)	LS-4
	X	Y				Noise Level dB(A)
1	476908.10	3729942.35	468.28	Habitat	60	57.6
2	476948.73	3729901.27	476.41	Residential	65	45.4
3	476858.56	3729910.27	467.80	Residential	65	44.2
4	476876.03	3729943.92	468.93	Residential	65	47.0

10667 Quail Valley Subarea 4
SoundPLAN Data - Lift Station Emergency Generator Testing

No.	Coordinates		Height (meters)	Receiver	Noise Limit dB(A)	LS-5
	X (meters)	Y (meters)				Noise Level dB(A)
1	476978.74	3729984.79	473.85	Residential	65	58.9
2	476969.22	3729972.23	475.41	Residential	65	53.0
3	476951.72	3729994.68	469.67	Habitat	60	52.8
4	476930.45	3729993.66	470.83	Residential	65	48.5
5	476959.56	3730019.06	470.43	Residential	65	52.2
6	476967.10	3730010.72	470.59	Habitat	60	57.5