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NOISE STUDY REPORT
US-101 / LOST HILLS ROAD INTERCHANGE
CALABASAS, CALIFORNIA

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Noise Study Report

US-101 / LOST HILLS ROAD INTERCHANGE CALABASAS, CALIFORNIA

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EXECUTIVE SUMMARY

The purpose of this study is to assess the potential noise impacts and identify feasible noise abatement measures for the US-101 / Lost Hills Road Interchange Project located in western Los Angeles County in the City of Calabasas. The alternatives considered were developed to reduce expected congestion and enhance traffic operations and safety by adding capacity in an area that experiences delays during peak hours. The design year for this project is 2040. Traffic conditions and demand forecasts were developed for the design year and used in the traffic noise analysis to assess the potential noise impacts.

The noise study considers seven alternatives: No-Build (Alternative 1), installing Transportation Management Systems (Alternative 2), construction of a new overcrossing and building a four-legged roundabout at the north side and south side of US-101 (Alternative 3), construction of a new overcrossing only (Alternative 4), construction of a new overcrossing, a new partial cloverleaf on-ramp for northbound Lost Hills Road to northbound US-101 and moving access to the residential community to Driver Avenue (Alternative 5), construction of a new overcrossing and moving access to the residential community to Driver Avenue (Alternative 6), and construction of a new overcrossing, a new cloverleaf on-ramp for northbound US-101, and relocating US-101 northbound on-ramp to a new cloverleaf on-ramp for US-101 northbound 500 feet north of Canwood Street.

Acentech personnel visited the site and conducted noise measurements at eight residential and recreational locations. Noise measurements were performed during February 2010. Noise data indicate that the existing noise levels approach or exceed the Noise Abatement Criteria (NAC) at several outdoor residential uses near the highway. The residential land use is located on the north side of US-101 and west of Lost Hills Road. The community elevation rises from the freeway toward the north. A noise impact occurs when predicted noise levels in the design year approach within 1 dB or exceed NAC. Noise abatement is considered feasible if the noise is reduced by at least 5 dB. The design year for this project is 2040. Traffic conditions and demand forecasts were developed for the design year and used in the modeling of the traffic noise.

The Federal Highway Administration's (FHWA's) Traffic Noise Model (TNM) version 2.5 was used for the noise calculations for each alternative. The noise model was calibrated using field data on traffic and noise levels measured in the community.

The main lines of US-101, the ramps and traffic on Lost Hills Road were considered in the analysis. No lane additions for US-101 were considered in the analysis. Soundwall heights from 8 feet to 16 feet were considered in the evaluation of noise abatement alternatives. Soundwall heights were designed to provide at least 5 dB reduction and block the line of site between heavy truck exhaust stacks on the highway and first row residential and recreation land uses. The number of benefited residences and reasonable allowance for barrier S32 are summarized in Table ES-1 for each of the build alternatives.

Construction noise exposure to outdoor use area will be intermittent. The degree of construction noise impacts will vary depending on the construction activities. During the construction period, the contractors may be required to comply with noise ordinances and conditions by the local jurisdiction.

Table ES-1
Summary of Feasible Barrier for Each Alternative

Alternative	Receptor No.	Type[1] and No. of Benefited Residences	Barrier Location/ Hwy. Side	Barrier Height/ Total Length	Reasonable Cost per Residence [2]	Reasonable Allowance Cost Per Barrier(s)
2	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	8 ft / 100 ft 12 ft / 100 ft 16 ft / 1,690 ft	$53,000	$1,219,000
3	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	8 ft / 300 ft 10 ft / 400 ft 12 ft / 200 ft 16 ft / 1,390 ft	$53,000	$1,219,000
4	R3 to R26	25 SFR	Edge of Traveled Way (NB On-ramp)	10 ft / 200 ft 16 ft / 1,890 ft	$53,000	$1,325,000
5	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	10 ft / 190 ft 16 ft / 1,900 ft	$53,000	$1,219,000
6	R3 to R24	23 SFR	Edge of Traveled Way (NB On-ramp)	8 ft / 100 ft 10 ft / 100 ft 14 ft / 100 ft 16 ft / 1,990 ft	$53,000	$1,219,000
7	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	12 ft / 100 ft 14 ft / 400 ft 16 ft / 1,600 ft	$51,000	$1,173,000

Notes:
1/ Land Use: SFR - single-family residence
2/ Based on the reasonable allowance of $31,000 per residence/unit (Caltrans, 2009)

Table of Contents

1. INTRODUCTION 1

1.1. Purpose of the Noise Study Report 1

1.2. Project Purpose and Need 1

2. Project Description 3

3. Fundamentals of Traffic Noise 6

3.1. Sound, Noise, and Acoustics 7

3.2. Frequency 7

3.3. Sound Pressure Levels and Decibels 7

3.4. Addition of Decibels 7

3.5. A-Weighted Decibels 7

3.6. Human Response to Changes in Noise Levels 8

3.7. Noise Descriptors 9

3.8. Sound Propagation 10

3.8.1. Geometric Spreading 10

3.8.2. Ground Absorption 10

3.8.3. Atmospheric Effects 10

3.8.4. Shielding by Natural or Human-Made Features 10

4. Federal Regulations and State Policies 12

4.1. Federal Regulations 13

4.2. State Regulations and Policies 14

4.2.1. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects 14

4.2.2. Section 216 of the California Streets and Highways Code 14

5. Study Methods and Procedures 15

5.1. Methods for Identifying Land Uses and Selecting Noise Measurement and Modeling Receiver Locations 15

5.2. Field Measurement Procedures 15

5.2.1. Short-Term Measurements 15

5.2.2. Long -Term Measurements 16

5.3. Traffic Noise Modeling 17

5.4. Methods for Identifying Traffic Noise Impacts and Consideration of Abatement 17

6. Existing Noise Environment 19

6.1. Existing Land Uses 19

6.2. Noise Measurement Results 19

6.2.1. Short-Term Monitoring 19

6.2.2. Long-Term Monitoring 19

6.3. Model Calibration 23

7. Future Noise Environment, Impacts, and Considered Abatement 25

7.1. Future Noise Environment and Impacts 26

7.2. Preliminary Noise Abatement Analysis 26

7.2.1. Alternative 2 28

7.2.2. Alternative 3 30

7.2.3. Alternative 4 33

7.2.4. Alternative 5 36

7.2.5. Alternative 6 38

7.2.6. Alternative 7 41

8. Construction noise 44

9. References 46

Appendix A Traffic Data 50

Appendix B Predicted Future Noise Levels and Noise Barrier Analysis 57

Appendix C Noise Barrier Reasonableness Analysis Worksheet 77

Appendix D Noise Barrier Analysis 109

Appendix E Receptor and Noise Barrier Locations 117

Figures

Figure 2–1 Project Location Map 4

Figure 2–2 Project Vicinity Map 5

Figure 6–1 Long-Term monitoring at Location LT-1, February 1–3, 2010 21

Figure 6–2 Long-Term monitoring at Location LT-2, February 1–3, 2010 21

Tables

Table 3–1 Typical A-Weighted Noise Levels 9
Table 4–1 Activity Categories and Noise Abatement Criteria 14
Table 6–1 Summary of Long-Term Monitoring 20
Table 6–2 Summary of Noise Measurement Results for the 4 P.M. Hour 22
Table 6–3 Noise Modeling Calibration Results 23
Table 6–4 Modeled Receiver Locations 24
Table 7–1 Alternative 2 – Summary of Feasible Barrier 29
Table 7–2 Alternative 2 – Soundwall Locations and Elevations 29
Table 7–3 Alternative 2 – Summary of Reasonableness Determination Data[a] 30
Table 7–4 Alternative 3 – Summary of Feasible Barrier 31
Table 7–5 Alternative 3 – Soundwall Locations and Elevations 32
Table 7–6 Alternative 3 – Summary of Reasonableness Determination Data[a] 33
Table 7–7 Alternative 4 – Summary of Feasible Barrier 34
Table 7–8 Alternative 4 – Soundwall Locations and Elevations 35
Table 7–9 Alternative 4 – Summary of Reasonableness Determination Data[a] 35
Table 7–10 Alternative 5 – Summary of Feasible Barrier 37
Table 7–11 Alternative 5 – Soundwall Locations and Elevations[1] 37
Table 7–12 Alternative 5 – Summary of Reasonableness Determination Data[a] 38
Table 7–13 Alternative 6 – Summary of Feasible Barrier 39
Table 7–14 Alternative 6 – Soundwall Locations and Elevations 40
Table 7–15 Alternative 6 – Summary of Reasonableness Analysis [a] 40
Table 7–16 Alternative 7 – Summary of Feasible Barrier 41
Table 7–17 Alternative 7 – Soundwall Locations and Elevations 42
Table 7–18 Alternative 7 – Summary of Reasonableness Analysis [a] 43

List of Abbreviated Terms

CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
dB	Decibels
FHWA	Federal Highway Administration
Hz	Hertz
kHz	Kilohertz
L_{dn}	Day-Night Level
L_{eq}	Equivalent Sound Level
$L_{eq(h)}$	Equivalent Sound Level over one hour
L_{max}	Maximum Sound Level
LOS	Level of Service
L_{xx}	Percentile-Exceeded Sound Level
mPa	micro-Pascals
mph	miles per hour
NAC	noise abatement criteria
NADR	Noise Abatement Decision Report
NEPA	National Environmental Policy Act
NSR	noise study reports
Protocol	Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects
SPL	sound pressure level
TeNS	Caltrans' Technical Noise Supplement
TNM 2.5	FHWA Traffic Noise Model Version 2.5

1. INTRODUCTION

The purpose of this Noise Study Report (NSR) is to evaluate noise impacts and identify feasible noise abatement measures for the US-101 / Lost Hills Road Interchange Project (Project). This project is defined as Type 1 under the requirements of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) "Procedures for Abatement of Highway Traffic Noise". 23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with Federal Highway Administration (FHWA) noise standards.

The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Caltrans 2006) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing noise study reports (NSR).

The purpose of this project is to improve mobility and safety by reducing existing and forecasted traffic congestion on Lost Hills Road and the US-101 Freeway Ramps within the project limits. The ramp intersections are currently operating at LOS C or better during the peak hours. Based on the future (2040) forecasts, the intersection of Lost Hills Road/US-101 northbound ramps is forecast to operate at LOS D in the a.m. peak hour and LOS F in the p.m. peak hour.[1]

The NSR includes (a) long-term noise measurements; (b) short-term measurements; (c) roadway traffic noise modeling using FHWA's Traffic Noise Model (TNM) version 2.5; and (d) evaluation of noise abatement measures in the form of soundwall placement.

1.1. Purpose of the Noise Study Report

The purpose of this NSR is to evaluate noise impacts and abatement under the requirements of Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) "Procedures for Abatement of Highway Traffic Noise". 23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with Federal Highway Administration (FHWA) noise standards.

The Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects (Protocol) (Caltrans 2006) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing noise study reports (NSR). Noise impacts associated with this project under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) are evaluated in the project's environmental document.

1.2. Project Purpose and Need

The purpose of this project is to improve mobility and safety by reducing existing and forecasted traffic congestion at Lost Hills Road Interchange on US-101 within the project limits. This project would reduce congestion and is expected to enhance traffic operations by adding capacity in an area that experiences delays during peak hours and enhance safety within the project limits, while minimizing environmental and socio-economic impacts.

[1] /DKS Associates 2009. "Traffic Analysis, Lost Hills Road Interchange, Calabasas, California." October 21, 2009.

The US-101 Freeway provides the primary regional access for the City of Calabasas and adjacent cities, with the western part of Calabasas served by the interchanges at Lost Hills Road and Las Virgenes Road. The proposed improvement to Lost Hills Road Overcrossing and US-101 Freeway interchange would substantially enhance the traffic operation at the interchange. The ramp intersections are currently operating at a level of service (LOS) C for the AM and PM peak hours. It should be noted that the actual operating conditions tend to be worse than indicated by the theoretical level of service calculation due to lane merging on the bridge and queue backup between intersections. Based on the traffic forecasts for 2040, level of service (LOS) F will occur for the PM peak hour. A Project Study Report (PSR) and Preliminary Environment Analysis Report (PEAR) were completed in 2007 for the Proposed Project (Caltrans, 2007).[2]

In addition to the limited traffic mobility, the existing overcrossing is too narrow for the amount of traffic. The Lost Hills Road Overcrossing provides the only emergency access to the residential community to the north and improving the operating conditions at the interchange will result in an overall operational improvement. Per Caltrans Retrofit Program Manager, the bridge requires seismic restrainer evaluation due to the current higher design criteria of Peak Rock Acceleration magnitude from 0.4g to 0.5g. The structure is 6km from a M6.25 fault and could possibly be vulnerable for near fault effects and vertical acceleration effects. Also, the current vertical clearance of the overcrossing is deficient at 15.42 ft. at its lowest point. The current overcrossing has a four span configuration with column bents located within the median and along the outside shoulders of the US-101 Freeway. This configuration cannot accommodate any future additional lanes on the US-101 Freeway.

[2]/ Athalye Consulting Engineers, 2007. "PROJECT STUDY REPORT PROJECT DEVELOPMENT SUPORT (PSR-PDS)." 07-LA-101-51.1/51.6 (PM 31.9/32.3) EA 07-24230K (Local-186 (HE11) Program, Replace Lost Hills Road Overcrossing & Modify Interchange Project. February 2007

2. PROJECT DESCRIPTION

US-101 provides the primary regional access for the City of Calabasas and adjacent cities with the western part of Calabasas served by the interchanges at Lost Hills Road and Las Virgenes Road. Lost Hills Road is a north-south arterial street that extends from the Calabasas Landfill north of Canwood Street to its southerly termination at Las Virgenes Road. There are signalized intersections at the off and on-ramp locations for the existing diamond interchange.

The noise analysis in support of the Project Report analyzes seven alternatives for the future design year (2040) horizon. Traffic conditions and demand forecasts were developed for the design year and used in the traffic noise analysis to assess the potential noise impacts. Common to all alternatives is the assumed upgrade to US-101 of adding a high-occupancy (HOV) lane in each direction. The following presents a description of each alternative evaluated in this report.

No-Build Alternative (Alternative 1)

Alternative 1 considers no improvements to the Lost Hills Road Interchange by the year 2040.

Transportation Management Systems Alternative (Alternative 2)

Alternative 2 considers no capacity improvements to the Lost Hills Road Interchange. This alternative includes improvements to traffic signal timing and coordination at the interchange (i.e. video detection, CCTV).

Roundabout Alternative (Alternative 3)

Alternative 3 considers the construction of a new overcrossing to meet the Caltrans design standards, a four-legged roundabout at the north side and south side of US-101.

Expanded Diamond Interchange Alternative (Alternative 4)

Alternative 4 considers the construction of a new overcrossing, but retains the same diamond interchange configuration. Canwood Street will be maintained at its current location.

Partial Cloverleaf Alternative (Alternative 5)

Alternative 5 considers the construction of a new overcrossing to meet Caltrans design standards, and a new partial cloverleaf on-ramp for northbound Lost Hills Road to northbound US-101. Access to the residential community to the northwest of the interchange would be relocated to Driver Avenue.

Full Standard Diamond Interchange Alternative (Alternative 6)

Alternative 6 considers the construction of a new overcrossing to meet the Caltrans design standards, but retains the same diamond interchange configuration. Access to the residential community to the northwest of the interchange would be relocated to Driver Avenue.

Cloverleaf Alternative (Alternative 7)

Alternative 7 considers the construction of a new overcrossing to meet Caltrans design standards, a new cloverleaf on-ramp for northbound US-101, and the closure of the existing US-101 northbound on-ramp. The new cloverleaf on-ramp for US-101 northbound would be located 500 feet north of Canwood Street, and serve both northbound and southbound traffic on Lost Hills Road. Access to the residential community to the northwest of the interchange would remain at Canwood Street. This alternative includes the signalization of Lost Hills Road/US-101 northbound ramps and Lost Hills Road/Canwood Street.

Figure 2–1 Project Location Map

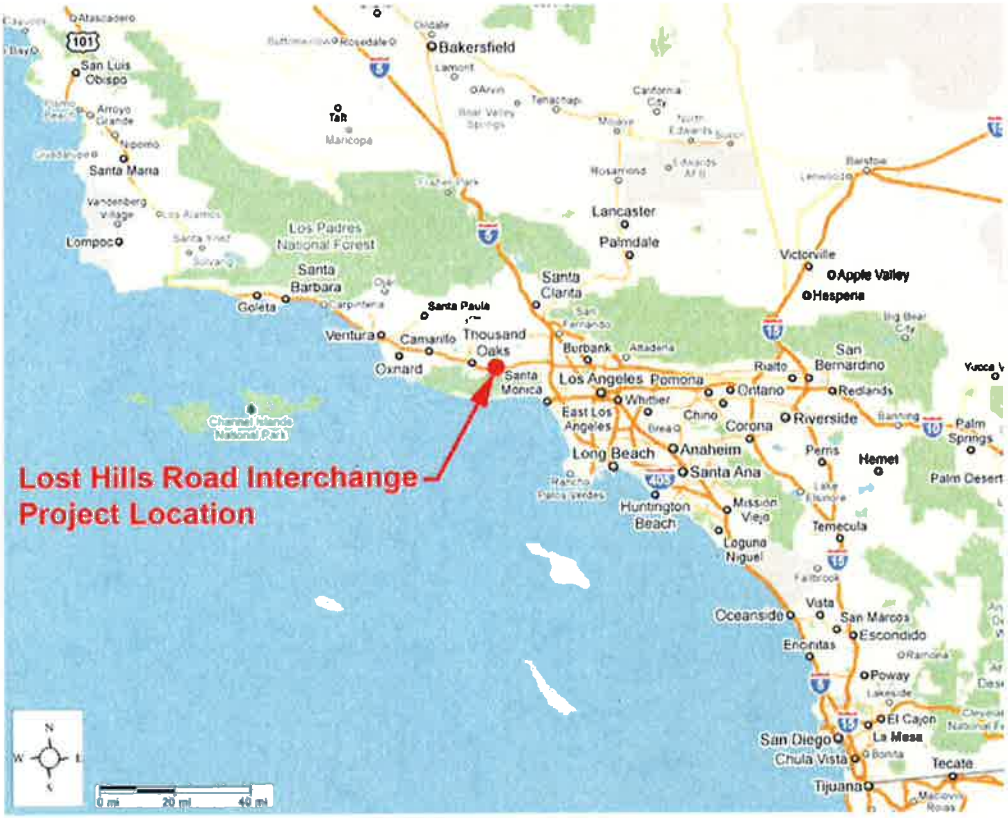
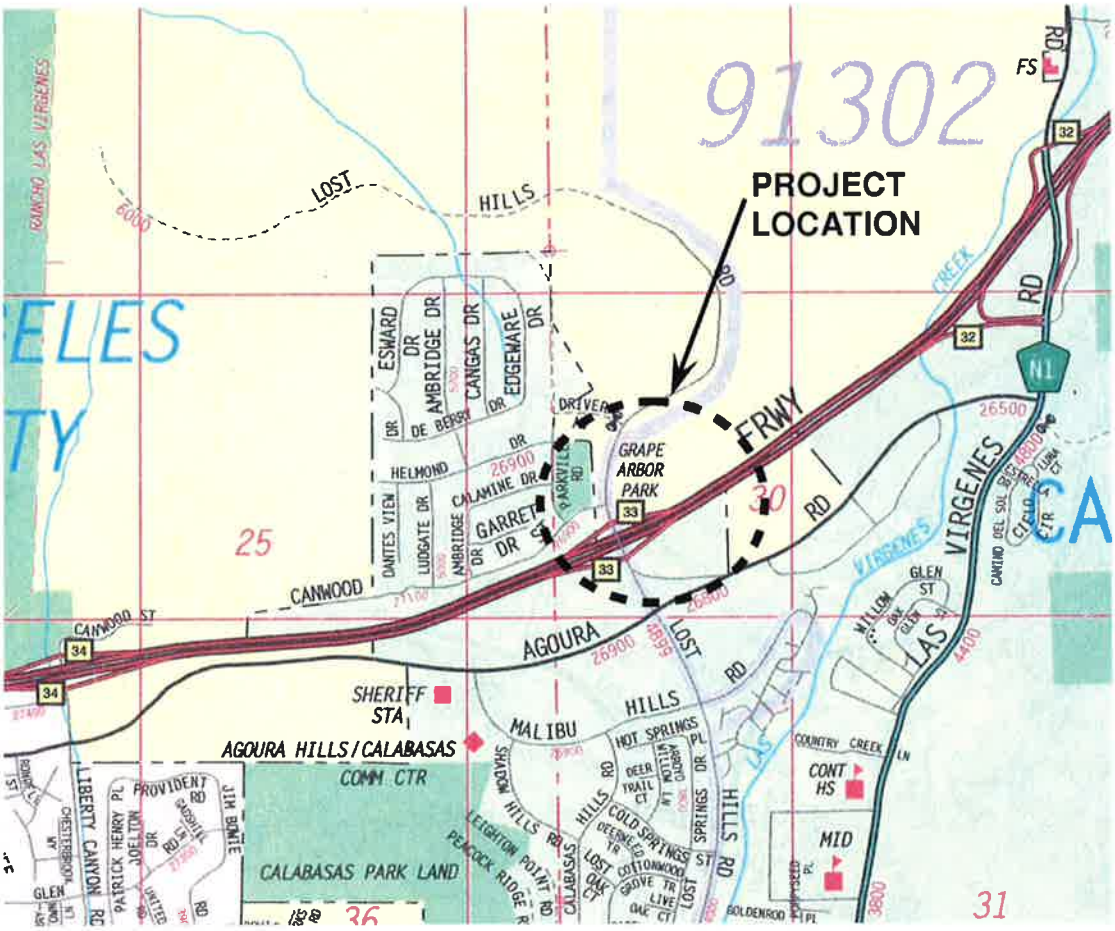


Figure 2–2 Project Vicinity Map



No Scale

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3. FUNDAMENTALS OF TRAFFIC NOISE

The following is a brief discussion of fundamental traffic noise concepts. For a detailed discussion, please refer to Caltrans' Technical Noise Supplement (TeNS), a technical supplement to the Protocol, that is available on Caltrans Web site (http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf).

3.1. Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

3.2. Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

3.3. Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (μPa). One μPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 μPa. Because of this huge range of values, sound is rarely expressed in terms of μPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 μPa.

3.4. Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

3.5. A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the

intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of dBA) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. The relative loudness or annoyance of a sound correlates well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway-traffic noise. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels or dBA. Table 3–1 describes typical A-weighted noise levels for various noise sources.

3.6. Human Response to Changes in Noise Levels

As discussed above, doubling sound energy results in a 3-dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different than what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dB changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 Hz–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound, would generally be perceived as barely detectable.

Table 3–1
Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	— 70 —	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	
		Large business office
Quiet urban daytime	— 50 —	Dishwasher next room
Quiet urban nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans 2009.

3.7. Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis.

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq}[h]$) is the energy average of A-weighted sound levels occurring during a one-hour period, and is the basis for Noise Abatement Criteria (NAC) used by Caltrans and FHWA, described in Section 4.1 below.

- **Percentile-Exceeded Sound Level (L_{xx}):** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10% of the time, and L_{90} is the sound level exceeded 90% of the time).

- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10 p.m. and 7 a.m.
- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m., and a 5-dB penalty applied to the A-weighted sound levels occurring during evening hours between 7 p.m. and 10 p.m.

3.8. Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

3.8.1. Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 decibels for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path, and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 decibels for each doubling of distance from a line source.

3.8.2. Ground Absorption

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water,), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 decibels per doubling of distance.

3.8.3. Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

3.8.4. Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and

human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and receiver is rarely effective in reducing noise because it does not create a solid barrier.

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4. FEDERAL REGULATIONS AND STATE POLICIES

This report focuses on the requirements of 23 CFR 772, as discussed below.

4.1. Federal Regulations

23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type I or Type II projects. FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment, or increases the number of through-traffic lanes. A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment.

Type I projects include those that create a completely new noise source, as well as those that increase the volume or speed of traffic or move the traffic closer to a receiver. Type I projects include the addition of an interchange, ramp, auxiliary lane, or truck-climbing lane to an existing highway, or the widening an existing ramp by a full lane width for its entire length. Projects unrelated to increased noise levels, such as striping, lighting, signing, and landscaping projects, are not considered Type I projects.

Under 23 CFR 772.11, noise abatement must be considered for Type I projects if the project is predicted to result in a traffic noise impact. In such cases, 23 CFR 772 requires that the project sponsor "consider" noise abatement before adoption of the final NEPA document. This process involves identification of noise abatement measures that are reasonable, feasible, and likely to be incorporated into the project, and of noise impacts for which no apparent solution is available.

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design year approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level substantially exceeds the existing noise level (a "substantial" noise increase). 23 CFR 772 does not specifically define the terms "substantial increase" or "approach"; these criteria are defined in the Protocol, as described below.

Table 4–1 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

In identifying noise impacts, primary consideration is given to exterior areas of frequent human use. In situations where there are no exterior activities, or where the exterior activities are far from the roadway or physically shielded in a manner that prevents an impact on exterior activities, the interior criterion (Activity Category E) is used as the basis for determining a noise impact.

Table 4–1
Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level (dBA-L_{eq}[h])	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 Exterior	Developed lands, properties, or activities not included in categories A or B above
D	—	Undeveloped lands
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: Caltrans

4.2. State Regulations and Policies

4.2.1. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects

The Protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or federal-aid highway projects. The NAC specified in the Protocol are the same as those specified in 23 CFR 772. The Protocol defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA. The Protocol also states that a sound level is considered to approach an NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA, but 65 dBA is not).

The TeNS to the Protocol provides detailed technical guidance for the evaluation of highway traffic noise. This includes field measurement methods, noise modeling methods, and report preparation guidance.

4.2.2. Section 216 of the California Streets and Highways Code

Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed freeway project on public and private elementary and secondary schools. Under this code, a noise impact occurs if, as a result of a proposed freeway project, noise levels exceed 52 dBA-L_{eq}(h) in the interior of public or private elementary or secondary classrooms, libraries, multipurpose rooms, or spaces. This requirement does not replace the "approach or exceed" NAC criterion for FHWA Activity Category E for classroom interiors, but it is a requirement that must be addressed in addition to the requirements of 23 CFR 772.

If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA-L_{eq}(h). If the noise levels generated from freeway and non-freeway sources exceed 52 dBA-L_{eq}(h) prior to the construction of the proposed freeway project, then noise abatement must be provided to reduce the noise to the level that existed prior to construction of the project.

5. STUDY METHODS AND PROCEDURES

5.1. Methods for Identifying Land Uses and Selecting Noise Measurement and Modeling Receiver Locations

A field investigation was conducted to identify land uses that could be subject to traffic noise impacts from the proposed project. Land uses in the project area were categorized by land use type, Activity Category as defined in Table 4–1, and the extent of frequent human use. As stated in the Protocol, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Although all developed land uses are evaluated in this analysis, the focus is on locations of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards and common use areas at multi-family residences.

Measurement locations outside the direct project area are useful for documenting existing community background noise levels that would occur without the freeway and interchange traffic. After the project is built, this information can be helpful in determining if noise barriers constructed as part of a project increased noise levels at distant receivers. Measurement location ST6, located approximately 1100 ft from the interchange, was selected to measure the background noise in the community.

5.2. Field Measurement Procedures

This section describes the methods and procedures followed for the noise study, including the selection of representative sensitive receptor sites, noise measurement procedures, and traffic noise modeling required to conduct the analysis.

There are no noise sensitive receivers adjacent to the project area south of US-101 and measurements were confined to the north side to the highway. The selection of measurement locations was based on the following criteria:

- Locations expected to receive the highest noise impacts, such as the first row of houses to the freeway or to Lost Hills Road.
- Locations are acoustically representative and equivalent of the area of concern.
- Areas of frequent human use where lower noise level would be of benefit, such as the Grape Arbor Park area along Lost Hills Road and residential backyards.
- Sites clear of major obstruction and noise contamination.
- Microphone location that was at least 10 feet (3 m) from any wall or building to prevent reflections or unrepresentative shielding of the traffic noise.

5.2.1. Short-Term Measurements

Noise measurements were taken at selected locations to evaluate the existing noise environment. Noise measurements were conducted in conformance with the Department's Technical Noise Supplement (Caltrans, 1998b) and the guidelines outlined in the FHWA's "Measuring of Highway Related Noise," FHWA-DP-96-046. The following are brief descriptions of the measurement procedures used for this project:

- Microphones were primarily placed approximately 1.5 meters (5 feet) above the ground or in some instances on top of walls and were positioned at least 3 meters (10 feet), when placed

on the ground, from any wall or building to prevent reflections or unrepresentative shielding of the noise.

- Sound level meters were calibrated before and after each set of measurements.
- Following the calibration of equipment, a wind screen was placed over the microphone.
- Frequency weighting was set on "A", and the slow detector response was used.
- Results of the short-term noise measurements were recorded on data sheets in the field and stored on the meters internal memory.
- During the short-term noise measurements, any noise contaminations such as barking dogs, local traffic, lawn mowers, etc. were noted.
- Traffic was counted for model calibration measurements. Vehicle types were separated into five vehicle groups: autos, medium trucks, heavy trucks, busses, and motorcycles. Average traffic speeds were measured using a radar gun.
- Wind speed, temperature, humidity, and sky conditions were observed and documented during the short-term noise measurements. Wind speeds varied between 5 mph and 7 mph.

The instruments used for the noise measurements included the following:

- Integrating Sound Level Meters
  - Larson Davis - 870 Sound Level Meter (ANSI Type 1).
  - Larson Davis - 820 Sound Level Meter (ANSI Type 1).
  - Rion – NL-31 Sound Level Meter (ANSI Type 1).
  - Larson Davis - 824 Sound Level Meter (ANSI Type 1).
- Microphone Systems
  - Larson Davis - 902 Preamp; Brüel & Kjær 4155 Microphone, 1/2" Prepolarized ½-inch pressure microphone.
  - Larson Davis – PRM828 Preamp; Larson Davis 2560 Microphone, 1/2" Prepolarized ½-inch pressure microphone.
  - Larson Davis – 900C Preamp; Brüel & Kjær 4189 Microphone, 1/2" Prepolarized ½-inch pressure microphone.
  - Larson Davis – 900B Preamp; Brüel & Kjær 4189 Microphone, 1/2" Prepolarized ½-inch pressure microphone.
  - Rion – NH-21 Preamp; Rion UC-53A Microphone, 1/2" Prepolarized ½-inch pressure microphone.
- Acoustic Field Calibrator
  - Larson Davis model CA200 constant pressure microphone calibrator.
  - Norsonic model 1251 constant pressure microphone calibrator.
- Wind Monitor/Temperature and Humidity Gauge – Kestrel 3000 Pocket Weather Meter.
- Radar Gun – Bushnell 101911.

5.2.2. Long -Term Measurements

Long-term monitoring was conducted at two locations: LT-1 used a Larson-Davis Model 870 Type 1 sound level meter (serial number 0124) and LT-2 used a Larson-Davis Model 870 Type 1 sound level meter (serial number 1525). The purpose of these measurements was to identify variations in sound

levels throughout the day. The long-term sound level data was collected over two consecutive 24-hour periods, beginning Monday, February 1, 2010, and ending Wednesday, February 3, 2010.

Long-term monitoring location LT-1 was located at the residence at 5001 Canwood St. on the north side of US-101; approximately 185 feet from the US-101 edge-of-pavement (refer to Figure 5-1). Long-term monitoring location LT-2 was located at the residence at 26901 Calamine Drive on the north side of US-101, approximately 750 feet from the US-101 edge-of-pavement and 480 ft WNW of Lost Hills Road edge-of-pavement. LT-2 was selected due to near proximity to the proposed project on Lost Hills Road.

5.3. Traffic Noise Modeling

Traffic noise levels were predicted using the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). TNM 2.5 is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010 (FHWA 1998a, 1998b). Key inputs to the traffic noise model were the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, ground type, and receivers. Three-dimensional representations of these inputs were developed using CAD drawings, aerials, and topographic contours provided by the Project Engineer, Huitt-Zollars, Inc.

Traffic noise was evaluated under existing conditions and design year conditions with each project alternative. Loudest-hour traffic volumes, vehicle classification percentages, and traffic speeds under existing and design-year (2040) conditions were provided by DKS Associates traffic engineers for input into the traffic noise model.

To validate the accuracy of the model, TNM 2.5 was used to compare measured traffic noise levels to modeled noise levels at field measurement locations. For each receiver, traffic volumes counted during the short-term measurement periods were normalized to 1-hour volumes. These normalized volumes were assigned to the corresponding project area roadways to simulate the noise source strength at the roadways during the actual measurement period. Modeled and measured sound levels were then compared to determine the accuracy of the model and if additional calibration of the model was necessary.

5.4. Methods for Identifying Traffic Noise Impacts and Consideration of Abatement

Traffic noise impacts are considered to occur at receiver locations where predicted design-year noise levels are at least 12 dB greater than existing noise levels, or where predicted design year noise levels approach or exceed the NAC for the applicable activity category. Where traffic noise impacts are identified, noise abatement must be considered for reasonableness and feasibility as required by 23 CFR 772 and the Protocol.

According to the Protocol, abatement measures are considered acoustically feasible if a minimum noise reduction of 5 dB at impacted receiver locations is predicted with implementation of the abatement measures. In addition, barriers should be designed to intercept the line-of-sight from the exhaust stack of a truck to the first tier of receivers, as required by the Highway Design Manual, Chapter 1100. Other factors that affect feasibility include topography, access requirements for driveways and ramps, presence of local cross streets, utility conflicts, other noise sources in the area, and safety considerations. The overall reasonableness of noise abatement is determined by considering factors such as cost; absolute predicted noise levels; predicted future increase in noise levels; expected noise abatement benefits; build date of surrounding residential development along

the highway; environmental impacts of abatement construction; opinions of affected residents; input from the public and local agencies; and social, legal, and technological factors.

The Protocol defines the procedure for assessing reasonableness of noise barriers from a cost perspective. A cost-per-residence allowance is calculated for each benefited residence (i.e., residences that receive at least 5 dB of noise reduction from a noise barrier). The 2009 base allowance is $31,000. Additional allowance dollars are added to the base allowance based on absolute noise levels, the increase in noise levels resulting from the project, achievable noise reduction, and the date of building construction in the area. Total allowances are calculated by multiplying the cost-per-residence by the number of benefited residences. If the total allowance for all evaluated noise barriers is more than 50% of the estimated construction cost, the allowance per residence is modified to a reduced value.

6. EXISTING NOISE ENVIRONMENT

6.1. Existing Land Uses

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the proposed project. Single-family residences and Grape Arbor Park located on the NW quadrant of the project were identified as Activity Category B land uses in the project area. A total of two long-term locations (> 24 hours) and six short-term measurements were taken for the purpose of evaluating the existing noise environment, identifying the peak noise hour, and calibrating the noise model. Appendix A includes field data sheets and graphs of the hourly Leq values measured at the two long-term measurement locations.

As required by the Protocol, although all developed land uses are evaluated in this analysis, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards and park as described below.

- First Row receivers adjacent to US-101. This residential area is separated from the main traveled lanes by the north bound on ramp and Canwood Street. Backyards and side yards face the highway.
- Second Row receivers that are located an additional residence away from US-101.
- Third Row receivers that are located an additional residence away from US-101 on Dante View Drive and Ludgate Drive.
- First Row receivers adjacent to Lost Hills Road. This residential area is separated from Lost Hills Road by Grape Arbor Park. Backyards and side yards face the street.
- Grape Arbor Park located west of Lost Hills Road.

6.2. Noise Measurement Results

The existing noise environment in the project area is characterized below based on short-term and long-term noise monitoring that was conducted.

6.2.1. Short-Term Monitoring

The short-term measurements were intended only for calibrating the TNM model and were performed in frequent outdoor use areas at sensitive land uses. The short-term measurement results are summarized in Table 6–2. The traffic volumes observed during the short-term measurements are summarized in Table A–1.

6.2.2. Long-Term Monitoring

The measurements were intended for calibrating the TNM model and for data to adjust short-term measurements to the peak-noise hour and were performed in frequent outdoor use areas at sensitive land uses. The peak-noise hour for LT 1 occurred during the hours of 2 PM, 3 PM and 4 PM. The peak-noise hour for LT 2 occurred during 2 PM. The long-term measurement results are summarized in Table 6–2 for the average peak-noise hours.

Table 6–1
Summary of Long-Term Monitoring

Hour Beginning	LT-1 Average (dBA $L_{eq}h$)	Difference from Loudest Hour (dB)	LT-2 Average (dBA $L_{eq}h$)	Difference from Loudest Hour (dB)
12:00 a.m.	58	-8	47	-9
1:00	58	-8	46	-10
2:00	58	-8	46	-9
3:00	60	-6	47	-9
4:00	61	-5	49	-7
5:00	63	-3	53	-3
6:00	65	-1	55	0
7:00	66	0	56	0
8:00	66	0	55	0
9:00	65	-1	54	-2
10:00	65	-1	52	-3
11:00	65	-1	55	-1
12:00 p.m.	66	0	55	-1
1:00	65	-1	53	-2
2:00	66	0	58	2[a]
3:00	66	0	55	0
4:00	66	0	56	0
5:00	66	0	55	0
6:00	66	0	56	0
7:00	65	-1	54	-1
8:00	64	-2	54	-1
9:00	63	-3	52	-3
10:00	62	-4	50	-6
11:00	61	-5	49	-6

Note a: Yard work. Not used as loudest hour.

Figure 6–1 Long-Term monitoring at Location LT-1, February 1–3, 2010

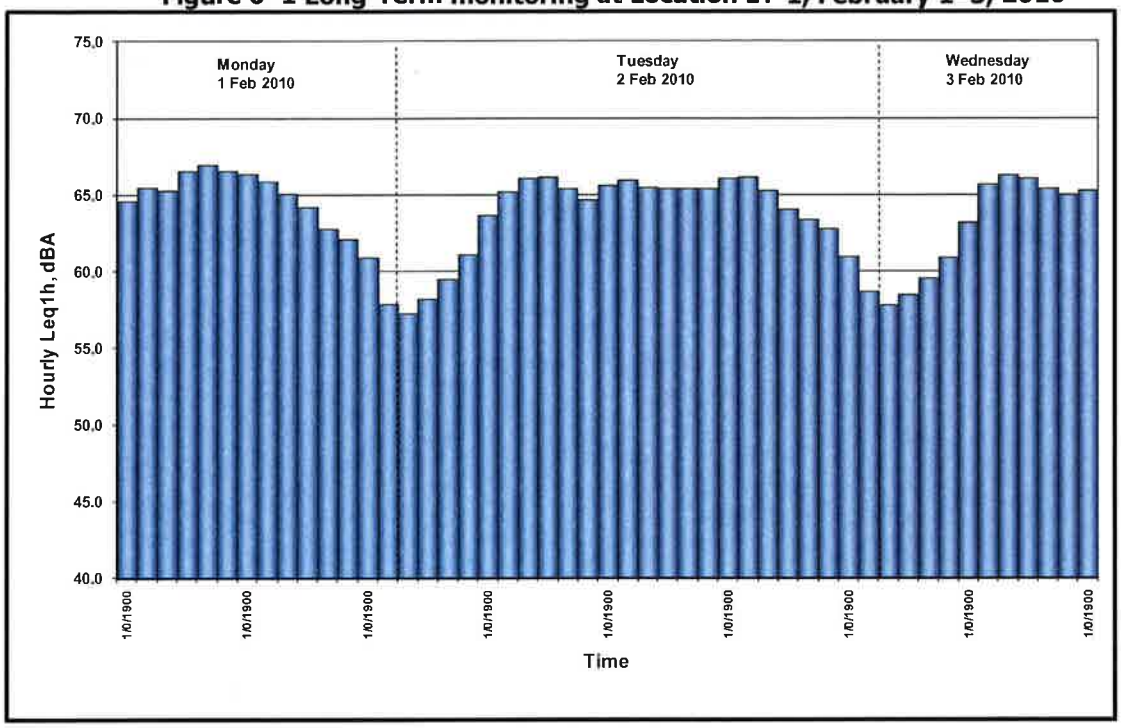

Figure 6–2 Long-Term monitoring at Location LT-2, February 1–3, 2010

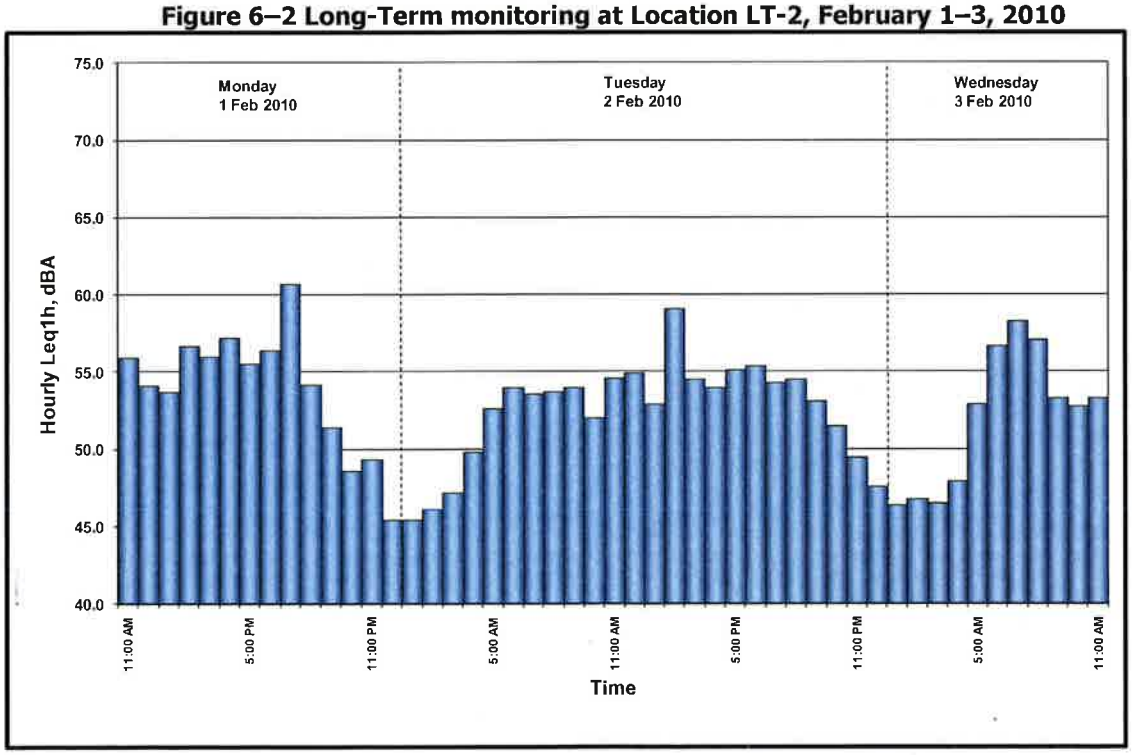

Table 6–2
Summary of Noise Measurement Results for the 4 P.M. Hour

Site No.	Street Address	Land Use	Meter Location	Date	Measured Leq, dBA [1]	Adjusted Peak-hour Leq, dBA	Adjusted to Long-Term Site
ST1	5019 Ludgate Drive	SFR	Backyard	2/2/2010	58.7	59	LT1
ST2	6930 Garret Drive	SFR	Backyard	2/2/2010	66.3	66	LT1
ST3	26910 Garret Drive	SFR	Backyard	2/2/2010	65.5	66	LT1
ST4	Grape Arbor Park	REC	North of Playground/east of volleyball court	2/2/2010	56.5	57	LT1
ST5	26914 Helmond Drive	SFR	Backyard	2/2/2010	56.5	57	LT1
ST6	26900 Edgeware Drive	SFR	Backyard	2/2/2010	55.4	55	LT1
LT1	5001 Canwood Street	SFR	Backyard	2/1/2010 & 2/2/2010	66. 0	66	--
LT2	26901 Calamine Drive	SFR	Backyard	2/1/2010 & 2/2/2010	58.1	58	--

1/ All values reported were observed between 16:00 and 17:00

Source: Acentech Inc.

6.3. Model Calibration

The short-term and the long-term measurement results shown in Table 6–2 were used to calibrate the model. Video recording of the traffic were made during the short-term measurements to document traffic conditions. A radar gun was used to establish freeway speeds during the video taping. The video recordings of freeway traffic were reviewed and the traffic tabulated according to five vehicle types: automobiles, medium trucks (2-axle with 6 wheels but not pickup trucks), heavy trucks (3 or more axles including garbage trucks), buses, and motorcycles. Traffic on the SB on-ramp and NB off-ramp Table A–1 shows the traffic volumes that were used in the calibration model.

TNM 2.5 was used to compare measured traffic noise levels to modeled noise levels at field measurement locations. Table 6–3 compares measured and modeled noise levels at each measurement location. The differences between measured and modeled values were less than ±2 dBA at all the measurement locations within 500 ft of US-101; therefore no calibration or "K" factor has been applied.

Table 6–3
Noise Modeling Calibration Results

Site No.	Measured	Modeled	Measured minus Predicted (dB)	Adjustment Applied, dB
ST1	58.7	60.3	-1.6	0.0
ST2	66.3	67.6	-1.3	0.0
ST3	65.5	66.3	-0.8	0.0
ST4	56.5	58.5	-2	0.0
ST5	56.5	56.3	+0.2	0.0
ST6	55.4	54.1	+1.3	0.0
LT1	66	67.2	-1.2	0.0
LT2	55.9	56.0	-0.1	0.0

Table 6–4 describes the modeling locations used in the evaluation and presents existing noise levels for each receiver.

Table 6–4
Modeled Receiver Locations

Receiver Number [1]	Location or Address [2]	Land Use [3]	Year Built	Number of Units Represented	Activity Category and NAC ( )	Existing Worst-Hour Noise Level Leq(h), dBA	Noise level Measured or Modeled
*R1	5015 Dantes View Dr	SFR	1965	1	B(67)	61	Modeled
*R2	5007 Dantes View Dr	SFR	1965	1	B(67)	61	Modeled
R3	5003 Dantes View Dr	SFR	1965	1	B(67)	68	Modeled
R4	5002 Dantes View Dr	SFR	1971	1	B(67)	67	Modeled
*R5	5006 Dantes View Dr	SFR	1965	1	B(67)	66	Modeled
*R6	5014 Dantes View Dr	SFR	1965	2	B(67)	66	Modeled
*R7	5001 Ludgate Dr	SFR	1965	1	B(67)	65	Modeled
*R8	5011 Ludgate Dr	SFR	1965	1	B(67)	61	Modeled
*R9/ST1	5019 Ludgate Dr	SFR	1965	1	B(67)	59	Measured
R10	5002 Ludgate Dr	SFR	1965	1	B(67)	68	Modeled
*R11	5012 Ludgate Dr	SFR	1965	1	B(67)	68	Modeled
*R12	5020 Ludgate Dr	SFR	1965	1	B(67)	68	Modeled
R13/LT1	5001 Ambridge Dr	SFR	1979	1	B(67)	66	Measured
*R14	5009 Ambridge Dr	SFR	1979	1	B(67)	65	Modeled
*R15	5015 Ambridge Dr	SFR	1979	1	B(67)	62	Modeled
*R16	5002 Ambridge Dr	SFR	1979	1	B(67)	72	Modeled
*R17	26952 Garret Dr	SFR	1979	1	B(67)	67	Modeled
*R18	26946 Garret Dr	SFR	1979	1	B(67)	61	Modeled
*R19	26940 Garret Dr	SFR	1979	1	B(67)	64	Modeled
R20/ST2	26930 Garret Dr	SFR	1979	1	B(67)	66	Measured
R21	26926 Garret Dr	SFR	1979	1	B(67)	66	Modeled
R22	26920 Garret Dr	SFR	1979	1	B(67)	63	Modeled
R23	26914 Garret Dr	SFR	1979	1	B(67)	66	Modeled
R24/ST3	26910 Garret Dr	SFR	1979	1	B(67)	66	Measured
R25	26904 Garret Dr	SFR	1979	1	B(67)	65	Modeled
R26	26900 Garret Dr	SFR	1979	1	B(67)	64	Modeled
*R27	26901 Garret Dr	SFR	1979	1	B(67)	58	Modeled
*R28	26902 Calamine Dr	SFR	1979	1	B(67)	64	Modeled
*R29	26911 Garret Dr	SFR	1979	3	B(67)	55	Modeled
*R30	26926 Garret Dr	SFR	1979	5	B(67)	51	Modeled
*R31	Grape Arbor Park Ball Diamond	REC	--	1	B(67)	62	Modeled
*R32	Grape Arbor Park Basketball Courts	REC	--	1	B(67)	59	Modeled
*R33/LT2	26901 Calamine Dr	SFR	1978	1	B(67)	56	Measured
*R34/ST5	26914 Helmond Dr	SFR	1965	1	B(67)	56	Measured
*R35/ST4	Grape Arbor Park	REC	--	1	B(67)	57	Measured
*R36	26909 Helmond Dr	SFR	1972	3	B(67)	50	Modeled
*R37/ST6	26900 De Berry Dr	SFR	1968	3	B(67)	55	Measured

Notes: [1]/ ST – Short-term; LT – Long-term
[2]/ All addresses in the City of Calabasas, CA
*/ Non 1st Row receiver
[3]/ Land Use: SFR – single family residential; REC – recreational use area.

7. FUTURE NOISE ENVIRONMENT, IMPACTS, AND CONSIDERED ABATEMENT

This section discusses the predicted traffic noise level under existing and design year conditions (with and without the project), identifies traffic noise impacts, and considers noise abatement. The results of this analysis are provided in tables contained in Appendix B and Appendix D. These tables include the following for each modeled receiver:

- Location identifiers that corresponds to those used in the aerial figure of modeled receiver and measurement locations;
- Description of location (physical address if possible);
- Type of land use;
- Number of dwelling units represented by each receiver;
- Noise abatement category and criterion;
- Worst-hour noise levels for existing, design year no-project, and design year with project conditions;
- Change in noise levels including:
    - Design year with project versus existing conditions, and
    - Design year with project versus design year no- project; and traffic noise impact conclusions ("approach or exceed NAC", "substantial increase", or both).

Predicted traffic noise levels and traffic noise impacts, if any, are discussed based on modeling results. If traffic noise impacts are identified, noise abatement is considered. A discussion of noise abatement options identified in 23 CFR 772 is provided. Abatement in the form of noise barriers is evaluated and discussed in detail.

The noise reduction (i.e. barrier insertion loss) provided by a range of barrier walls heights is evaluated for each barrier considered. Barrier heights in the range of 8 to 16 feet in 2-foot increments are evaluated. Tables summarizing the noise reduction for each barrier height and the number of benefited receivers for each height evaluated are provided in Appendix B. This table also identifies the minimum wall height necessary for each barrier evaluated to break the line-of-sight between an 11.5-foot truck stack and a 5-foot-high receiver in the first row of residences. This table can be combined with the table that summarizes existing and modeled noise levels.

Reasonableness cost allowances for each height increment of each barrier are calculated using the method described in the Protocol. Cost allowance calculation sheets for each barrier are provided in Appendix C. The sheets show the calculated allowance per benefited residences, the number of benefited residences, and the total allowance for each barrier height (the allowance per benefited residences multiplied by the number of benefited residences). Allowances for each barrier are summarized in a table in the body of the report.

The NSR provides information on the acoustical feasibility of barriers and reasonable cost allowances for a range of barrier heights for each barrier evaluated. It does not provide information on the construction cost of barriers considered. This construction cost information is provided in the Noise Abatement Decision Report (NADR). The NADR compares the allowances to construction cost estimates and identifies those barrier heights that are reasonable from a cost perspective.

7.1. Future Noise Environment and Impacts

Table B-1 in Appendix B summarizes the traffic noise modeling results for existing conditions and design-year conditions with and without the project. Predicted design-year traffic noise levels with the project are compared to existing conditions and to design-year no-project conditions. The comparison to existing conditions is included in the analysis to identify traffic noise impacts under 23 CFR 772. The comparison to no-project conditions indicates the direct effect of the project.

As stated in the TeNS, modeling results are rounded to the nearest decibel before comparisons are made. In some cases, this can result in relative changes that may not appear intuitive. An example would be a comparison between sound levels of 64.4 and 64.5 dBA. The difference between these two values is 0.1 dB. However, after rounding, the difference is reported as 1 dB.

Modeling results in Table B-1 indicate that predicted traffic noise levels for the design-year with-project conditions approach or exceed the NAC of 67 dBA Leq(h) for Activity Category B land uses at residences and recreational areas. Therefore, traffic noise impacts are predicted to occur at Activity Category B land uses within the project area, and noise abatement must be considered.

The predicted noise levels for the "No-Build" Alternative (Alternative 1) indicate that the first row of receptors on the north side US-101 approach or exceed the Noise Abatement Criteria (NAC). These values are included as a basis for comparison of the noise impacts and barrier analysis for each of the "Build" Alternatives discussed below. A CD containing the TNM files for the Calibration, No-Build and Build Alternatives is included in Appendix F.

7.2. Preliminary Noise Abatement Analysis

In accordance with 23 CFR 772, noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. Potential noise abatement measures identified in the Protocol include the following:

- Avoiding the impact by using design alternatives, such as altering the horizontal and vertical alignment of the project;
- Constructing noise barriers;
- Acquiring property to serve as a buffer zone;
- Using traffic management measures to regulate types of vehicles and speeds; and
- Acoustically insulating public-use or nonprofit institutional structures.

All of these abatement options have been considered. However, because of the configuration and location of the project, abatement in the form of noise barriers is the only abatement that is considered to be feasible.

Each noise barrier evaluated has been evaluated for feasibility based on achievable noise reduction. For each noise barrier found to be acoustically feasible, reasonable cost allowances were calculated. Worksheets provided in Appendix C summarize the reasonable cost allowance calculations at the critical design receiver based on the allowance calculation procedure identified in the Protocol. Tables in Appendix B summarize results at receiver locations for the single noise barrier (Barrier S32) that has been evaluated in detail for this project for each of the built alternatives.

For any noise barrier to be considered reasonable from a cost perspective the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the barrier, such as traffic control, drainage modification, and retaining walls. Construction cost estimates are not provided in this NSR, but are presented in the NADR. The NADR is a design responsibility and is prepared to compile information from the NSR, other relevant environmental studies, and design considerations into a single, comprehensive document before public review of the project. The NADR is prepared by the project engineer after completion of the NSR and prior to publication of the draft environmental document. The NADR includes noise abatement construction cost estimates that have been prepared and signed by the project engineer based on site-specific conditions. Construction cost estimates are compared to reasonableness allowances in the NADR to identify which wall configurations are reasonable from a cost perspective.

The design of noise barriers presented in this report is preliminary and has been conducted at a level appropriate for environmental review and not for final design of the project. Preliminary information on the physical location, length, and height of noise barriers is provided in this report. If pertinent parameters change substantially during the final project design, preliminary noise barrier designs may be modified or eliminated from the final project. A final decision on the construction of the noise abatement will be made upon completion of the project design.

The following is a discussion of noise abatement considered for each evaluation area where traffic noise impacts are predicted for each of the design alternatives.

The modeled peak-hour noise levels for the future year 2040 for Alternative 2 through Alternative 7 are compared to traffic noise level under existing and design year conditions (with and without the project). Where outdoor noise levels for each alternative (build without barrier) approach or exceed the NAC, barrier heights ranging from 8 ft to 16 ft were evaluated and the results included in the tables. The minimum barrier heights are identified which would provide at least a 5 dB noise reduction. The minimum barrier heights required to cut the line-of-site from each receptor to the exhaust stacks of heavy trucks was also calculated using TNM 2.5 and are indicated in the tables.

The heights and locations of the soundwall and existing property walls, the location of receivers, and the locations of roadways are shown in Appendix E. The cost analyses for the soundwall are included in Appendix C.

7.2.1. Alternative 2

The traffic noise modeling results in Figure B-1 to Figure B-3 indicate traffic noise levels at residences adjacent to the highway are predicted to be in the range of 66 to 75 dBA Leq(h) in the design year, and that the increase in noise will be 3 dB in the design year. Because the predicted noise level in the design year exceeds 67 dBA Leq(h), traffic noise impacts are predicted at residences in this area, and noise abatement must be considered.

Table D-1 presents the results of the barrier analysis. The predicted noise levels without a barrier and, for barrier heights of 8 ft to 16 ft in 2-ft increments, the noise levels and noise reduction are presented. One soundwall along the edge of traveled way for the northbound (NB) on-ramp to US 101 was evaluated. A location along the highway right of way is lower and was discarded from consideration. Locating the soundwall along the edge of traveled way of the northbound side of the highway would be beneficial to some residences, however, the soundwall location was discarded due to consideration of future US 101 widening. Locating the soundwall along Canwood Street was also discarded since in many areas it is lower than the highway and the residences. A soundwall along Lost Hills Road would not provide substantial noise reduction to the community since noise from the highway and ramps are the major contributor to the noise in this residential area. The noise at non-first row receivers (R1, R2, R8, R9, R15, R18, and R27 to R37) and Grape Arbor Park did not exceed NAC and do not require noise abatement. Although these receivers are behind the wall, many would not receive a 5 dB noise reduction and are not considered as benefitted. Soundwalls along Lost Hills Road would not benefit these receptors.

Receivers R25, R26 and R28 qualify for abatement under the NAC. The proposed soundwall would reduce the noise levels to below the NAC, however, the abatement received at these locations was less than 5 dB and are not considered benefited.

As described in Table 7-1, Soundwall S32 would be 8 ft to 16 ft in height located along the northbound on-ramp to US-101, extending between Stations 1687+10 and 1706+00. Sheet 1 in Appendix E shows the location and height of S32 to achieve a 5 dB noise reduction for receives meeting the NAC and the receivers that would benefit (receive at least a 5 dB reduction). This wall would benefit Receptors R3 to R24, and have a reasonable cost per residence of $53,000 based on the base reasonable allowance of $31,000 per residence.

Table 7–1
Alternative 2 – Summary of Feasible Barrier

Barrier No.	Receptor No.	Type[1] and No. of Benefited Residences	Barrier Location/ Hwy. Side	Barrier Height/ Total Length	Reasonable Cost per Residence [2]	Reasonable Allowance Cost Per Barrier(s)
S32	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	8 ft / 100 ft 12 ft / 100 ft 16 ft / 1,690 ft	$53,000	$1,219,000

Notes:
1/ Land Use: SFR - single-family residence
2/ Based on the reasonable allowance of $31,000 per residence/unit (Caltrans, 2009)

Table 7–2 provides a summary of soundwall locations and minimum heights and lengths. The actual wall height may be reduced by placing the wall on a graded berm or replacing the wall with a graded berm having the top elevations as shown in Table 7–2; however, there may be limited opportunity for a berm because of the proximity of the north bound on-ramp to Canwood Street.

Table 7–2
Alternative 2 – Soundwall Locations and Elevations

Barrier No.	Receptor No.	Barrier Location	US-101 Barrier Station	Approximate Barrier Height, ft	Top of Barrier Elevation, ft
S32/Edge of Roadway	R3 to R24	Edge of Traveled Way (NB US 101 On-ramp)	1687+10	0	799
			1687+10	16	815
			1689+00	16	803
			1692+00	16	799
			1695+00	16	809
			1698+00	16	824
			1701+00	16	839
			1703+00	16	850
			1704+00	16	854
			1704+00	12	850
			1705+00	12	856
			1705+00	8	852
			1706+00	8	857
			1706+00	0	855
		Approximate Length: 1890 ft			

Notes: 1/ Top of wall elevation shall take precedent over specified barrier heights for design and construction purposes. Actual height of wall can be reduced by placing the wall on a graded berm.

Appendix C presents the calculations sheets of the reasonable allowance. Table 7–3 summarizes the calculated noise reductions and reasonable allowance for each barrier height.

Table 7–3
Alternative 2 – Summary of Reasonableness Determination Data[a]

Barrier I.D.:	S32					
Predicted Sound Level without Barrier						
Critical Design Receiver:	R16					
Design Year Noise Level, dBA L_{eq}(h):	75					
Design Year Noise Level Minus Existing Noise Level:	3					
Design Year with Barrier	**6-Foot Barrier**	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier Noise Reduction, dB	NA	8	9	10	11	12
Number of Benefited Residences	NA	15	16	18	22	24
New Highway or More than 50% of Residences Predate 1978[b]	NA	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance Per Benefited Residence	NA	$51,000	$53,000	$53,000	$53,000	$53,000
Total Reasonable Allowance, M	NA	$0.77	$ 0.85	$ 0.95	$1.17	$1.27

Note: NA-Not applicable. Barrier does not provide 5 dB of noise reduction.

[a] An NADR will be prepared that will identify noise barrier construction cost information and the noise barriers that are reasonable from a cost perspective.

[b] This adjustment increases the abatement allowance by $10,000 if the project is new highway construction or if most of the benefited residences (more than 50%) existed before January 1, 1978.

7.2.2. Alternative 3

The traffic noise modeling results in Figure B-4 to Figure B-6 indicate traffic noise levels at residences adjacent to the highway are predicted to be in the range of 66 to 75 dBA Leq(h) in the design year, and that the increase in noise will be 3 dB in the design year. Because the predicted noise level in the design year exceeds 67 dBA Leq(h), traffic noise impacts are predicted at residences in this area, and noise abatement must be considered.

Table D-2 presents the results of the barrier analysis. It presents the predicted noise levels without a barrier and the noise levels and noise reduction calculated for barrier heights of 8 ft to 16 ft in 2-ft increments. One soundwall along the edge of traveled way for the NB on-ramp to US 101 was evaluated. A location along the highway right of way is lower and was discarded from consideration. Locating the soundwall along the edge of traveled way of the northbound side of the highway would be beneficial to some residences, however, the soundwall location was discarded due to consideration of future US 101 widening. Locating the soundwall along Canwood Street was also discarded since in many areas it is lower than the highway and the residences. A soundwall along Lost Hills Road would not provide substantial noise reduction to the community since noise from the highway and ramps are the major contributor to the noise in this residential area. The noise at non-first row receivers (R1, R2, R8, R9, R15, R18, and R27 to R37) and Grape Arbor Park did not exceed NAC and do not require noise abatement. Although these receivers are behind the wall, many would not receive a 5 dB noise reduction and are not considered as benefitted. Soundwalls along Lost Hills Road would not benefit these receptors.

Receivers R25, R26 and R28 qualify for abatement under the NAC. The proposed soundwall would reduce the noise levels to below the NAC, however, the abatement received at these locations was less than 5 dB and are not considered benefited.

As described in Table 7–4, Soundwall S32 would be 8 ft to 16 ft in height located along the northbound on-ramp to US-101, extending between Stations 1685+20 and 1706+00. Sheet 3 in Appendix E shows the location and height of S32 to achieve a 5 dB noise reduction for receives meeting the NAC and the receivers that would benefit (receive at least a 5 dB reduction). This wall would benefit Receptors R3 to R24, and have a reasonable cost per residence of $53,000 based on the base reasonable allowance of $31,000 per residence.

Table 7–4
Alternative 3 – Summary of Feasible Barrier

Barrier No.	Receptor No.	Type[1] and No. of Benefited Residences	Barrier Location/ Hwy. Side	Barrier Height/ Total Length	Reasonable Cost per Residence [2]	Reasonable Allowance Cost Per Barrier(s)
S32	R3 to R24	23 SFR	Edge of Traveled Way (NB On-ramp)	8 ft / 100 ft 10 ft / 400 ft 12 ft / 200 ft 16 ft / 1,390 ft	$53,000	$1,219,000

Notes:
1/ Land Use: SFR - single-family residence
2/ Based on the reasonable allowance of $31,000 per residence/unit (Caltrans, 2009)

Table 7–5 provides a summary of soundwall locations and minimum heights and lengths. The actual wall height may be reduced by placing the wall on a graded berm or replacing the wall with a graded berm having the top elevations as shown in Table 7–5; however, there may be limited opportunity for a berm because of the proximity of the north bound on-ramp to Canwood Street.

Table 7–5
Alternative 3 – Soundwall Locations and Elevations

Barrier No.	Receptor No.	Barrier Location	US-101 Barrier Station	Approximate Barrier Height, ft	Top of Barrier Elevation, ft
S32/Edge of Roadway	R3 to R24	Edge of Traveled Way (NB US 101 On-ramp)	1685+20	0	812
			1685+20	10	822
			1687+00	10	809
			1687+00	12	811
			1689+00	12	799
			1689+00	16	803
			1692+00	16	799
			1695+00	16	809
			1698+00	16	824
			1701+00	16	839
			1703+00	16	850
			1703+00	10	844
			1704+00	10	848
			1705+00	10	854
			1705+00	8	852
			1706+00	8	857
			1706+00	0	849
		Approximate Length: 2080 ft			

Notes: 1/ Top of wall elevation shall take precedent over specified barrier heights for design and construction purposes. Actual height of wall can be reduced by placing the wall on a graded berm.

Appendix C presents the calculations sheets of the reasonable allowance. Table 7–6 summarizes the calculated noise reductions and reasonable allowance for each barrier height.

Table 7–6
Alternative 3 – Summary of Reasonableness Determination Data[a]

Barrier I.D.:		**S32**				
Predicted Sound Level without Barrier						
Critical Design Receiver:		**R16**				
Design Year Noise Level, dBA L_{eq}(h):		**75**				
Design Year Noise Level Minus Existing Noise Level:		**3**				
Design Year with Barrier	**6-Foot Barrier**	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier Noise Reduction, dB	NA	8	9	10	11	12
Number of Benefited Residences	NA	13	18	21	23	25
New Highway or More than 50% of Residences Predate 1978b	NA	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance Per Benefited Residence	NA	$51,000	$53,000	$53,000	$53,000	$53,000
Total Reasonable Allowance, M	NA	$ 0.66	$ 0.95	$ 1.11	$ 1.22	$ 1.33

Note: NA-Not applicable. Barrier does not provide 5 dB of noise reduction.

[a] An NADR will be prepared that will identify noise barrier construction cost information and the noise barriers that are reasonable from a cost perspective.

[b] This adjustment increases the abatement allowance by $10,000 if the project is new highway construction or if most of the benefited residences (more than 50%) existed before January 1, 1978.

7.2.3. Alternative 4

The traffic noise modeling results in Figure B-7 to Figure B-9 indicate traffic noise levels at residences adjacent to the highway are predicted to be in the range of 66 to 75 dBA Leq(h) in the design year, and that the increase in noise will be 3 dB in the design year. Because the predicted noise level in the design year exceeds 67 dBA Leq(h), traffic noise impacts are predicted at residences in this area, and noise abatement must be considered.

Table D-3 presents the results of the barrier analysis. It presents the predicted noise levels without a barrier and the noise levels and noise reduction calculated for barrier heights of 8 ft to 16 ft in 2-ft increments. One soundwall along the edge of traveled way for the NB on-ramp to US 101 was evaluated. A location along the highway right of way is lower and was discarded from consideration. Locating the soundwall along the edge of traveled way of the northbound side of the highway would be beneficial to some residences, however, the soundwall location was discarded due to consideration of future US 101 widening. Locating the soundwall along Canwood Street was also discarded since in many areas it is lower than the highway and the residences. A soundwall along Lost Hills Road would not provide substantial noise reduction to the community since noise from the highway and ramps are the major contributor to the noise in this residential area. The noise at non-first row receivers (R1, R2, R8, R9, R15, R18, and R27 to R37) and Grape Arbor Park did not exceed NAC and do not require noise abatement. Although these receivers are behind the wall, many would not receive a 5 dB noise reduction and are not considered as benefitted. Soundwalls along Lost Hills Road would not benefit these receptors.

Receiver R28 qualifies for abatement under the NAC. The proposed soundwall would reduce the noise levels to below the NAC, however, the abatement received at this location was less than 5 dB and is not considered benefited.

As described in Table 7–7, Soundwall S32 would be 10 ft to 16 ft in height located along the northbound on-ramp to US-101, extending between Stations 1685+10 and 1706+00. Sheet 5 in Appendix E shows the location and height of S32 to achieve a 5 dB noise reduction for receives meeting the NAC and the receivers that would benefit (receive at least a 5 dB reduction). This wall would benefit Receptors R3 to R26, and have a reasonable cost per residence of $53,000 based on the base reasonable allowance of $31,000 per residence.

Table 7–7
Alternative 4 – Summary of Feasible Barrier

Barrier No.	Receptor No.	Type[1] and No. of Benefited Residences	Barrier Location/ Hwy. Side	Barrier Height/ Total Length	Reasonable Cost per Residence [2]	Reasonable Allowance Cost Per Barrier(s)
S32	R3 to R26	25 SFR	Edge of Traveled Way (NB US 101 On-ramp)	10 ft / 200 ft 16 ft / 1,890 ft	$53,000	$1,325,000

Notes:
1. Land Use: SFR - single-family residence
2. Based on the reasonable allowance of $31,000 per residence/unit (Caltrans, 2009)

Table 7–8 provides a summary of soundwall locations and minimum heights and lengths. The actual wall height may be reduced by placing the wall on a graded berm or replacing the wall with a graded berm having the top elevations as shown in Table 7–8; however, there may be limited opportunity for a berm because of the proximity of the north bound on-ramp to Canwood Street.

Table 7–8
Alternative 4 – Soundwall Locations and Elevations

Barrier No.	Receptor No.	Barrier Location	US-101 Barrier Station	Approximate Barrier Height, ft	Top of Barrier Elevation, ft
S32/Edge of Roadway	R3 to R26	Edge of Traveled Way - NB On Ramp	1685+10	0	812
			1685+10	16	828
			1687+00	16	815
			1687+00	16	815
			1689+00	16	803
			1692+00	16	799
			1695+00	16	809
			1698+00	16	824
			1701+00	16	839
			1703+00	16	850
			1704+00	16	854
			1704+00	10	848
			1705+00	10	854
			1706+00	10	859
			1706+00	0	849
		Approximate Length: 2090 ft			

Notes: 1/ Top of wall elevation shall take precedent over specified barrier heights for design and construction purposes. Actual height of wall can be reduced by placing the wall on a graded berm.

Appendix C presents the calculations sheets of the reasonable allowance. Table 7–9 summarizes the calculated noise reductions and reasonable allowance for each barrier height.

Table 7–9
Alternative 4 – Summary of Reasonableness Determination Data[a]

Barrier I.D.:	S32					
Predicted Sound Level without Barrier						
Critical Design Receiver:	R16					
Design Year Noise Level, dBA $L_{eq}(h)$:	75					
Design Year Noise Level Minus Existing Noise Level:	3					
Design Year with Barrier	**6-Foot Barrier**	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier Noise Reduction, dB	NA	8	9	10	11	12
Number of Benefited Residences	NA	15	18	21	23	27
New Highway or More than 50% of Residences Predate 1978 [b]	NA	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance Per Benefited Residence	NA	$51,000	$53,000	$53,000	$53,000	$53,000
Total Reasonable Allowance, M	NA	$0.77	$0.95	$1.11	$1.22	$1.43

Note: NA-Not applicable. Barrier does not provide 5 dB of noise reduction.

[a] An NADR will be prepared that will identify noise barrier construction cost information and the noise barriers that are reasonable from a cost perspective.

[b] This adjustment increases the abatement allowance by $10,000 if the project is new highway construction or if most of the benefited residences (more than 50%) existed before January 1, 1978.

7.2.4. Alternative 5

The traffic noise modeling results in Figure B-10 to Figure B-12 indicate traffic noise levels at residences adjacent to the highway are predicted to be in the range of 67 to 75 dBA Leq(h) in the design year, and that the increase in noise will be 3 dB in the design year. Because the predicted noise level in the design year exceeds 67 dBA Leq(h), traffic noise impacts are predicted at residences in this area, and noise abatement must be considered.

Table D-1 presents the results of the barrier analysis. The predicted noise levels without a barrier and, for barrier heights of 8 ft to 16 ft in 2-ft increments, the noise levels and noise reduction are presented. One soundwall along the edge of traveled way for the NB on-ramp to US 101 was evaluated. A location along the highway right of way is lower and was discarded from consideration. Locating the soundwall along the edge of traveled way of the northbound side of the highway would be beneficial to some residences, however, the soundwall location was discarded due to consideration of future US 101 widening. Locating the soundwall along Canwood Street was also discarded since in many areas it is lower than the highway and the residences. A soundwall along Lost Hills Road would not provide substantial noise reduction to the community since noise from the highway and ramps are the major contributor to the noise in this residential area. The noise at non-first row receivers (R1, R2, R8, R9, R15, R18, and R27 to R37) and Grape Arbor Park did not exceed NAC and do not require noise abatement. Although these receivers are behind the wall, many would not receive a 5 dB noise reduction and are not considered as benefitted. Soundwalls along Lost Hills Road would not benefit these receptors.

Receivers R25, R26 and R28 qualify for abatement under the NAC. The proposed soundwall would reduce the noise levels to below the NAC, however, the abatement received at these locations was less than 5 dB and are not considered benefited.

As described in Table 7–10, Soundwall S32 would be 10 ft to 16 ft in height located along the northbound on-ramp to US-101, extending between Stations 1685+00 and 1707+00. Sheet 7 in Appendix E shows the location and height of S32 to achieve a 5 dB noise reduction for receives meeting the NAC and the receivers that would benefit (receive at least a 5 dB reduction). This wall would benefit Receptors R3 to R24, and have a reasonable cost per residence of $53,000 based on the base reasonable allowance of $31,000 per residence.

Table 7–10
Alternative 5 – Summary of Feasible Barrier

Barrier No.	Receptor No.	Type[1] and No. of Benefited Residences	Barrier Location/ Hwy. Side	Barrier Height/ Total Length	Reasonable Cost per Residence [2]	Reasonable Allowance Cost Per Barrier(s)
S32	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	10 ft / 190 ft 16 ft / 1,900 ft	$53,000	$1,219,000

Notes:
1. Land Use: SFR - single-family residence
2. Based on the reasonable allowance of $31,000 per residence/unit (Caltrans, 2009)

Table 7–11 provides a summary of soundwall locations and minimum heights and lengths. The actual wall height may be reduced by placing the wall on a graded berm or replacing the wall with a graded berm having the top elevations as shown in Table 7–11.

Table 7–11
Alternative 5 – Soundwall Locations and Elevations[1]

Barrier No.	Receptor No.	Barrier Location	US-101 Barrier Station	Approximate Barrier Height, ft	Top of Barrier Elevation, ft
S32/Edge of Roadway	R3 to R24	Edge of Traveled Way (NB US 101 On-ramp)	1685+10	0	812
			1685+10	10	822
			1687+00	10	809
			1687+00	16	815
			1689+00	16	803
			1692+00	16	799
			1695+00	16	809
			1698+00	16	824
			1701+00	16	839
			1703+00	16	850
			1705+01	16	854
			1706+00	16	854
			1707+00	16	871
			1707+00	0	855
		Approximate Length: 2090 ft			

Notes: 1/ Top of wall elevation shall take precedent over specified barrier heights for design and construction purposes. Actual height of wall can be reduced by placing the wall on a graded berm.

Appendix C presents the calculations sheets of the reasonable allowance. Table 7–12 summarizes the calculated noise reductions and reasonable allowance for each barrier height.

Table 7–12
Alternative 5 – Summary of Reasonableness Determination Data[a]

Barrier I.D.:	S32					
Predicted Sound Level without Barrier						
Critical Design Receiver:	R16					
Design Year Noise Level, dBA L_{eq}(h):	75					
Design Year Noise Level Minus Existing Noise Level:	3					
Design Year with Barrier	**6-Foot Barrier**	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier Noise Reduction, dB	NA	8	9	10	11	12
Number of Benefited Residences	NA	17	18	21	24	25
New Highway or More than 50% of Residences Predate 1978[b]	NA	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance Per Benefited Residence	NA	$51,000	$53,000	$53,000	$53,000	$53,000
Total Reasonable Allowance, M	NA	$0.87	$0.95	$1.11	$1.27	$1.33

Note: NA-Not applicable. Barrier does not provide 5 dB of noise reduction.

[a] An NADR will be prepared that will identify noise barrier construction cost information and the noise barriers that are reasonable from a cost perspective.

[b] This adjustment increases the abatement allowance by $10,000 if the project is new highway construction or if most of the benefited residences (more than 50%) existed before January 1, 1978.

7.2.5. Alternative 6

The traffic noise modeling results in Figure B-13 to Figure B-15 indicate traffic noise levels at residences adjacent to the highway are predicted to be in the range of 66 to 75 dBA Leq(h) in the design year, and that the increase in noise will be 3 dB in the design year. Because the predicted noise level in the design year exceeds 67 dBA Leq(h), traffic noise impacts are predicted at residences in this area, and noise abatement must be considered.

Table D-5 presents the results of the barrier analysis. It presents the predicted noise levels without a barrier and the noise levels and noise reduction calculated for barrier heights of 8 ft to 16 ft in 2-ft increments. One soundwall along the edge of traveled way for the NB on-ramp to US 101 was evaluated. A location along the highway right of way provided no additional noise reduction and was discarded from consideration. Locating the soundwall along the edge of traveled way of the northbound side of the highway would be beneficial to some residences, however, the soundwall location was discarded due to consideration of future US 101 widening. Locating the soundwall along Canwood Street outside the highway right of way was also discarded since in many areas it is lower than the highway and the residences. A soundwall along Lost Hills Road would not provide substantial noise reduction to the community since noise from the highway and ramps are the major contributor to the noise in this residential area. The noise in Grape Arbor Park did not exceed NAC and does not require abatement. Although these receivers are behind the wall, many would not receive a 5 dB noise reduction and are not considered as benefitted. Soundwalls along Lost Hills Road would not benefit these receptors.

Receivers R25 and R28 qualify for abatement under the NAC. The proposed soundwall would reduce the noise levels to below the NAC, however, the abatement received at these locations was less than 5 dB and are not considered benefited.

As described in Table 7–13, Soundwall S32 would be 10 ft to 16 ft in height located along the northbound on-ramp to US-101, extending between Stations 1685+10 and 1705+00. The top of wall elevation south of 1685+02 would remain constant as in merges into the embankment for Lost Hills Road. Sheet 9 in Appendix D shows the location and height of S32 to achieve a 5 dB noise reduction and benefit Receptors R3 to R24. Receptors R23 and R24 determine the minimum wall heights. This wall would have a reasonable cost per residence of $53,000 based on the base reasonable allowance of $31,000 per residence.

Table 7–13
Alternative 6 – Summary of Feasible Barrier

Barrier No.	Receptor No.	Type[1] and No. of Benefited Residences	Barrier Location/ Hwy. Side	Barrier Height/ Total Length	Reasonable Cost per Residence [2]	Reasonable Allowance Cost Per Barrier(s)
S32	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	10 ft / 390 ft 14 ft / 200 ft 16 ft / 1,400 ft	$53,000	$1,219,000

Notes:
1. Land Use: SFR - single-family residence
2. Based on the reasonable allowance of $31,000 per residence/unit (Caltrans, 2009)

Table 7–14 provides a summary of soundwall locations and minimum heights and lengths. The actual wall height may be reduced by placing the wall on a graded berm or replacing the wall with a graded berm having the top elevations as shown in Table 7–14.

Table 7–14
Alternative 6 – Soundwall Locations and Elevations

Barrier No.	Receptor No.	Barrier Location	US-101 Barrier Station	Approximate Barrier Height, ft	Top of Barrier Elevation, ft
S32/Edge of Roadway	R3 to R24	Edge of Traveled Way (NB US 101 On-ramp)	1685+10	0	799
			1685+10	10	809
			1687+00	10	797
			1687+00	16	803
			1689+00	16	799
			1692+00	16	809
			1695+00	16	824
			1698+00	16	839
			1701+00	14	848
			1703+00	14	852
			1703+00	10	848
			1704+00	10	854
			1705+00	10	859
			1705+00	0	849
		Approximate Length: 1990 ft			

Notes: 1/ Top of wall elevation shall take precedent over specified barrier heights for design and construction purposes. Actual height of wall can be reduced by placing the wall on a graded berm.

Appendix C presents the calculations sheets of the reasonable allowance. Table 7–15 summarizes the calculated noise reductions and reasonable allowance for each barrier height.

Table 7–15
Alternative 6 – Summary of Reasonableness Analysis [a]

Barrier I.D.:	S32					
Predicted Sound Level without Barrier						
Critical Design Receiver:	R16					
Design Year Noise Level, dBA $L_{eq}(h)$:	75					
Design Year Noise Level Minus Existing Noise Level:	3					
Design Year with Barrier	**6-Foot Barrier**	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier Noise Reduction, dB	NA	8	9	11	11	12
Number of Benefited Residences	NA	13	18	21	23	25
New Highway or More than 50% of Residences Predate 1978[b]	NA	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance Per Benefited Residence	NA	$51,000	$53,000	$53,000	$53,000	$53,000
Total Reasonable Allowance, M	NA	$ 0.66	$ 0.95	$ 1.11	$ 1.22	$ 1.33

Note: NA-Not applicable. Barrier does not provide 5 dB of noise reduction.

[a] An NADR will be prepared that will identify noise barrier construction cost information and the noise barriers that are reasonable from a cost perspective.

[b] This adjustment increases the abatement allowance by $10,000 if the project is new highway construction or if most of the benefited residences (more than 50%) existed before January 1, 1978.

7.2.6. Alternative 7

The traffic noise modeling results in Figure B-16 to Figure B-17 indicate traffic noise levels at residences adjacent to the highway are predicted to be in the range of 66 to 75 dBA Leq(h) in the design year, and that the increase in noise will be 3 dB in the design year. Because the predicted noise level in the design year exceeds 67 dBA Leq(h), traffic noise impacts are predicted at residences in this area, and noise abatement must be considered.

Table D-6 presents the results of the barrier analysis. The predicted noise levels without a barrier and, for barrier heights of 8 ft to 16 ft in 2-ft increments, the noise levels and noise reduction are presented. One soundwall along the edge of traveled way for the NB on-ramp to US 101 was evaluated. A location along the highway right of way is lower and was discarded from consideration. Locating the soundwall along the edge of traveled way of the northbound side of the highway would be beneficial to some residences, however, the soundwall location was discarded due to consideration of future US 101 widening. Locating the soundwall along Canwood Street was also discarded since in many areas it is lower than the highway and the residences. A soundwall along Lost Hills Road would not provide substantial noise reduction to the community since noise from the highway and ramps are the major contributor to the noise in this residential area. The noise at non-first row receivers (R1, R2, R8, R9, R15, R18, and R27 to R37) and Grape Arbor Park did not exceed NAC and do not require noise abatement. Although these receivers are behind the wall, many would not receive a 5 dB noise reduction and are not considered as benefitted. Soundwalls along Lost Hills Road would not benefit these receptors.

Receivers R25, R26 and R28 qualify for abatement under the NAC. The proposed soundwall would reduce the noise levels to below the NAC, however, the abatement received at these locations was less than 5 dB and are not considered benefited.

As described in Table 7–16, Soundwall S32 would be 12 ft to 16 ft in height located along the northbound on-ramp to US-101, extending between Stations 1687+68 and 1705+00. The top of wall elevation south of 1685+00 would remain constant as in merges into the embankment for Lost Hills Road. Sheet 11 in Appendix E shows the location and height of S32 to achieve a 5 dB noise reduction and benefit Receptors R3 to R24. This wall would have a reasonable cost per residence of $53,000 based on the base reasonable allowance of $31,000 per residence.

Table 7–16
Alternative 7 – Summary of Feasible Barrier

Barrier No.	Receptor No.	Type[1] and No. of Benefited Residences	Barrier Location/ Hwy. Side	Barrier Height/ Total Length	Reasonable Cost per Residence [2]	Reasonable Allowance Cost Per Barrier(s)
S32	R3 to R24	23 SFR	Edge of Traveled Way (NB US 101 On-ramp)	12 ft / 100 ft 14 ft / 300 ft 16 ft / 1,600 ft	$53,000	$1,219,000

Notes:
1/ Land Use: SFR - single-family residence
2/ Based on the reasonable allowance of $31,000 per residence/unit (Caltrans, 2009)

Table 7–17 provides a summary of soundwall locations and minimum heights and lengths. The actual wall height may be reduced by placing the wall on a graded berm or replacing the wall with a graded berm having the top elevations as shown in Table 7–17.

Table 7–17
Alternative 7 – Soundwall Locations and Elevations

Barrier No	Receptors Protected	Barrier Location	Barrier Stations	Approximate Barrier Height, ft	Top of Barrier Elevation[1], ft
S32	R3 to R24	Edge of Traveled Way (NB US 101 On Ramp)	1684+68	0	810
			1685+00	16	809
			1686+00	16	805
			1687+00	16	802
			1688+00	16	800
			1689+00	16	798
			1690+00	16	798
			1691+00	16	798
			1692+00	16	799
			1693+00	16	801
			1694+00	16	804
			1695+00	16	809
			1696+00	16	814
			1697+00	16	819
			1698+00	16	824
			1699+00	16	828
			1700+00	16	833
			1701+00	16	838
			1701+00	14	836
			1702+00	14	842
			1703+00	14	847
			1704+00	14	851
			1704+00	12	849
			1705+00	12	855
			1705+00	0	843
		Approximate Length: 2032 ft			

Notes: 1/ Top of wall elevation shall take precedent over specified barrier heights for design and construction purposes. Actual height of wall can be reduced by placing the wall on a graded berm.

Appendix C presents the calculations sheets of the reasonable allowance. Table 7–18 summarizes the calculated noise reductions and reasonable allowance for each barrier height.

Table 7–18
Alternative 7 – Summary of Reasonableness Analysis [a]

Barrier I.D.:		**S32**				
Predicted Sound Level without Barrier						
Critical Design Receiver:		**R16**				
Design Year Noise Level, dBA $L_{eq}(h)$:		**72**				
Design Year Noise Level Minus Existing Noise Level:		**4**				
Design Year with Barrier	**6-Foot Barrier**	**8-Foot Barrier**	**10-Foot Barrier**	**12-Foot Barrier**	**14-Foot Barrier**	**16-Foot Barrier**
Barrier Noise Reduction, dB	NA	7	8	10	11	11
Number of Benefited Residences	NA	13	16	17	20	23
New Highway or More than 50% of Residences Predate 1978[b]	NA	Yes	Yes	Yes	Yes	Yes
Reasonable Allowance Per Benefited Residence	NA	$51,000	$51,000	$53,000	$53,000	$53,000
Total Reasonable Allowance, M	NA	$0.66	$ 0.82	$ 0.90	$1.06	$1.22

Note: NA-Not applicable. Barrier does not provide 5 dB of noise reduction.

[a] An NADR will be prepared that will identify noise barrier construction cost information and the noise barriers that are reasonable from a cost perspective.

[b] This adjustment increases the abatement allowance by $10,000 if the project is new highway construction or if most of the benefited residences (more than 50%) existed before January 1, 1978.

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8. CONSTRUCTION NOISE

23 CFR 772 requires that construction noise impacts be identified, but does not specify specific methods or abatement criteria for evaluating construction noise. If adverse construction noise impacts are anticipated (e.g. nighttime pile driving near residences), project plans and specifications should identify abatement measures that would minimize or eliminate adverse construction noise impacts to the community. In determining the feasibility of construction noise abatement, Caltrans will consider the benefits achieved and the overall adverse social, economic, and environmental effects and the costs of the construction noise abatement measures.

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Construction noise is regulated by Caltrans Standard Specifications Section 7-1.01I, "Sound Control Requirements," which states that noise levels generated during construction shall comply with applicable local, state, and federal regulations, and that all equipment shall be fitted with adequate mufflers according to the manufacturers' specifications. Caltrans Standard Specifications Section 42-1.02, "Groove and Grind Pavement," construction noise during this operation cannot exceed 86 dBA at 50 ft from the job site activities from 9 p.m. to 6 a.m.

Table 8-1 summarizes noise levels produced by construction equipment that is commonly used on roadway construction projects. Construction equipment is expected to generate noise levels ranging from 70 to 90 dB at a distance of 50 feet, and noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. Construction activities would be from 120 ft to over 500 ft from the adjacent residences, providing from 8 dB to over 20 dB reduction. Shielding by intervening property walls and residential structures could reduce the construction noise further.

Table 8-1. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 50 feet)
Scrapers	85
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Concrete Pump	82
Jackhammer	89
Pile Driver	101

Source: Federal Highway Administration 2006.

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 7-1.01I and applicable local noise standards. Construction noise would be short-term, intermittent, and overshadowed by local traffic noise. Further, implementing the following measures would minimize the temporary noise impacts from construction:

- All equipment will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
- As directed by Caltrans, the contractor will implement appropriate additional noise mitigation measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

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9. REFERENCES

23 CFR Part 772, 2009. Procedures for Abatement of Highway Traffic Noise and Construction Noise, 23 Codes of Federal Regulations, Part 772, April.

Caltrans, 2009. California Department of Transportation. Technical Noise Supplement A Technical Noise Supplement to the Traffic Noise Analysis Protocol, November.

Caltrans, 2006. California Department of Transportation. Traffic Noise Analysis Protocol, August.

FHWA, 2004. U.S. Department of Transportation, FHWA Traffic Noise Model. TNM 2.5, Report No. FHWA PD-96-010, Revision No.1, April 14, 2004.

FHWA, 2006. FHWA Roadway Construction Noise Model, Version 1.0 User's Guide, January.

Caltrans, 2007. Project Study Report -Project Development Support (PSR-PDS), 1-LA-IOI-SI.1/51.6 (PM 31.9/32.3). March.

Caltrans and the City of Calabasas, 2009. Lost Hills Road/Route 101 Lost Hills Road Overcrossing Replacement & Interchange Modification Project Initial Study/Mitigated Negative Declaration Environmental Assessment with Finding of No Significant Impact, December.

Caltrans, 2006. Standard Specifications, May.

DKS Associates, 2009. Traffic Analysis, Lost Hills Road Interchange, Calabasas, California - EA 07-242300. October.

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Appendix A

Traffic Data

Appendix A Traffic Data

The highest traffic noise levels occur when traffic is operating under Level-of-service C (LOS C) conditions. Under LOS C conditions, traffic is heavy, but remains free-flowing. DKS Associates provided future build year 2040 traffic volumes for the streets and ramps. The traffic distribution for the year 2040 for US-101 was set to the LOS C volume of 2,000 vehicles per hour (vph) for mainline lanes. Speeds of 65 mph were assumed for all US-101 lanes. US-101 has four traffic lanes in each direction and the future condition is assumed to remain at 4 general traffic lanes. However, ramps for the future build conditions have allowed for the addition of a 5th lane in both directions. For all alternatives, the US-101 was modeled two general lanes in each direction: the inside two lanes are modeled along the striping between two lanes with 2000 cars, medium trucks, and motorcycles per lane and no heavy trucks. The outside two general lanes are modeled as one line along the striping between two lanes with 2000 cars, medium trucks heavy trucks, and buses per lane. All the heavy trucks and busses are included in this line. The number of the medium trucks, heavy trucks, buses, and motorcycles is determined based on the total volume of the vehicles on 4 lanes. Medium trucks are spread equally between two modeled lines.

The street and ramp traffic data provided by DKS was examined and was capped at 1,000 vph/lane. The higher of either the AM or PM ramp traffic volumes has been used in the model to ensure the worst-case scenario. For alternatives 3, 4, 5, 6, and 7, the future Lost Hills Road and NB on-ramp arrangement includes two lanes that merge into one lane at the highway speed and in these cases the on-ramp volumes were capped at 2 lanes. On-ramp speeds were modeled at 10 mph and accelerating to 65 mph. Off-ramps were modeled at 65 mph, decelerating to 25 mph. Lost Hills Road was modeled at 35 mph with flow controls (stop lights) as appropriate for the Alternative being modeled.

It was assumed that the traffic mix percentages observed in the field during the measurements would apply to all Alternatives. No medium trucks were observed during the short-term measurements, however, based numerous observations, medium trucks are often present. To account for this, medium truck percentages on portions of Lost Hills Road were set to the NB US-101 value of 0.7% and adjustments made to the on- and off-ramps to account for these vehicles.

Table A–2 presents the future traffic volumes, speeds, and traffic distributions for the No-Build Alternative, Alternative 1. Table A–2, Table A–3, Table A–4, Table A–5, and Table A–6, present the future traffic volumes, speeds, and traffic distributions for the "Build" scenarios of Alternatives 2 through 7. Since highway associated traffic would be the dominant noise source for the receptors adjacent to the proposed project, only traffic on US-101, ramps, and Lost Hills Road was incorporated into the traffic noise model.

Table A–1
Traffic Volumes Observed During Short-Term Noise Measurements

Roadway	Number of Lanes	Total Traffic Vol. [1]	Traffic Speeds (mph)	Cars	% Cars	Medium Truck	% MT	Heavy Trucks	% HT	Buses	% Buses	Motor-cycle	% Motor-cycle
SB Lost Hills Road 1 (north of Canwood St)	1	22	35	8	36.4%	0	0.0%	21	95.5%	0	0.0%	0	0.0%
SB Lost Hills Road 2 (Canwood St to ramps on north side of US-101)	1	121	35	100	82.6%	0	0.0%	21 [2]	17.4%	0	0.0%	0	0.0%
SB Lost Hills Road 3 (Overcrossing)	1	210	35	189	90.0%	0	0.0%	21 [2]	10.0%	0	0.0%	0	0.0%
SB Lost Hills Road 4 (S of ramps on south side of US-101)	1	480	35	480	100.0%	0	0.0%	0 [2]	0.0%	0	0.0%	0	0.0%
NB Lost Hills Road 1	1	22	35	8	36.4%	0	0.0%	7	31.8%	0	0.0%	0	0.0%
NB Lost Hills Road 2	1	128	35	128	100.0%	0	0.0%	7 [3]	5.5%	0	0.0%	0	0.0%
NB Lost Hills Road 3	1	764	35	764	100.0%	0	0.0%	0 [3]	0.0%	0	0.0%	0	0.0%
NB Lost Hills Road 4	1	987	35	987	100.0%	0	0.0%	0 [3]	0.0%	0	0.0%	0	0.0%
NB US-101 Inside Lanes	2	3496	65	3460	99.0%	8	0.2%	0	0.0%	4	0.1%	24	0.7%
NB US-101 Outside Lanes	2	2196	65	2092	95.3%	32	1.5%	68	3.1%	0	0.0%	4	0.2%
NB US-101 On-Ramp from Lost Hills Rd.	1	724	0 to 65	716	98.9%	0	0.0%	0	0.0%	0	0.0%	8	1.1%
NB US-101 Off-Ramp to Lost Hills Rd.	1	172	65 to 25	163	94.8%	0	0.0%	7 [3]	4.1%	0	0.0%	2	1.1%
SB US-101 Inside Lanes	2	3440	65	3392	98.6%	36	1.0%	0	0.0%	0	0.0%	12	0.3%
SB US-101 Outside Lanes	2	2340	65	2172	92.8%	68	2.9%	72	3.1%	28	1.2%	0	0.0%
SB US-101 On-Ramp from Lost Hills Rd.	1	323	0 to 65	294	91.2%	0	0.0%	21	6.5%	4	1.1%	4	1.1%
SB US-101 Off-Ramp to Lost Hills Rd.	1	356	65 to 25	348	97.8%	0	0.0%	0	0.0%	4	1.1%	4	1.1%

1/ Traffic volume for grayed roadway segments were estimated based on the average difference between traffic observed on US-101, US-101 NB on-ramp and US-101 SB off-ramp and traffic volumes reported in the project traffic report (-11.4%).
2/ All of the heavy SB trucks were assumed coming from the dump and went to the SB onramp (and so don't show up in LH RD 4).
3/ All heavy trucks going to the dump were coming from US-101 NB off-ramp and did not come from the southern side of US-101.
4/ The percent of medium trucks, buses, and motorcycles on the SB on-ramp was assumed to be the same as SB off-ramp and on the NB off-ramp was assumed to be the same as the NB on-ramp.

Table A–2
2040 Traffic Volumes - Future No Build (Alternative 1) and Transportation Management Systems (Alternative 2)

Roadway	No. of Lanes	Total Traffic Volume	Travel Speed, mph	Cars		Med. Trucks		Heavy Trucks		Bus		Motorcycles	
				Vol	%	Vol	%	Vol	%	Vol	%	Vol	%
SB Lost Hills Road 1 (north of Canwood St)	1	46	35	9	19.6%	0	0.0%	37	80.4%	0	0.0%	0	0.0%
SB Lost Hills Road 2 (Canwood St to ramps on north side of US-101)	1	152	35	114	75.0%	1	0.7%	37	24.3%	0	0.0%	0	0.0%
SB Lost Hills Road 3 (Overcrossing)	1	298	35	259	86.9%	2	0.7%	37	12.4%	0	0.0%	0	0.0%
SB Lost Hills Road 4 (S of ramps on south side of US-101)	1	744	35	739	99.3%	5	0.7%	0	0.0%	0	0.0%	0	0.0%
Lost Hills Road 1	1	77	35	19	61.3%	0	0.0%	12	38.7%	0	0.0%	0	0.0%
Lost Hills Road 2 [1]	1	316	35	151	92.1%	1	0.6%	12	7.3%	0	0.0%	0	0.0%
Lost Hills Road 3 [1]	1	1298	35	991	99.1%	7	0.7%	2	0.2%	0	0.0%	0	0.0%
Lost Hills Road 4 [1]	1	1744	35	991	99.1%	7	0.7%	2	0.2%	0	0.0%	0	0.0%
NB US-101 Inside Lanes	2	4000	65	3933	98.3%	28	0.7%	0	0.0%	0	0.0%	39	1.0%
NB US-101 Outside Lanes	2	4000	65	3870	96.8%	28	0.7%	96	2.4%	6	0.2%	0	0.0%
NB US-101 On-Ramp from Lost Hills Rd.	1	1000	0 to 65	988	98.8%	1	0.1%	0	0.0%	0	0.0%	11	1.1%
NB US-101 Off-Ramp to Lost Hills Rd. [1]	1	247	65 to 25	232	93.9%	2	0.8%	10	4.0%	0	0.0%	3	1.2%
SB US-101 Inside Lanes	2	4000	65	3911	97.8%	72	1.8%	0	0.0%	0	0.0%	17	0.4%
SB US-101 Outside Lanes	2	4000	65	3789	94.7%	72	1.8%	100	2.5%	39	1.0%	0	0.0%
SB US-101 On-Ramp from Lost Hills Rd.	1	472	0 to 65	425	90.0%	0	0.0%	37	7.8%	5	1.1%	5	1.1%
SB US-101 Off-Ramp to Lost Hills Rd.	1	574	65 to 25	559	97.4%	3	0.5%	0	0.0%	6	1.0%	6	1.0%

1/ Two heavy trucks were assumed to come from south of the project. Medium trucks assumed to be 0.7%.

Table A–3

2040 Traffic Volumes - Roundabout (Alternative 3) and Full Standard Diamond Interchange (Alternative 6)

Roadway	No. of Lanes	Total Traffic Volume	Travel Speed, mph	Cars		Med. Trucks		Heavy Trucks		Bus		Motorcycles	
				Vol	%	Vol	%	Vol	%	Vol	%	Vol	%
SB Lost Hills Road 1 (north of Canwood St)	1	46	35	9	19.6%	0	0.0%	37	80.4%	0	0.0%	0	0.0%
SB Lost Hills Road 2 (Canwood St to ramps on north side of US-101)	1	152	35	114	75.0%	1	0.7%	37	24.3%	0	0.0%	0	0.0%
SB Lost Hills Road 3 (Overcrossing)	2	298	35	259	86.9%	2	0.7%	37	12.4%	0	0.0%	0	0.0%
SB Lost Hills Road 4 (S of ramps on south side of US-101)	2	744	35	739	99.3%	5	0.7%	0	0.0%	0	0.0%	0	0.0%
Lost Hills Road 1	1	77	35	49	61.3%	0	0.0%	49	38.7%	0	0.0%	0	0.0%
Lost Hills Road 2 [1]	1	316	35	265	92.1%	2	0.6%	49	7.3%	0	0.0%	0	0.0%
Lost Hills Road 3 [1]	2	1431	35	1382	99.1%	10	0.7%	49	0.2%	0	0.0%	0	0.0%
Lost Hills Road 4 [1]	2	2220	35	2203	99.2%	15	0.7%	2	0.1%	0	0.0%	0	0.0%
NB US-101 Inside Lanes	2	4000	65	3933	98.3%	28	0.7%	0	0.0%	0	0.0%	39	1.0%
NB US-101 Outside Lanes	2	4000	65	3870	96.8%	28	0.7%	96	2.4%	6	0.2%	0	0.0%
NB US-101 On-Ramp from Lost Hills Rd.	2	1070	0 to 65	1057	98.8%	1	0.1%	0	0.0%	0	0.0%	12	1.1%
NB US-101 Off-Ramp to Lost Hills Rd. [1]	2	247	65 to 25	232	93.9%	2	0.8%	10	4.0%	0	0.0%	3	1.2%
SB US-101 Inside Lanes	2	4000	65	3911	97.8%	72	1.8%	0	0.0%	0	0.0%	17	0.4%
SB US-101 Outside Lanes	2	4000	65	3789	94.7%	72	1.8%	100	2.5%	39	1.0%	0	0.0%
SB US-101 On-Ramp from Lost Hills Rd.	2	472	0 to 65	423	89.6%	2	0.4%	37	7.8%	5	1.1%	5	1.1%
SB US-101 Off-Ramp to Lost Hills Rd.	2	574	65 to 25	559	97.4%	3	0.5%	0	0.0%	6	1.0%	6	1.0%

1/ Two heavy trucks were assumed to come from south of the project. Medium trucks assumed to be 0.7%.

Table A–4

2040 Traffic Volumes - Expanded Diamond Interchange (Alternative 4)

Roadway	No. of Lanes	Total Traffic Volume	Travel Speed, mph	Cars		Med. Trucks		Heavy Trucks		Bus		Motorcycles	
				Vol	%	Vol	%	Vol	%	Vol	%	Vol	%
SB Lost Hills Road 1 (north of Canwood St)	1	46	35	9	19.6%	0	0.0%	37	80.4%	0	0.0%	0	0.0%
SB Lost Hills Road 2 (Canwood St to ramps on north side of US-101)	1	152	35	114	75.0%	1	0.7%	37	24.3%	0	0.0%	0	0.0%
SB Lost Hills Road 3 (Overcrossing)	2	298	35	259	86.9%	2	0.7%	37	12.4%	0	0.0%	0	0.0%
SB Lost Hills Road 4 (S of ramps on south side of US-101)	2	744	35	739	99.3%	5	0.7%	0	0.0%	0	0.0%	0	0.0%
Lost Hills Road 1	1	77	35	28	61.3%	0	0.0%	49	38.7%	0	0.0%	0	0.0%
Lost Hills Road 2 [1]	1	316	35	265	92.1%	2	0.6%	49	7.3%	0	0.0%	0	0.0%
Lost Hills Road 3 [1]	2	1431	35	1382	99.1%	10	0.7%	39	0.2%	0	0.0%	0	0.0%
Lost Hills Road 4 [1]	2	2220	35	2203	99.2%	15	0.7%	2	0.1%	0	0.0%	0	0.0%
NB US-101 Inside Lanes	2	4000	65	3933	98.3%	28	0.7%	0	0.0%	0	0.0%	39	1.0%
NB US-101 Outside Lanes	2	4000	65	3870	96.8%	28	0.7%	96	2.4%	6	0.2%	0	0.0%
NB US-101 On-Ramp from Lost Hills Rd.	2	1070	0 to 65	1057	98.8%	1	0.1%	0	0.0%	0	0.0%	12	1.1%
NB US-101 Off-Ramp to Lost Hills Rd. 1	2	247	65 to 25	232	93.9%	2	0.8%	10	4.0%	0	0.0%	3	1.2%
SB US-101 Inside Lanes	2	4000	65	3911	97.8%	72	1.8%	0	0.0%	0	0.0%	17	0.4%
SB US-101 Outside Lanes	2	4000	65	3789	94.7%	72	1.8%	100	2.5%	39	1.0%	0	0.0%
SB US-101 On-Ramp from Lost Hills Rd.	2	472	0 to 65	423	89.6%	2	0.4%	37	7.8%	5	1.1%	5	1.1%
SB US-101 Off-Ramp to Lost Hills Rd.	2	574	65 to 25	559	97.4%	3	0.5%	0	0.0%	6	1.0%	6	1.0%

1/ Two heavy trucks were assumed to come from south of the project. Medium trucks assumed to be 0.7%.

Table A–5

2040 Traffic Volumes - Partial Cloverleaf (Alternative 5)

Roadway	No. of Lanes	Total Traffic Volume	Travel Speed, mph	Cars		Med. Trucks		Heavy Trucks		Bus		Motorcycles	
				Vol	%	Vol	%	Vol	%	Vol	%	Vol	%
SB Lost Hills Road 1 (north of Canwood St)	1	46	35	9	19.6%	0	0.0%	37	80.4%	0	0.0%	0	0.0%
SB Lost Hills Road 2 (Canwood St to ramps on north side of US-101)	1	152	35	114	75.0%	1	0.7%	37	24.3%	0	0.0%	0	0.0%
SB Lost Hills Road 3 (Overcrossing)	2	298	35	259	86.9%	2	0.7%	37	12.4%	0	0.0%	0	0.0%
SB Lost Hills Road 4 (S of ramps on south side of US-101)	2	744	35	739	99.3%	5	0.7%	0	0.0%	0	0.0%	0	0.0%
Lost Hills Road 1	1	77	35	28	61.3%	0	0.0%	49	38.7%	0	0.0%	0	0.0%
Lost Hills Road 2 [1]	1	316	35	265	92.1%	2	0.6%	49	7.3%	0	0.0%	0	0.0%
Lost Hills Road 3 [1]	2	1470	35	1421	99.1%	10	0.7%	39	0.2%	0	0.0%	0	0.0%
Lost Hills Road 4 [1]	2	2220	35	2203	99.2%	15	0.7%	2	0.1%	0	0.0%	0	0.0%
NB US-101 Inside Lanes	2	4000	65	3933	98.3%	28	0.7%	0	0.0%	0	0.0%	39	1.0%
NB US-101 Outside Lanes	2	4000	65	3870	96.8%	28	0.7%	96	2.4%	6	0.2%	0	0.0%
NB US-101 On-Ramp from Lost Hills Rd.	2	1070	0 to 65	1057	98.8%	1	0.1%	0	0.0%	0	0.0%	12	1.1%
NB US-101 Off-Ramp to Lost Hills Rd. [1]	2	247	65 to 25	232	93.9%	2	0.8%	10	4.0%	0	0.0%	3	1.2%
SB US-101 Inside Lanes	2	4000	65	3911	97.8%	72	1.8%	0	0.0%	0	0.0%	17	0.4%
SB US-101 Outside Lanes	2	4000	65	3789	94.7%	72	1.8%	100	2.5%	39	1.0%	0	0.0%
SB US-101 On-Ramp from Lost Hills Rd.	2	472	0 to 65	423	89.6%	2	0.4%	37	7.8%	5	1.1%	5	1.1%
SB US-101 Off-Ramp to Lost Hills Rd.	2	574	65 to 25	559	97.4%	3	0.5%	0	0.0%	6	1.0%	6	1.0%

1/ Two heavy trucks were assumed to come from south of the project. Medium trucks assumed to be 0.7%.

Table A–6
2040 Traffic Volumes - Cloverleaf (Alternative 7)

Roadway	No. of Lanes	Total Traffic Volume	Travel Speed, mph	Cars		Med. Trucks		Heavy Trucks		Bus		Motorcycles	
				Vol	%	Vol	%	Vol	%	Vol	%	Vol	%
SB Lost Hills Road 1 (north of US 101 NB Off-ramp)	1	58	35	16	27.6%	0	0.0%	42	72.4%	0	0.0%	0	0.0%
SB Lost Hills Road 2 (US 101 NB Off-ramp to Canwood St)	2	282	35	238	84.4%	2	0.7%	42	14.9%	0	0.0%	0	0.0%
SB Lost Hills Road 3 (Overcrossing)	2	298	35	254	85.2%	2	0.7%	42	14.1%	0	0.0%	0	0.0%
SB Lost Hills Road 4 (S of ramps on south side of US-101)	2	744	35	739	99.3%	5	0.7%	0	0.0%	0	0.0%	0	0.0%
Lost Hills Road 1	1	89	35	33	54.8%	0	0.0%	56	45.2%	0	0.0%	0	0.0%
Lost Hills Road 2 [1]	2	1359	35	1305	99.1%	10	0.7%	44	0.2%	0	0.0%	0	0.0%
Lost Hills Road 3 [1]	2	1376	35	1376	99.1%	10	0.7%	44	0.2%	0	0.0%	0	0.0%
Lost Hills Road 4 [1]	2	2220	35	2203	99.2%	15	0.7%	2	0.1%	0	0.0%	0	0.0%
NB US-101 Inside Lanes	2	4000	65	3933	98.3%	28	0.7%	0	0.0%	0	0.0%	39	1.0%
NB US-101 Outside Lanes	2	4000	65	3870	96.8%	28	0.7%	96	2.4%	6	0.2%	0	0.0%
NB US-101 On-Ramp from Lost Hills Rd.	2	1069	0 to 65	1049	98.1%	8	0.7%	0	0.0%	0	0.0%	11	1.0%
NB US-101 Off-Ramp to Lost Hills Rd. [1]	2	247	65 to 25	230	93.1%	2	0.8%	12	4.9%	0	0.0%	3	1.2%
SB US-101 Inside Lanes	2	4000	65	3911	97.8%	72	1.8%	0	0.0%	0	0.0%	17	0.4%
SB US-101 Outside Lanes	2	4000	65	3789	94.7%	72	1.8%	100	2.5%	39	1.0%	0	0.0%
SB US-101 On-Ramp from Lost Hills Rd.	2	472	0 to 65	418	88.6%	2	0.4%	42	8.9%	5	1.1%	5	1.1%
SB US-101 Off-Ramp to Lost Hills Rd.	2	574	65 to 25	559	97.4%	3	0.5%	0	0.0%	6	1.0%	6	1.0%

1/ Two heavy trucks were assumed to come from south of the project. Medium trucks assumed to be 0.7%.

Appendix B

Predicted Future Noise Levels and Noise Barrier Analysis

Figure B – 1 Predicted Future Noise and Barrier Analysis - Alternative 2

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	Existing Noise Level	US-101 Future Worst Hour Noise Levels - $L_{eq}(h)$, dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
*R 1	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	62	2	0	61	3	0	61 5	3	0	60	4	0	61	3	0
*R 2	A	SW 32	SFR	1	62 E	65	65	3	0	B (67)	NONE	62	3	0	61	4	0	61 5	4	0	61	4	0	62	3	0
R 3	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	65	5	1	65 T	5	1	64	6	1	63	7	1	64 5	6	1
R 4	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	65	5	1	64 T	6	1	63	7	1	62	8	1	62 5	8	1
*R 5	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	65	4	0	64	5	1	63	6	1	62	7	1	62	7	1
*R 6	A	SW 32	SFR	2	66 E	69	69	3	0	B (67)	A/E	64	5	2	63	6	2	62	7	2	61	8	2	60	9	2
R 7	A	SW 32	SFR	1	64 E	67	67	3	0	B (67)	A/E	64	3	0	62	5	1	61 T	6	1	61	6	1	60 5	7	1
*R 8	A	SW 32	SFR	1	60 E	63	63	3	0	B (67)	NONE	60	3	0	59	4	0	58	5	1	58	5	1	57	6	1
*R 9	A	SW 32	SFR	1	59 M, ST1	62	62	3	0	B (67)	NONE	58	4	0	57	5	1	56	6	1	55	7	1	54	8	1
R 10	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	66	4	0	65 T	5	1	64 T	6	1	63	7	1	62 5	8	1
*R 11	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	66	4	0	65	5	1	63 T	7	1	63	7	1	61	9	1
*R 12	A	SW 32	SFR	1	68 E	71	71	3	0	B (67)	A/E	65	6	1	64	7	1	63	8	1	62 T	9	1	61	10	1

Notes: 1 - Leq(h) are A-weighted, peak hour noise levels in decibels.

2 - Land Use: SFR - single-family residence; REC - Recreational.

3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.

4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.

5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.

R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.

T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.

L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.

C - Critical receptor.

W - The existing and future noise levels at this location include benefits of an existing property wall.

* - Non first-row receptor.

Figure B – 2 Predicted Future Noise and Barrier Analysis - Alternative 2, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	Existing Noise Level	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R 13	A	SW 32	SFR	1	66 M, LT1/CAL	68	68	2	0	B (67)	A/E	64 T	4	0	63	5	1	62 T	6	1	61	7	1	**60** [5]	8	1
*R 14	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	64	5	1	63	6	1	62 T	7	1	61	8	1	**61**	8	1
*R 15	A	SW 32	SFR	1	62 E	65	65	3	0	B (67)	NONE	60	5	1	59	6	1	58	7	1	57	8	1	**56**	9	1
R 16[C]	A	SW 32	SFR	1	72 E	75	75	3	0	B (67)	A/E	69	6	1	67 T	8	1	66	9	1	65 T	10	1	**63** [5]	12	1
*R 17	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	65	5	1	64	6	1	63	7	1	62 T	8	1	**61** [5]	9	1
*R 18	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	62	2	0	61	3	0	60	4	0	60	4	0	**59**	5	1
*R 19	A	SW 32	SFR	1	64 E	67	67	3	0	B (67)	A/E	64	3	0	63	4	0	63	4	0	62	5	1	**61** [5,T]	6	1
R 20	A	SW 32	SFR	1	66 M, ST2/CAL	69	69	3	0	B (67)	A/E	67	2	0	66 T	3	0	65	4	0	64	5	1	**63** [5,T]	6	1
R 21	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	68	1	0	67	2	0	66 T	3	0	65	4	0	**63** [5,T]	6	1
R 22	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	65	1	0	64	2	0	64	2	0	62 T	4	0	**60** [5]	6	1
R 23	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	67	1	0	66	2	0	66	2	0	65 T	3	0	**63** [R]	5	1
R 24	A	SW 32	SFR	1	66 M, ST3/CAL	68	68	2	0	B (67)	A/E	67	1	0	67 T	1	0	66	2	0	65	3	0	**63** [R]	5	1

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W - The existing and future noise levels at this location include benefits of an existing property wall.
*- Non first-row receptor.

Figure B – 3 Predicted Future Noise and Barrier Analysis - Alternative 2, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	Existing Noise Level	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R 25	A	SW 32	SFR	1	65 E	67	67	2	0	B (67)	A/E	67	0	0	66	1	0	65	2	0	65	2	0	63 [5]	4	0
R 26	A	SW 32	SFR	1	64 E	66	66	2	0	B (67)	A/E	66	0	0	65	1	0	64	2	0	64	2	0	62 [5]	4	0
*R 27	A	SW 32	SFR	1	58 E	60	60	2	0	B (67)	NONE	59	1	0	59	1	0	58	2	0	58	2	0	57	3	0
*R 28	A	SW 32	SFR	1	64 E	66	66	2	0	B (67)	A/E	65	1	0	65	1	0	64	2	0	64	2	0	63	3	0
*R 29	A	SW 32	SFR	3	55 E	57	57	2	0	B (67)	NONE	57	0	0	57	0	0	56	1	0	56	1	0	56	1	0
*R 30	A	SW 32	SFR	5	51 E	53	53	2	0	B (67)	NONE	53	0	0	53	0	0	53	0	0	52	1	0	51	2	0
*R 31	A	SW 32	REC	1	61 E	64	64	3	0	B (67)	NONE	62	2	0	62	2	0	61	3	0	61	3	0	60	4	0
*R 32	A	SW 32	REC	1	58 E	61	61	3	0	B (67)	NONE	61	0	0	60	1	0	60	1	0	60	1	0	59	2	0
*R 33	A	SW 32	SFR	1	56 M, LT2/CAL	58	58	2	0	B (67)	NONE	57	1	0	57	1	0	57	1	0	56	2	0	56	2	0
*R 34	A	SW 32	SFR	1	57 M, ST5/CAL	58	58	1	0	B (67)	NONE	57	1	0	57	1	0	57	1	0	56	2	0	56	2	0
*R 35	A	SW 32	REC	1	57 M, ST4/CAL	60	60	3	0	B (67)	NONE	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0
*R 36	A	SW 32	SFR	3	51 E	52	52	1	0	B (67)	NONE	52	0	0	52	0	0	52	0	0	52	0	0	52	0	0
*R 37	A	SW 32	SFR	3	55 M, ST6/CAL	56	56	1	0	B (67)	NONE	56	0	0	55	1	0	55	1	0	55	1	0	55	1	0

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 4 Predicted Future Noise and Barrier Analysis - Alternative 3

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	$L_{eq}(h)$, dBA	US-101 Future Worst Hour Noise Levels - $L_{eq}(h)$, dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
*R 1	A	SW 32	SFR	1	60 E	63	63	3	0	B (67)	NONE	59	4	0	59	4	0	**58** [5]	5	1	57	6	1	57	6	1
*R 2	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	59	5	1	59	5	1	**58** [5]	6	1	57	7	1	**57**	7	1
R 3	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	64	5	1	63 T	6	1	62	7	1	**61** [5]	8	1	61	8	1
R 4	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63 T	7	1	62	8	1	62	8	1	**61** [5]	9	1
*R 5	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	64	5	1	63	6	1	61	8	1	61	8	1	**60**	9	1
*R 6	A	SW 32	SFR	2	66 E	69	69	3	0	B (67)	A/E	63	6	2	62	7	2	61	8	2	60	9	2	**60**	9	2
R 7	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	62	4	0	61	5	1	61 T	5	1	60	6	1	**60** [5]	6	1
*R 8	A	SW 32	SFR	1	60 E	63	63	3	0	B (67)	NONE	59	4	0	58	5	1	58	5	1	57	6	1	**57**	6	1
*R 9	A	SW 32	SFR	1	59 M, ST1	62	62	3	0	B (67)	NONE	57	5	1	56	6	1	55	7	1	54	8	1	**53**	9	1
R 10	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	65	5	1	64 T	6	1	63 T	7	1	62	8	1	**62** [5]	8	1
*R 11	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	65	4	0	63	6	1	63 T	6	1	62	7	1	**61**	8	1
*R 12	A	SW 32	SFR	1	68 E	71	71	3	0	B (67)	A/E	64	7	1	63	8	1	62	9	1	61 T	10	1	**61**	10	1

Notes:

1 - Leq(h) are A-weighted, peak hour noise levels in decibels.

2 - Land Use: SFR - single-family residence; REC - Recreational.

3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.

4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.

5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.

R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.

T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.

L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.

C - Critical receptor.

W - The existing and future noise levels at this location include benefits of an existing property wall.

* - Non first-row receptor.

Figure B – 5 Predicted Future Noise and Barrier Analysis - Alternative 3, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	L_{eq}(h), dBA	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R 13	A	SW 32	SFR	1	66 M, LT1/CAL	68	68	2	0	B (67)	A/E	63 T	5	1	62	6	1	61 T	7	1	61	7	1	**60** 5	**8**	1
*R 14	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	64	4	0	62	6	1	62 T	6	1	61	7	1	**60**	**8**	1
*R 15	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	59	5	1	58	6	1	57	7	1	56	8	1	**55**	**9**	1
R 16[c]	A	SW 32	SFR	1	72 E	75	75	3	0	B (67)	A/E	67	8	1	66 T	9	1	65	10	1	64 T	11	1	**63** 5	**12**	1
*R 17	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63	7	1	62	8	1	61 T	9	1	**61** 5	**9**	1
*R 18	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	61	3	0	60	4	0	59	5	1	59	5	1	**58**	**6**	1
*R 19	A	SW 32	SFR	1	64 E	67	67	3	0	B (67)	A/E	63	4	0	62	5	1	61	6	1	61	6	1	**61** 5,T	**6**	1
R 20	A	SW 32	SFR	1	66 M, ST2/CAL	69	69	3	0	B (67)	A/E	66	3	0	65 T	4	0	64	5	1	63	6	1	**63** 5,T	**6**	1
R 21	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	67	2	0	66	3	0	65 T	4	0	64	5	1	**63** 5,T	**6**	1
R 22	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	64	2	0	64	2	0	62	4	0	61 T	5	1	**60** 5	**6**	1
R 23	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	66	2	0	66	2	0	65	3	0	64 T	4	0	**63** R	**5**	1
R 24	A	SW 32	SFR	1	66 M, ST3/CAL	68	68	2	0	B (67)	A/E	67	1	0	66 T	2	0	65	3	0	64	4	0	**63** R	**5**	1

Notes:

1 - Leq(h) are A-weighted, peak hour noise levels in decibels.

2 - Land Use: SFR - single-family residence; REC - Recreational.

3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.

4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.

5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.

R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.

T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.

L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.

C - Critical receptor.

W - The existing and future noise levels at this location include benefits of an existing property wall.

* - Non first-row receptor.

Figure B – 6 Predicted Future Noise and Barrier Analysis - Alternative 3, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	$L_{eq}(h)$, dBA	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
R 25	A	SW 32	SFR	1	65 E	67	67	2	0	B (67)	A/E	66	1	0	65	2	0	65	2	0	64	3	0	63 [5]	4	0
R 26	A	SW 32	SFR	1	64 E	66	66	2	0	B (67)	A/E	65	1	0	64	2	0	64	2	0	63	3	0	62 [5]	4	0
*R 27	A	SW 32	SFR	1	58 E	60	60	2	0	B (67)	NONE	58	2	0	58	2	0	58	2	0	58	2	0	57	3	0
*R 28	A	SW 32	SFR	1	64 E	66	66	2	0	B (67)	A/E	65	1	0	65	1	0	64	2	0	64	2	0	63	3	0
*R 29	A	SW 32	SFR	3	54 E	56	56	2	0	B (67)	NONE	56	0	0	56	0	0	56	0	0	55	1	0	55	1	0
*R 30	A	SW 32	SFR	5	51 E	53	53	2	0	B (67)	NONE	53	0	0	52	1	0	52	1	0	52	1	0	51	2	0
*R 31	A	SW 32	REC	1	61 E	64	64	3	0	B (67)	NONE	62	2	0	61	3	0	61	3	0	60	4	0	60	4	0
*R 32	A	SW 32	REC	1	59 E	62	62	3	0	B (67)	NONE	61	1	0	60	2	0	60	2	0	60	2	0	60	2	0
*R 33	A	SW 32	SFR	1	56 M, LT2/CAL	58	58	2	0	B (67)	NONE	57	1	0	57	1	0	57	1	0	57	1	0	56	2	0
*R 34	A	SW 32	SFR	1	57 M, ST5/CAL	59	59	2	0	B (67)	NONE	58	1	0	58	1	0	58	1	0	58	1	0	57	2	0
*R 35	A	SW 32	REC	1	57 M, ST4/CAL	60	60	3	0	B (67)	NONE	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0
*R 36	A	SW 32	SFR	3	52 E	53	53	1	0	B (67)	NONE	53	0	0	53	0	0	53	0	0	53	0	0	53	0	0
*R 37	A	SW 32	SFR	3	55 M, ST6/CAL	57	57	2	0	B (67)	NONE	57	0	0	57	0	0	57	0	0	56	1	0	56	1	0

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 7 Predicted Future Noise and Barrier Analysis - Alternative 4

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	L_{eq}(h), dBA	US-101 Future Worst Hour Noise Levels - L_{eq}(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
*R 1	A	SW 32	SFR	1	60 E	63	64	3	1	B (67)	NONE	59	5	1	**59** 5	5	1	**58**	6	1	57	7	1	57	7	1
*R 2	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	59	5	1	**59** 5	5	1	**58**	6	1	57	7	1	**57**	7	1
R 3	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	64	5	1	63 T	6	1	**62** R	7	1	62	7	1	61	8	1
R 4	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63 T	7	1	**62** R	8	1	62	8	1	61	9	1
*R 5	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	64	5	1	63	6	1	62	7	1	61	8	1	**60**	9	1
*R 6	A	SW 32	SFR	2	66 E	69	69	3	0	B (67)	A/E	63	6	2	62	7	2	61	8	2	61	8	2	**60**	9	2
R 7	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	62	4	0	61	5	1	61 T	5	1	60	6	1	**60** 5	6	1
*R 8	A	SW 32	SFR	1	60 E	63	63	3	0	B (67)	NONE	59	4	0	58	5	1	58	5	1	57	6	1	**57**	6	1
*R 9	A	SW 32	SFR	1	59 M, ST1	62	62	3	0	B (67)	NONE	57	5	1	56	6	1	55	7	1	54	8	1	**53**	9	1
R 10	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	65	5	1	64	6	1	63 T	7	1	62	8	1	**62** 5	8	1
*R 11	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	65	4	0	63	6	1	63 T	6	1	62	7	1	**61**	8	1
*R 12	A	SW 32	SFR	1	68 E	71	70	3	-1	B (67)	A/E	64	6	1	63	7	1	62	8	1	62 T	8	1	**61**	9	1

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W - The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 8 Predicted Future Noise and Barrier Analysis - Alternative 4, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	Existing Noise Level	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
R 13	A	SW 32	SFR	1	66 M, LT1/CAL	68	68	2	0	B (67)	A/E	63 T	5	1	62	6	1	61 T	7	1	61	7	1	**60** 5	8	1
*R 14	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	63	5	1	62	6	1	62 T	6	1	61	7	1	**61**	7	1
*R 15	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	59	5	1	58	6	1	57	7	1	56	8	1	**55**	9	1
R 16[c]	A	SW 32	SFR	1	72 E	75	75	3	0	B (67)	A/E	67	8	1	66 T	9	1	65	10	1	64 T	11	1	**63** 5	12	1
*R 17	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63	7	1	62	8	1	61 T	9	1	**61** 5	9	1
*R 18	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	61	3	0	60	4	0	60	4	0	59	5	1	**58**	6	1
*R 19	A	SW 32	SFR	1	64 E	67	67	3	0	B (67)	A/E	63	4	0	63	4	0	62	5	1	61	6	1	**61** 5,T	6	1
R 20	A	SW 32	SFR	1	66 M, ST2/CAL	69	69	3	0	B (67)	A/E	66	3	0	65 T	4	0	64	5	1	63	6	1	**63** 5,T	6	1
R 21	A	SW 32	SFR	1	66 E	69	70	3	1	B (67)	A/E	67	3	0	66	4	0	65 T	5	1	64	6	1	**63** 5,T	7	1
R 22	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	65	1	0	64	2	0	63	3	0	61 T	5	1	**61** 5	5	1
R 23	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	67	1	0	66	2	0	65	3	0	64 T	4	0	**63** R	5	1
R 24	A	SW 32	SFR	1	66 M, ST3/CAL	68	68	2	0	B (67)	A/E	67	1	0	66 T	2	0	65	3	0	64	4	0	**63** R	5	1

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W - The existing and future noise levels at this location include benefits of an existing property wall.
*- Non first-row receptor.

Figure B – 9 Predicted Future Noise and Barrier Analysis - Alternative 4, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	L_{eq}(h), dBA	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R 25	A	SW 32	SFR	1	65 E	67	68	2	1	B (67)	A/E	66	2	0	66	2	0	65	3	0	64	4	0	63 R	5	1
R 26	A	SW 32	SFR	1	64 E	66	67	2	1	B (67)	A/E	65	2	0	65	2	0	64	3	0	63	4	0	62 R	5	1
*R 27	A	SW 32	SFR	1	58 E	60	60	2	0	B (67)	NONE	59	1	0	58	2	0	58	2	0	58	2	0	58	2	0
*R 28	A	SW 32	SFR	1	64 E	66	66	2	0	B (67)	A/E	65	1	0	64	2	0	64	2	0	63	3	0	63	3	0
*R 29	A	SW 32	SFR	3	54 E	56	57	2	1	B (67)	NONE	56	1	0	56	1	0	56	1	0	56	1	0	55	2	0
*R 30	A	SW 32	SFR	5	51 E	53	53	2	0	B (67)	NONE	53	0	0	53	0	0	52	1	0	52	1	0	51	2	0
R 31	A	SW 32	REC	1	61 E	64	64	3	0	B (67)	NONE	62	2	0	61	3	0	61	3	0	60 S	4	0	60	4	0
*R 32	A	SW 32	REC	1	59 E	62	62	3	0	B (67)	NONE	60	2	0	60	2	0	60	2	0	59	3	0	60	2	0
*R 33	A	SW 32	SFR	1	56 M, LT2/CAL	58	57	2	-1	B (67)	NONE	57	0	0	57	0	0	56	1	0	56	1	0	56	1	0
*R 34	A	SW 32	SFR	1	57 M, ST5/CAL	59	58	2	-1	B (67)	NONE	57	1	0	57	1	0	56	2	0	56	2	0	56	2	0
*R 35	A	SW 32	REC	1	57 M, ST4/CAL	60	60	3	0	B (67)	NONE	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0
*R 36	A	SW 32	SFR	3	52 E	53	52	1	-1	B (67)	NONE	52	0	0	52	0	0	52	0	0	52	0	0	53	-1	0
*R 37	A	SW 32	SFR	3	55 M, ST6/CAL	57	56	2	-1	B (67)	NONE	55	1	0	55	1	0	55	1	0	55	1	0	55	1	0

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 10 Predicted Future Noise and Barrier Analysis - Alternative 5

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	L_{eq}(h), dBA	US-101 Future Worst Hour Noise Levels - L_{eq}(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
*R 1	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	59	5	1	**59** 5	5	1	**58**	6	1	57	7	1	57	7	1
*R 2	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	59	5	1	**59** 5	5	1	**58**	6	1	57	7	1	**57**	7	1
R 3	A	SW 32	SFR	1	68 E	71	70	3	-1	B (67)	A/E	64	6	1	63 T	7	1	**62** R	8	1	62	8	1	61	9	1
R 4	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63 T	7	1	**62** R	8	1	62	8	1	61	9	1
*R 5	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	64	5	1	63	6	1	62	7	1	61	8	1	**60**	9	1
*R 6	A	SW 32	SFR	2	66 E	69	69	3	0	B (67)	A/E	63	6	2	63	6	2	62	7	2	61	8	2	**60**	9	2
R 7	A	SW 32	SFR	1	65 E	68	67	3	-1	B (67)	A/E	62	5	1	61	6	1	61 T	6	1	60	7	1	**60** 5	7	1
*R 8	A	SW 32	SFR	1	61 E	64	63	3	-1	B (67)	NONE	59	4	0	58	5	1	58	5	1	57	6	1	**57**	6	1
*R 9	A	SW 32	SFR	1	59 M, ST1	62	63	3	1	B (67)	NONE	57	6	1	56	7	1	55	8	1	54	9	1	**53**	10	1
R 10	A	SW 32	SFR	1	68 E	71	71	3	0	B (67)	A/E	65	6	1	64	7	1	63 T	8	1	63	8	1	**62** 5	9	1
*R 11	A	SW 32	SFR	1	68 E	71	70	3	-1	B (67)	A/E	65	5	1	64	6	1	63 T	7	1	62	8	1	**61**	9	1
*R 12	A	SW 32	SFR	1	68 E	71	71	3	0	B (67)	A/E	64	7	1	63	8	1	62	9	1	62 T	9	1	**61**	10	1

Notes:

1 - Leq(h) are A-weighted, peak hour noise levels in decibels.

2 - Land Use: SFR - single-family residence; REC - Recreational.

3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.

4 - S = Substantial increase (12 dBA or more); A/E = Approach or exceed NAC.

5 - Barrier height recommended to meet requirements of nearby receptor(s).

. Emboldened levels indicate results of recommended sound wall design.

R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.

T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.

L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.

C - Critical receptor.

W - The existing and future noise levels at this location include benefits of an existing property wall.

* - Non first-row receptor.

Figure B – 11 Predicted Future Noise and Barrier Analysis - Alternative 5, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	$L_{eq}(h)$, dBA	Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	US-101 Future Worst Hour Noise Levels - Leq(h), dBA														
												Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
R 13	A	SW 32	SFR	1	66 M, LT1/CAL	69	68	3	-1	B (67)	A/E	63 T	5	1	62	6	1	61 T	7	1	61	7	1	**60** [5]	8	1
*R 14	A	SW 32	SFR	1	65 E	68	69	3	1	B (67)	A/E	64	5	1	62	7	1	62 T	7	1	61	8	1	**61**	8	1
*R 15	A	SW 32	SFR	1	62 E	65	65	3	0	B (67)	NONE	59	6	1	58	7	1	57	8	1	56	9	1	**56**	9	1
R 16[C]	A	SW 32	SFR	1	72 E	75	75	3	0	B (67)	A/E	67	8	1	66 T	9	1	65	10	1	64 T	11	1	**63** [5]	12	1
*R 17	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63	7	1	62	8	1	61 T	9	1	**61** [5]	9	1
*R 18	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	61	3	0	61	3	0	60	4	0	59	5	1	**58**	6	1
*R 19	A	SW 32	SFR	1	64 E	67	67	3	0	B (67)	A/E	63	4	0	63	4	0	62	5	1	61	6	1	**61** [5,T]	6	1
R 20	A	SW 32	SFR	1	66 M, ST2/CAL	69	69	3	0	B (67)	A/E	66	3	0	65 T	4	0	64	5	1	64	5	1	**63** [5,T]	6	1
R 21	A	SW 32	SFR	1	66 E	69	70	3	1	B (67)	A/E	68	2	0	66	4	0	65 T	5	1	64	6	1	**64** [5,T]	6	1
R 22	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	65	1	0	64	2	0	63	3	0	61 T	5	1	**61** [5]	5	1
R 23	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	68	0	0	67	1	0	66	2	0	64 T	4	0	**63** [R]	5	1
R 24	A	SW 32	SFR	1	66 M, ST3/CAL	68	69	2	1	B (67)	A/E	68	1	0	67 T	2	0	66	3	0	64	5	1	**63** [R]	6	1

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W - The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 12 Predicted Future Noise and Barrier Analysis - Alternative 5, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	$L_{eq}(h)$, dBA	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																			
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)													
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
R 25	A	SW 32	SFR	1	65 E	67	68	2	1	B (67)	A/E	67	1	0	66	2	0	65	3	0	64	4	0	64 R	4	0
R 26	A	SW 32	SFR	1	64 E	66	67	2	1	B (67)	A/E	66	1	0	65	2	0	64	3	0	63	4	0	63 R	4	0
*R 27	A	SW 32	SFR	1	58 E	60	61	2	1	B (67)	NONE	59	2	0	58	3	0	58	3	0	58	3	0	58	3	0
*R 28	A	SW 32	SFR	1	64 E	66	67	2	1	B (67)	A/E	65	2	0	65	2	0	64	3	0	64	3	0	63	4	0
*R 29	A	SW 32	SFR	3	55 E	57	57	2	0	B (67)	NONE	56	1	0	56	1	0	56	1	0	56	1	0	55	2	0
*R 30	A	SW 32	SFR	5	51 E	53	53	2	0	B (67)	NONE	53	0	0	53	0	0	53	0	0	52	1	0	52	1	0
R 31	A	SW 32	REC	1	61 E	64	64	3	0	B (67)	NONE	62	2	0	62	2	0	61	3	0	61 5	3	0	60	4	0
*R 32	A	SW 32	REC	1	58 E	61	62	3	1	B (67)	NONE	61	1	0	60	2	0	60	2	0	60	2	0	60	2	0
*R 33	A	SW 32	SFR	1	56 M, LT2/CAL	58	58	2	0	B (67)	NONE	57	1	0	57	1	0	57	1	0	57	1	0	57	1	0
*R 34	A	SW 32	SFR	1	57 M, ST5/CAL	58	59	1	1	B (67)	NONE	57	2	0	57	2	0	57	2	0.	57	2	0	56	3	0
*R 35	A	SW 32	REC	1	57 M, ST4/CAL	60	61	3	1	B (67)	NONE	61	0	0	60	1	0	60	1	0	60	1	0	60	1	0
*R 36	A	SW 32	SFR	3	51 E	52	53	1	1	B (67)	NONE	53	0	0	53	0	0	53	0	0	53	0	0	53	0	0
*R 37	A	SW 32	SFR	3	55 M, ST6/CAL	56	57	1	1	B (67)	NONE	57	0	0	57	0	0	57	0	0	56	1	0	56	1	0

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 13 Predicted Future Noise and Barrier Analysis - Alternative 6

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	L_{eq}(h), dBA	US-101 Future Worst Hour Noise Levels - L_{eq}(h), dBA: Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
*R 1	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	60	4	0	60	4	0	**59**	5	1	58	6	1	58	6	1
*R 2	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	60	4	0	59	5	1	**59**	5	1	59	5	1	**58**	6	1
R 3	A	SW 32	SFR	1	68 E	71	69	3	-2	B (67)	A/E	64	5	1	63 T	6	1	62	7	1	62	7	1	**61** R	8	1
R 4	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63 T	7	1	62	8	1	62	8	1	**61** R	9	1
*R 5	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	63	6	1	63	6	1	61	8	1	61	8	1	**60**	9	1
*R 6	A	SW 32	SFR	2	66 E	69	69	3	0	B (67)	A/E	63	6	2	62	7	2	61	8	2	60	9	2	**60**	9	2
R 7	A	SW 32	SFR	1	65 E	68	66	3	-2	B (67)	A/E	62	4	0	61 T	5	1	61	5	1	60	6	1	**60** 5	6	1
*R 8	A	SW 32	SFR	1	61 E	64	63	3	-1	B (67)	NONE	59	4	0	58	5	1	58	5	1	57	6	1	**57**	6	1
*R 9	A	SW 32	SFR	1	59 M, ST1	62	62	3	0	B (67)	NONE	57	5	1	56	6	1	55	7	1	54	8	1	**53**	9	1
R 10	A	SW 32	SFR	1	68 E	71	70	3	-1	B (67)	A/E	65	5	1	64 T	6	1	63	7	1	62	8	1	**62** 5	8	1
*R 11	A	SW 32	SFR	1	68 E	71	69	3	-2	B (67)	A/E	65	4	0	63	6	1	63	6	1	62	7	1	**61**	8	1
*R 12	A	SW 32	SFR	1	68 E	71	70	3	-1	B (67)	A/E	64	6	1	63	7	1	62	8	1	61 T	9	1	**61**	9	1

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W - The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 14 Predicted Future Noise and Barrier Analysis - Alternative 6, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	$L_{eq}(h)$, dBA	US-101 Future Worst Hour Noise Levels - Leq(h), dBA: Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)											
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
R 13	A	SW 32	SFR	1	66 M, LT1/CAL	69	68	3	-1	B (67)	A/E	63 T	5	1	62	6	1	61 T	7	1	61	7	1	60 [5]	8	1
*R 14	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	63	5	1	62	6	1	61 T	7	1	61	7	1	61	7	1
*R 15	A	SW 32	SFR	1	62 E	65	64	3	-1	B (67)	NONE	59	5	1	58	6	1	57	7	1	56	8	1	55	9	1
R 16[C]	A	SW 32	SFR	1	72 E	75	75	3	0	B (67)	A/E	67	8	1	66 T	9	1	65	10	1	64	11	1	63 [5]	12	1
*R 17	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	64	6	1	63	7	1	62	8	1	61	9	1	61	9	1
*R 18	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	61	3	0	60	4	0	59	5	1	59	5	1	58	6	1
*R 19	A	SW 32	SFR	1	64 E	67	67	3	0	B (67)	A/E	63	4	0	62	5	1	61	6	1	61	6	1	61	6	1
R 20	A	SW 32	SFR	1	66 M, ST2/CAL	69	69	3	0	B (67)	A/E	66	3	0	65	4	0	64 T	5	1	63	6	1	63 [5,T]	6	1
R 21	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	67	2	0	66	3	0	65 T	4	0	64	5	1	63 [5,T]	6	1
R 22	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	65	1	0	64	2	0	62 T	4	0	61	5	1	61 [5]	5	1
R 23	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	67	1	0	66	2	0	65 T	3	0	64	4	0	63 [R]	5	1
R 24	A	SW 32	SFR	1	66 M, ST3/CAL	68	68	2	0	B (67)	A/E	67	1	0	66 T	2	0	65	3	0	64	4	0	63 [R]	5	1

Notes:

1 - Leq(h) are A-weighted, peak hour noise levels in decibels.

2 - Land Use: SFR - single-family residence; REC - Recreational.

3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.

4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.

5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.

R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.

T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.

L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.

C - Critical receptor.

W - The existing and future noise levels at this location include benefits of an existing property wall.

* - Non first-row receptor.

Figure B – 15 Predicted Future Noise and Barrier Analysis - Alternative 6, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	$L_{eq}(h)$, dBA	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
R 25	A	SW 32	SFR	1	65 E	67	67	2	0	B (67)	A/E	66	1	0	66	1	0	65	2	0	64 T	3	0	**63** R	4	0
R 26	A	SW 32	SFR	1	64 E	66	66	2	0	B (67)	A/E	65	1	0	64	2	0	64	2	0	63	3	0	**62** R	4	0
*R 27	A	SW 32	SFR	1	58 E	60	60	2	0	B (67)	NONE	58	2	0	58	2	0	58	2	0	57	3	0	57	3	0
*R 28	A	SW 32	SFR	1	64 E	66	66	2	0	B (67)	A/E	65	1	0	64	2	0	63	3	0	63	3	0	62	4	0
*R 29	A	SW 32	SFR	3	55 E	57	56	2	-1	B (67)	NONE	56	0	0	55	1	0	55	1	0	55	1	0	54	2	0
*R 30	A	SW 32	SFR	5	51 E	53	52	2	-1	B (67)	NONE	52	0	0	52	0	0	52	0	0	51	1	0	51	1	0
R 31	A	SW 32	REC	1	61 E	64	63	3	-1	B (67)	NONE	61	2	0	60	3	0	60	3	0	**59**	4	0	**59** 5	4	0
*R 32	A	SW 32	REC	1	58 E	61	61	3	0	B (67)	NONE	59	2	0	59	2	0	59	2	0	58	3	0	58	3	0
*R 33	A	SW 32	SFR	1	56 M, LT2/CAL	58	56	2	-2	B (67)	NONE	55	1	0	55	1	0	55	1	0	55	1	0	55	1	0
*R 34	A	SW 32	SFR	1	57 M, ST5/CAL	58	58	1	0	B (67)	NONE	57	1	0	56	2	0	56	2	0	56	2	0	56	2	0
*R 35	A	SW 32	REC	1	57 M, ST4/CAL	60	60	3	0	B (67)	NONE	59	1	0	58	2	0	58	2	0	58	2	0	57	3	0
*R 36	A	SW 32	SFR	3	51 E	52	52	1	0	B (67)	NONE	52	0	0	52	0	0	52	0	0	51	1	0	51	1	0
*R 37	A	SW 32	SFR	3	55 M, ST6/CAL	56	55	1	-1	B (67)	NONE	55	0	0	55	0	0	55	0	0	55	0	0	55	0	0

Notes:

1 - Leq(h) are A-weighted, peak hour noise levels in decibels.

2 - Land Use: SFR - single-family residence; REC - Recreational.

3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.

4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.

5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.

R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.

T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.

L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.

C - Critical receptor.

W The existing and future noise levels at this location include benefits of an existing property wall.

* - Non first-row receptor.

Figure B – 16 Predicted Future Noise and Barrier Analysis - Alternative 7

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	$L_{eq}(h)$, dBA	Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	US-101 Future Worst Hour Noise Levels - $L_{eq}(h)$, dBA: Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
*R 1	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	63	1	0	62	2	0	62	2	0	62	2	0	62	2	0
*R 2	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	63	1	0	63	1	0	63	1	0	62	2	0	62	2	0
R 3	A	SW 32	SFR	1	68 E	71	71	3	0	B (67)	A/E	65	6	1	65	6	1	64 T	7	1	64 5	7	1	64	7	1
R 4	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	65	5	1	65	5	1	64 T	6	1	63 5	7	1	63	7	1
*R 5	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	65	4	0	64	5	1	63	6	1	63 5,T	6	1	63	6	1
*R 6	A	SW 32	SFR	2	66 E	69	69	3	0	B (67)	A/E	64	5	2	63	6	2	62	7	2	61 5,T	8	2	60	9	2
R 7	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	64	4	0	62	6	1	62 T	6	1	61	7	1	61 5	7	1
*R 8	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	60	4	0	59	5	1	58	6	1	57	7	1	57	7	1
*R 9	A	SW 32	SFR	1	59 M, ST1	62	63	3	1	B (67)	NONE	58	5	1	57	6	1	55	8	1	55	8	1	54	9	1
R 10	A	SW 32	SFR	1	68 E	71	72	3	1	B (67)	A/E	66	6	1	65	7	1	64 T	8	1	63	9	1	62 5	10	1
*R 11	A	SW 32	SFR	1	68 E	71	72	3	1	B (67)	A/E	65	7	1	64	8	1	63 T	9	1	62	10	1	62 5	10	1
*R 12	A	SW 32	SFR	1	68 E	71	71	3	0	B (67)	A/E	64	7	1	64	7	1	62	9	1	62 T	9	1	61 5	10	1

Notes:

1 - Leq(h) are A-weighted, peak hour noise levels in decibels.

2 - Land Use: SFR - single-family residence; REC - Recreational.

3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.

4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.

5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.

R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.

T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.

L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.

C - Critical receptor.

W - The existing and future noise levels at this location include benefits of an existing property wall.

* - Non first-row receptor.

Figure B – 17 Predicted Future Noise and Barrier Analysis - Alternative 7, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	Existing Noise Level	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																							
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)																	
												8 feet			10 feet			12 feet			14 feet			16 feet				
												Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)		I.L.	NBR	
R 13	A	SW 32	SFR	1	66 M, LT1/CAL	69	70	3	1	B (67)	A/E	64	6	1	63	7	1	62 T	8	1	61	9	1	60 5		10	1		
*R 14	A	SW 32	SFR	1	65 E	68	71	3	3	B (67)	A/E	64	7	1	63	8	1	62 T	9	1	61	10	1	61 5		10	1		
*R 15	A	SW 32	SFR	1	62 E	65	65	3	0	B (67)	NONE	60	5	1	59	6	1	57	8	1	56	9	1	56		9	1		
R 16[c]	A	SW 32	SFR	1	72 E	75	75	3	0	B (67)	A/E	68	7	1	67	8	1	65	10	1	64 T	11	1	64 5		11	1		
*R 17	A	SW 32	SFR	1	67 E	70	70	3	0	B (67)	A/E	65	5	1	64	6	1	63	7	1	62 T	8	1	61 5		9	1		
*R 18	A	SW 32	SFR	1	61 E	64	64	3	0	B (67)	NONE	62	2	0	61	3	0	60	4	0	60	4	0	59		5	1		
*R 19	A	SW 32	SFR	1	64 E	67	67	3	0	B (67)	A/E	64	3	0	63	4	0	62	5	1	61	6	1	61 5,T		6	1		
R 20	A	SW 32	SFR	1	66 M, ST2/CAL	69	69	3	0	B (67)	A/E	67	2	0	66	3	0	65	4	0	64	5	1	63 5,T		6	1		
R 21	A	SW 32	SFR	1	66 E	69	69	3	0	B (67)	A/E	67	2	0	66	3	0	65	4	0	64	5	1	63 5,T		6	1		
R 22	A	SW 32	SFR	1	63 E	66	66	3	0	B (67)	A/E	64	2	0	64	2	0	63	3	0	62	4	0	60 5,T		6	1		
R 23	A	SW 32	SFR	1	65 E	68	68	3	0	B (67)	A/E	67	1	0	66	2	0	65	3	0	65	3	0	63 R,L		5	1		
R 24	A	SW 32	SFR	1	66 M, ST3/CAL	68	68	2	0	B (67)	A/E	67	1	0	67	1	0	66	2	0	65	3	0	63 R,L		5	1		

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W - The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

Figure B – 18 Predicted Future Noise and Barrier Analysis - Alternative 7, cont.

Receiver I.D.	Area	Barrier I.D.	Land Use[2]	Number of Dwelling Units	Existing Noise Level	US-101 Future Worst Hour Noise Levels - Leq(h), dBA																				
						Design Year Noise Level without Project Leq(h), dBA	Design Year Noise Level with Project Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project Minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)														
												8 feet			10 feet			12 feet			14 feet			16 feet		
												Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R 25	A	SW 32	SFR	1	65 E	67	68	2	1	B (67)	A/E	67	1	0	67	1	0	66	2	0	65	3	0	64 5,L	4	0
R 26	A	SW 32	SFR	1	64 E	66	67	2	1	B (67)	A/E	67	0	0	66	1	0	65	2	0	65	2	0	64 5,L	3	0
*R 27	A	SW 32	SFR	1	58 E	60	61	2	1	B (67)	NONE	60	1	0	60	1	0	59	2	0	58	3	0	58	3	0
*R 28	A	SW 32	SFR	1	64 E	66	68	2	2	B (67)	A/E	67	1	0	66	2	0	66	2	0	65	3	0	64 5,T	4	0
*R 29	A	SW 32	SFR	3	55 E	57	57	2	0	B (67)	NONE	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0
*R 30	A	SW 32	SFR	5	51 E	53	53	2	0	B (67)	NONE	53	0	0	53	0	0	53	0	0	52	1	0	52	1	0
*R 31	A	SW 32	REC	1	61 E	64	64	3	0	B (67)	NONE	63	1	0	62	2	0	62	2	0	61	3	0	61	3	0
*R 32	A	SW 32	REC	1	58 E	61	62	3	1	B (67)	NONE	62	0	0	61	1	0	61	1	0	61	1	0	61	1	0
*R 33	A	SW 32	SFR	1	56 M, LT2/CAL	58	58	2	0	B (67)	NONE	58	0	0	58	0	0	58	0	0	58	0	0	58	0	0
*R 34	A	SW 32	SFR	1	57 M, ST5/CAL	58	59	1	1	B (67)	NONE	59	0	0	58	1	0	58	1	0	58	1	0	57	2	0
*R 35	A	SW 32	REC	1	57 M, ST4/CAL	60	61	3	1	B (67)	NONE	61	0	0	61	0	0	61	0	0	61	0	0	60	1	0
*R 36	A	SW 32	SFR	3	51 E	52	54	1	2	B (67)	NONE	54	0	0	54	0	0	54	0	0	54	0	0	54	0	0
*R 37	A	SW 32	SFR	3	55 M, ST6/CAL	56	57	1	1	B (67)	NONE	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0

Notes:
1 - Leq(h) are A-weighted, peak hour noise levels in decibels.
2 - Land Use: SFR - single-family residence; REC - Recreational.
3 - M - Measured noise level; STxx or LTxx - measurement site number; E - Estimated from future "Build" and measurement sites.
4 - S = Substantial Increase (12 dBA or more); A/E = Approach or exceed NAC.
5 - Barrier height recommended to meet requirements of nearby receptor(s).
Emboldened levels indicate results of recommended sound wall design.
R - Recommended height to meet feasibility requirements of the Department's Noise Abatement Protocol.
T - Minimum height required to block the line-of-sight from the receptor to truck exhaust stacks.
L - A soundwall taller than 4.9 m (16 ft) would be required to block the line of sight.
C - Critical receptor.
W The existing and future noise levels at this location include benefits of an existing property wall.
* - Non first-row receptor.

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Appendix C

Noise Barrier Reasonableness Analysis Worksheet

Table C – 1 Reasonable Allowance Worksheet – Alternative 2 – 8 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 2	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**8 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$459,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 2 Reasonable Allowance Worksheet – Alternative 2 – 10 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 2	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**10 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$765,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 3 Reasonable Allowance Worksheet – Alternative 2 – 12 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 2	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**12 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$848,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 4 Reasonable Allowance Worksheet – Alternative 2 – 14 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 2	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**14 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			$31,000
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$954,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 5 Reasonable Allowance Worksheet – Alternative 2 – 16 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 2	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**16 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☑	**$4,000**
75-78 dBA:	Add $6,000	☐	
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☑	**$6,000**
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,219,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 6 Reasonable Allowance Worksheet – Alternative 3 – 8 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 3	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**8 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$663,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 7 Reasonable Allowance Worksheet – Alternative 3 – 10 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 3	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**10 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$954,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 8 Reasonable Allowance Worksheet – Alternative 3 – 12 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 3	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**12 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,113,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 9 Reasonable Allowance Worksheet – Alternative 3 – 14 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 3	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**14 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			$31,000
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,219,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 10 Reasonable Allowance Worksheet – Alternative 3 – 16 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 3	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**16 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☑	**$4,000**
75-78 dBA:	Add $6,000	☐	
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☑	**$6,000**
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,325,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 11 Reasonable Allowance Worksheet – Alternative 4 – 8 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 4	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**8 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$765,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 12 Reasonable Allowance Worksheet – Alternative 4 – 10 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 4	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**10 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less.than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$954,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 13 Reasonable Allowance Worksheet – Alternative 4 – 12 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 4	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**12 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,113,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 14 Reasonable Allowance Worksheet – Alternative 4 – 14 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 4	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**14 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			$31,000
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,219,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 15 Reasonable Allowance Worksheet – Alternative 4 – 16 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 4	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**16 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☑	**$4,000**
75-78 dBA:	Add $6,000	☐	
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☑	**$6,000**
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,431,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 16 Reasonable Allowance Worksheet – Alternative 5 – 8 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 5	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**8 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$867,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 17 Reasonable Allowance Worksheet – Alternative 5 – 10 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 5	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**10 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$954,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 18 Reasonable Allowance Worksheet – Alternative 5 – 12 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 5	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**12 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,113,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 19 Reasonable Allowance Worksheet – Alternative 5 – 14 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 5	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**14 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			$31,000
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,272,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 20 Reasonable Allowance Worksheet – Alternative 5 – 16 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 5	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**16 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☑	**$4,000**
75-78 dBA:	Add $6,000	☐	
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☑	**$6,000**
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,325,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 21 Reasonable Allowance Worksheet – Alternative 6 – 8 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 6	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**8 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$663,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 22 Reasonable Allowance Worksheet – Alternative 6 – 10 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 6	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**10 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$954,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 23 Reasonable Allowance Worksheet – Alternative 6 – 12 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 6	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**12 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,113,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 24 Reasonable Allowance Worksheet – Alternative 6 – 14 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 6	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**14 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			$31,000
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,219,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 25 Reasonable Allowance Worksheet – Alternative 6 – 16 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 6	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**16 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☑	**$4,000**
75-78 dBA:	Add $6,000	☐	
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☑	**$6,000**
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,325,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 26 Reasonable Allowance Worksheet – Alternative 7 – 8 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 7	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**8 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$663,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 27 Reasonable Allowance Worksheet – Alternative 7 – 10 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 7	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**10 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☑	**$2,000**
9-11 dBA	Add $4,000	☐	
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$51,000**
Unmodified Barrier Allowance			**$816,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 28 Reasonable Allowance Worksheet – Alternative 7 – 12 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 7	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**12 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$901,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 29 Reasonable Allowance Worksheet – Alternative 7 – 14 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 7	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**14 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			$31,000
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,060,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

Table C – 30 Reasonable Allowance Worksheet – Alternative 7 – 16 ft

CALCULATION OF REASONABLE ALLOWANCE

PROJECT: Lost Hills Interchange Project Alternative 7	PROJECT LOCATION: Los Angeles County		Date: 2-25-2010
NOISE BARRIER I.D. & LOCATION:	S32		**16 feet high**
NOISE ANALYST: Nugent			
Base Allowance (2009 Dollars)			**$31,000**
1) Absolute Noise Levels (Choose One)	70 dBA*	Check	
69 dBA or less:	Add $2,000	☐	
70-74 dBA:	Add $4,000	☐	
75-78 dBA:	Add $6,000	☑	**$6,000**
More than 78 dBA:	Add $8,000	☐	
2) "Build" VS Existing Noise Levels (Choose One)	3 dBA*	Check	
Less than 3 dBA:	Add $0	☐	
3-7 dBA:	Add $2,000	☑	**$2,000**
8-11 dBA:	Add $4,000	☐	
12 dBA or more:	Add $6,000	☐	
3) Achievable Noise Reduction (Choose One)	5 dBA*	Check	
Less than 6 dBA	Add $0	☐	
6-8 dBA	Add $2,000	☐	
9-11 dBA	Add $4,000	☑	**$4,000**
12 dBA or more	Add $6,000	☐	
4) Either New Construction Or Pre-date 1978? (Choose Yes or No)			
YES on either one	Add $10,000	☑	**$10,000**
NO on both	Add $0	☐	
Reasonable Allowance for Benefited Residence			**$53,000**
Unmodified Barrier Allowance			**$1,219,000**
Adjusted Reasonable Allowance for Benefited Residence			
Adjusted Unmodified Barrier Allowance			

Adjusted reasonable allowance for Residence and Barrier are rounded up to nearest $1,000.

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Appendix D

Noise Barrier Analysis

Table D – 1 Analysis of Barrier S32 – Alternative 2

	Position																																					Total Number of Benefited Receivers
	R1*	R2*	R3	R4	R5*	R6*	R7	R8*	R9 / ST1*	R10	R11*	R12*	R13 / LT1	R14*	R15*	R16c	R17*	R18*	R19*	R20 / ST2	R21	R22	R23	R24 / ST3	R25	R26	R27*	R28*	R29*	R30*	R31*	R32*	R33 / LT2*	R34 / ST5*	R35 / ST4*	R36*	R37 / ST6*	
Number of Units Represented	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	5	1	1	1	1	3	3	
Existing Traffic Noise Level (dBA L_{eq}[h])	61	61	68	67	66	66	65	61	59	68	68	68	66	65	62	72	67	61	64	66	66	63	65	66	65	64	58	64	55	51	61	58	56	57	57	51	55	
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	64	65	**70**	**70**	**69**	**69**	**67**	63	62	**70**	**70**	**71**	**68**	**69**	65	**75**	**70**	64	**67**	**69**	**69**	**66**	**68**	**68**	**67**	**66**	60	**66**	57	53	64	61	58	58	60	52	56	
Design Year with Project minus Existing Traffic Noise Level (dBA L_{eq}[h])	3	4	2	3	3	3	2	2	3	2	2	3	2	4	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	3	3	2	1	3	1	1	
8-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	62	62	65	65	65	64	64	60	58	66	66	65	64	64	60	69	65	62	64	67	68	65	67	67	67	66	59	65	57	53	62	61	57	57	60	52	56	
Predicted Noise Reduction (dB)	2	3	5	5	4	5	3	3	4	4	4	6	4	5	5	6	5	2	3	2	1	1	1	1	0	0	1	1	0	0	2	0	1	1	0	0	0	
Number of Benefited Receivers	--	--	1	1	--	2	--	--	--	--	--	1	--	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9
10-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	61	61	65	64	64	63	62	59	57	65	65	64	63	63	59	67	64	61	63	66	67	64	66	67	66	65	59	65	57	53	62	60	57	57	60	52	55	
Predicted Noise Reduction (dB)	3	4	5	6	5	6	5	4	5	5	5	7	5	6	6	8	6	3	4	3	2	2	2	1	1	1	1	1	0	0	2	1	1	1	0	0	1	
Number of Benefited Receivers	--	--	1	1	1	2	1	--	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15
12-Foot Barrier[b]																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	61	61	64	63	63	62	61	58	56	64	63	63	62	62	58	66	63	60	63	65	66	64	66	66	65	64	58	64	56	53	61	60	57	57	59	52	55	
Predicted Noise Reduction (dB)	3	4	6	7	6	7	6	5	6	6	7	8	6	7	7	9	7	4	4	4	3	2	2	2	2	2	2	2	1	0	3	1	1	1	1	0	1	
Number of Benefited Receivers	--	--	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16
14-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	60	61	63	62	62	61	61	58	55	63	63	62	61	61	57	65	62	60	62	64	65	62	65	65	65	64	58	64	56	52	61	60	56	56	59	52	55	
Predicted Noise Reduction (dB)	4	4	7	8	7	8	6	5	7	7	7	9	7	8	8	10	8	4	5	5	4	4	3	3	2	2	2	2	1	1	3	1	2	2	1	0	1	
Number of Benefited Receivers	--	--	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18
16-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	61	62	64	62	62	60	60	57	54	62	61	61	60	61	56	63	61	59	61	63	63	60	63	63	63	62	57	63	56	51	60	59	56	56	59	52	55	
Predicted Noise Reduction (dB)	3	3	6	8	7	9	7	6	8	8	9	10	8	8	9	12	9	5	6	6	6	6	5	5	4	4	3	3	1	2	4	2	2	2	1	0	1	
Number of Benefited Receivers	--	--	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23

[a] Future traffic noise levels that approach or exceed 67 dBA L_{eq}(h) are shown in bold.

[b] 12-foot-high barrier breaks the line of sight to an 11.5-foot truck stack, however, because of upslope conditions, 14-foot high is required at some locations.

[c] Critical Receiver.

* Not first row receiver.

Table D – 2 Analysis of Barrier S32 – Alternative 3

	Position																																					Total Number of Benefited Receivers
	R1*	R2*	R3	R4	R5*	R6*	R7	R8*	R9 / ST1*	R10	R11*	R12*	R13 / LT1	R14*	R15*	R16c	R17*	R18*	R19*	R20 / ST2	R21	R22	R23	R24 / ST3	R25	R26	R27*	R28*	R29*	R30*	R31*	R32*	R33 / LT2*	R34 / ST5*	R35 / ST4*	R36*	R37 / ST6*	
Number of Units Represented	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	5	1	1	1	1	1	3	3	
Existing Traffic Noise Level (dBA $L_{eq}[h]$)	61	61	68	67	66	66	65	61	59	68	68	68	66	65	62	72	67	61	64	66	66	63	65	66	65	64	58	64	55	51	61	58	56	57	57	51	55	
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	63	64	**69**	**70**	**69**	**69**	**66**	63	62	**70**	**69**	**71**	**68**	**68**	64	**75**	**70**	64	**67**	**69**	**69**	**66**	**68**	**68**	**67**	**66**	60	**66**	56	53	64	62	58	59	60	53	57	
Design Year with Project minus Existing Traffic Noise Level (dBA $L_{eq}[h]$)	2	3	1	3	3	3	1	2	3	2	1	3	2	3	2	3	3	3	3	3	3	3	3	2	2	2	2	2	1	2	3	4	2	2	3	2	2	
8-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	59	59	64	64	64	63	62	59	57	65	65	64	63	64	59	67	64	61	63	66	67	64	66	67	66	65	58	65	56	53	62	61	57	58	60	53	57	
Predicted Noise Reduction (dB)	4	5	5	6	5	6	4	4	5	5	4	7	5	4	5	8	6	3	4	3	2	2	2	1	1	1	2	1	0	0	2	1	1	1	0	0	0	
Number of Benefited Receivers	--	1	1	1	1	2	--	--	1	1	--	1	1	--	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13
10-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	59	59	63	63	63	62	61	58	56	64	63	63	62	62	58	66	63	60	62	65	66	64	66	66	65	64	58	65	56	52	61	60	57	58	60	53	57	
Predicted Noise Reduction (dB)	4	5	6	7	6	7	5	5	6	6	6	8	6	6	6	9	7	4	5	4	3	2	2	2	2	2	2	1	0	1	3	2	1	1	0	0	0	
Number of Benefited Receivers	--	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18
12-Foot Barrier[b]																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	58	58	62	62	61	61	61	58	55	63	63	62	61	62	57	65	62	59	61	64	65	62	65	65	65	64	58	64	56	52	61	60	57	58	59	53	57	
Predicted Noise Reduction (dB)	5	6	7	8	8	8	5	5	7	7	6	9	7	6	7	10	8	5	6	5	4	4	3	3	2	2	2	2	0	1	3	2	1	1	1	0	0	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21
14-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	57	57	61	62	61	60	60	57	54	62	62	61	61	61	56	64	61	59	61	63	64	61	64	64	64	63	58	64	55	52	60	60	57	58	59	53	56	
Predicted Noise Reduction (dB)	6	7	8	8	8	9	6	6	8	8	7	10	7	7	8	11	9	5	6	6	5	5	4	4	3	3	2	2	1	1	4	2	1	1	1	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23
16-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	57	57	61	61	60	60	60	57	53	62	61	61	60	60	55	63	61	58	61	63	63	60	63	63	63	62	57	63	55	51	60	60	56	57	59	53	56	
Predicted Noise Reduction (dB)	6	7	8	9	9	9	6	6	9	8	8	10	8	8	9	12	9	6	6	6	6	6	5	5	4	4	3	3	1	2	4	2	2	2	1	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25

[a] Traffic noise levels that approach or exceed 67 dBA $L_{eq}(h)$ are shown in bold.

[b] 12-foot-high barrier breaks the line of sight to an 11.5-foot truck stack, however, because of upslope conditions, 14-foot high is required at some locations.

[c] Critical Receiver.

[*] Not first row receiver.

Table D – 3 Analysis of Barrier S32 – Alternative 4

	Position																																						Total Number of Benefited Receivers
	R1*	R2*	R3	R4	R5*	R6*	R7	R8*	R9 / ST1*	R10	R11*	R12*	R13 / LT1	R14*	R15*	R16c	R17*	R18*	R19*	R20 / ST2	R21	R22	R23	R24 / ST3	R25	R26	R27*	R28*	R29*	R30*	R31	R32*	R33 / LT2*	R34 / ST5*	R35 / ST4*	R36*	R37 / ST6*	
Number of Units Represented	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	5	1	1	1	1	3	3	
Existing Traffic Noise Level (dBA L_{eq}[h])	61	61	68	67	66	66	65	61	59	68	68	68	66	65	62	72	67	61	64	66	66	63	65	66	65	64	58	64	55	51	61	58	56	57	57	51	55	
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	64	64	**69**	**70**	**69**	**69**	**66**	63	62	**70**	**69**	**70**	**68**	**68**	64	**75**	**70**	64	**67**	**69**	**70**	**66**	**68**	**68**	**68**	**67**	60	**66**	57	53	64	62	57	58	60	52	56	
Design Year with Project minus Existing Traffic Noise Level (dBA L_{eq}[h])	3	3	1	3	3	3	1	2	3	2	1	2	2	3	2	3	3	3	3	3	4	3	3	2	3	3	2	2	2	2	3	4	1	1	3	1	1	
8-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	59	59	64	64	64	63	62	59	57	65	65	64	63	63	59	67	64	61	63	66	67	65	67	67	66	65	59	65	56	53	62	60	57	57	60	52	55	
Predicted Noise Reduction (dB)	5	5	5	6	5	6	4	4	5	5	4	6	5	5	5	8	6	3	4	3	3	1	1	1	2	2	1	1	1	0	2	2	0	1	0	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	--	--	1	1	--	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15
10-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	59	59	63	63	63	62	61	58	56	64	63	63	62	62	58	66	63	60	63	65	66	64	66	66	66	65	58	64	56	53	61	60	57	57	60	52	55	
Predicted Noise Reduction (dB)	5	5	6	7	6	7	5	5	6	6	6	7	6	6	6	9	7	4	4	4	4	2	2	2	2	2	2	2	1	0	3	2	0	1	0	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18
12-Foot Barrier[b]																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	58	58	62	62	62	61	61	58	55	63	63	62	61	62	57	65	62	60	62	64	65	63	65	65	65	64	58	64	56	52	61	60	56	56	59	52	55	
Predicted Noise Reduction (dB)	6	6	7	8	7	8	5	5	7	7	6	8	7	6	7	10	8	4	5	5	5	3	3	3	3	3	2	2	1	1	3	2	1	2	1	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21
14-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	57	57	62	62	61	61	60	57	54	62	62	62	61	61	56	64	61	59	61	63	64	61	64	64	64	63	58	63	56	52	60	59	56	56	59	52	55	
Predicted Noise Reduction (dB)	7	7	7	8	8	8	6	6	8	8	7	8	7	7	8	11	9	5	6	6	6	5	4	4	4	4	2	3	1	1	4	3	1	2	1	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23
16-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	57	57	61	61	60	60	60	57	53	62	61	61	60	61	55	63	61	58	61	63	63	61	63	63	63	62	58	63	55	51	60	60	56	56	59	53	55	
Predicted Noise Reduction (dB)	7	7	8	9	9	9	6	6	9	8	8	9	8	7	9	12	9	6	6	6	7	5	5	5	5	5	2	3	2	2	4	2	1	2	1	-1	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	27

[a] Traffic noise levels that approach or exceed 67 dBA L_{eq}(h) are shown in bold.

[b] 12-foot-high barrier breaks the line of sight to an 11.5-foot truck stack, however, because of upslope conditions, 14-foot high is required at some locations.

[c] Critical Receiver.

* Not first row receiver.

Table D – 4 Analysis of Barrier S32 – Alternative 5

	Position																																					Total Number of Benefited Receivers
	R1*	R2*	R3	R4	R5*	R6*	R7	R8*	R9 / ST1*	R10	R11*	R12*	R13 / LT1	R14*	R15*	R16c	R17*	R18*	R19*	R20 / ST2	R21	R22	R23	R24 / ST3	R25	R26	R27*	R28*	R29*	R30*	R31	R32*	R33 / LT2*	R34 / ST5*	R35 / ST4*	R36*	R37 / ST6*	
Number of Units Represented	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	5	1	1	1	1	3	3		
Existing Traffic Noise Level (dBA L_{eq}[h])	61	61	68	67	66	66	65	61	59	68	68	68	66	65	62	72	67	61	64	66	66	63	65	66	65	64	58	64	55	51	61	58	56	57	57	51	55	
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	64	64	**70**	**70**	**69**	**69**	**67**	63	63	**71**	**70**	**71**	**68**	**69**	65	**75**	**70**	64	**67**	**69**	**70**	**66**	**68**	**69**	**68**	**67**	61	**67**	57	53	64	62	58	59	61	53	57	
Design Year with Project minus Existing Traffic Noise Level (dBA L_{eq}[h])	3	3	2	3	3	3	2	2	4	3	2	3	2	4	3	3	3	3	3	3	4	3	3	3	3	3	3	3	2	2	3	4	2	2	4	2	2	
8-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	59	59	64	64	64	63	62	59	57	65	65	64	63	64	59	67	64	61	63	66	68	65	68	68	67	66	59	65	56	53	62	61	57	57	61	53	57	
Predicted Noise Reduction (dB)	5	5	6	6	5	6	5	4	6	6	5	7	5	5	6	8	6	3	4	3	2	1	0	1	1	1	2	2	1	0	2	1	1	2	0	0	0	
Number of Benefited Receivers	1	1	1	1	1	2	1	--	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	17
10-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	59	59	63	63	63	63	61	58	56	64	64	63	62	62	58	66	63	61	63	65	66	64	67	67	66	65	58	65	56	53	62	60	57	57	60	53	57	
Predicted Noise Reduction (dB)	5	5	7	7	6	6	6	5	7	7	6	8	6	7	7	9	7	3	4	4	4	2	1	2	2	2	3	2	1	0	2	2	1	2	1	0	0	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18
12-Foot Barrier[b]																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	58	58	62	62	62	62	61	58	55	63	63	62	61	62	57	65	62	60	62	64	65	63	66	66	65	64	58	64	56	53	61	60	57	57	60	53	57	
Predicted Noise Reduction (dB)	6	6	8	8	7	7	6	5	8	8	7	9	7	7	8	10	8	4	5	5	5	3	2	3	3	3	3	3	1	0	3	2	1	2	1	0	0	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21
14-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	57	57	62	62	61	61	60	57	54	63	62	62	61	61	56	64	61	59	61	64	64	61	64	64	64	63	58	64	56	52	61	60	57	57	60	53	56	
Predicted Noise Reduction (dB)	7	7	8	8	8	8	7	6	9	8	8	9	7	8	9	11	9	5	6	5	6	5	4	5	4	4	3	3	1	1	3	2	1	2	1	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	24
16-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	57	57	61	61	60	60	60	57	53	62	61	61	60	61	56	63	61	58	61	63	64	61	63	63	64	63	58	63	55	52	60	60	57	56	60	53	56	
Predicted Noise Reduction (dB)	7	7	9	9	9	9	7	6	10	9	9	10	8	8	9	12	9	6	6	6	6	5	5	6	4	4	3	4	2	1	4	2	1	3	1	0	1	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25

[a] Traffic noise levels that approach or exceed 67 dBA L_{eq}(h) are shown in bold.

[b] 12-foot-high barrier breaks the line of sight to an 11.5-foot truck stack, however, because of upslope conditions, 14-foot high is required at some locations.

[c] Critical Receiver.

* Not first row receiver.

Table D – 5 Analysis of Barrier S32 – Alternative 6

	Position																																					Total Number of Benefited Receivers
	R1*	R2*	R3	R4	R5*	R6*	R7	R8*	R9 / ST1*	R10	R11*	R12*	R13 / LT1	R14*	R15*	R16c	R17*	R18*	R19*	R20 / ST2	R21	R22	R23	R24 / ST3	R25	R26	R27*	R28*,	R29*	R30*	R31	R32*	R33 / LT2*	R34 / ST5*	R35 / ST4*	R36*	R37 / ST6*	
Number of Units Represented	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	5	1	1	1	1	1	3	3	
Existing Traffic Noise Level (dBA $L_{eq}[h]$)	61	61	**68**	**67**	**66**	**66**	65	61	59	**68**	**68**	**68**	**66**	65	62	**72**	**67**	61	64	**66**	**66**	63	65	66	65	64	58	64	55	51	61	58	56	57	57	51	55	
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	64	64	69	70	69	69	66	63	62	70	69	70	68	68	64	75	70	64	67	69	69	66	68	68	67	66	60	66	56	52	63	61	56	58	60	52	55	
Design Year with Project minus Existing Traffic Noise Level (dBA $L_{eq}[h]$)	3	3	1	3	3	3	1	2	3	2	1	2	2	3	2	3	3	3	3	3	3	3	3	2	2	2	2	2	1	1	2	3	0	1	3	1	0	
8-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	60	60	64	64	63	63	62	59	57	65	65	64	63	63	59	67	64	61	63	66	67	65	67	67	66	65	58	65	56	52	61	59	55	57	59	52	55	
Predicted Noise Reduction (dB)	4	4	5	6	6	6	4	4	5	5	4	6	5	5	5	8	6	3	4	3	2	1	1	1	1	1	2	1	0	0	2	2	1	1	1	0	0	
Number of Benefited Receivers	--	--	1	1	1	2	--	--	1	1	--	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13
10-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	60	59	63	63	63	62	61	58	56	64	63	63	62	62	58	66	63	60	62	65	66	64	66	66	66	64	58	64	55	52	60	59	55	56	58	52	55	
Predicted Noise Reduction (dB)	4	5	6	7	6	7	5	5	6	6	6	7	6	6	6	9	7	4	5	4	3	2	2	2	1	2	2	2	1	0	3	2	1	2	2	0	0	
Number of Benefited Receivers	--	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18
12-Foot Barrier[b]																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	59	59	62	62	61	61	61	58	55	63	63	62	61	61	57	65	62	59	61	64	65	62	65	65	65	64	58	63	55	52	60	59	55	56	58	52	55	
Predicted Noise Reduction (dB)	5	5	7	8	8	8	5	5	7	7	6	8	7	7	7	10	8	5	6	5	4	4	3	3	2	2	2	3	1	0	3	2	1	2	2	0	0	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21
14-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	58	59	62	62	61	60	60	57	54	62	62	61	61	61	56	64	61	59	61	63	64	61	64	64	64	63	57	63	55	51	59	58	55	56	58	51	55	
Predicted Noise Reduction (dB)	6	5	7	8	8	9	6	6	8	8	7	9	7	7	8	11	9	5	6	6	5	5	4	4	3	3	3	3	1	1	4	3	1	2	2	1	0	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	23
16-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA $L_{eq}[h]$)	58	58	61	61	60	60	60	57	53	62	61	61	60	61	55	63	61	58	61	63	63	61	63	63	63	62	57	62	54	51	59	58	55	56	57	51	55	
Predicted Noise Reduction (dB)	6	6	8	9	9	9	6	6	9	8	8	9	8	7	9	12	9	6	6	6	6	5	5	5	4	4	3	4	2	1	4	3	1	2	3	1	0	
Number of Benefited Receivers	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25

[a] Traffic noise levels that approach or exceed 67 dBA $L_{eq}(h)$ are shown in bold.

[b] 12-foot-high barrier breaks the line of sight to an 11.5-foot truck stack, however, because of upslope conditions, 14-foot high is required at some locations.

[c] Critical Receiver.

* Not first row receiver.

Table D – 6 Analysis of Barrier S32 – Alternative 7

	Position																																			Total Number of Benefited Receivers
	R-1*	R-2*	R-3	R-4	R-5*	R-6*	R-7	R-8*	R-9*	R-10	R-11*	R-12*	R-13	R-14*	R-15*	R-16c	R-17*	R-18*	R-19*	R-20	R-21	R-22	R-23	R-24	R-25	R-26	R-27*	R-28*	R-29*	R-30*	R-31*	R-32*	R-33*	R-34*	R-35*	R-36*	R-37*	
Number of Units Represented	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	5	1	1	1	1	1	3	3	
Existing Traffic Noise Level (dBA L_{eq}[h])	61	61	68	67	66	66	65	61	59	68	68	68	66	65	62	72	67	61	64	66	66	63	65	66	65	64	58	64	55	51	61	58	56	57	57	51	55	
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	64	64	**71**	**70**	**69**	**69**	**68**	64	63	**72**	**72**	**71**	**70**	**71**	65	**75**	**70**	**64**	**67**	**69**	**69**	**66**	**68**	**68**	**68**	**67**	61	**68**	57	53	64	62	58	**59**	**61**	**54**	**57**	
Design Year with Project minus Existing Traffic Noise Level (dBA L_{eq}[h])	3	3	3	3	3	3	3	3	4	4	4	3	4	6	3	3	3	3	3	3	3	3	3	2	3	3	3	4	2	2	3	4	2	2	4	3	2	
8-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	63	63	65	65	65	64	64	60	58	66	65	64	64	64	60	**68**	65	62	64	**67**	**67**	64	**67**	**67**	**67**	**67**	60	**67**	57	53	63	62	58	59	**61**	**54**	**57**	
Predicted Noise Reduction (dB)	1	1	6	5	4	5	4	4	5	6	7	7	6	7	5	7	5	2	3	2	2	2	1	1	1	0	1	1	0	0	1	0	0	0	0	0	0	
Number of Benefited Receivers	--	--	1	1	--	2	--	--	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13
10-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	62	63	65	65	64	63	62	59	57	65	64	64	63	63	59	**67**	64	61	63	**66**	**66**	64	**66**	**67**	**67**	**66**	60	**66**	57	53	62	61	58	58	61	54	57	
Predicted Noise Reduction (dB)	2	1	6	5	5	6	6	5	6	7	8	7	7	8	6	8	6	3	4	3	3	2	2	1	1	1	1	2	0	0	2	1	0	1	0	0	0	
Number of Benefited Receivers	--	--	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16
12-Foot Barrier[b]																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	62	63	64	64	63	62	62	58	55	64	63	62	62	62	57	65	63	60	62	65	65	63	65	**66**	**66**	65	59	**66**	57	53	62	61	58	58	61	54	57	
Predicted Noise Reduction (dB)	2	1	7	6	6	7	6	6	8	8	9	9	8	9	8	10	7	4	5	4	4	3	3	2	2	2	2	2	0	0	2	1	0	1	0	0	0.3	
Number of Benefited Receivers	--	--	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	17
14-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	62	62	64	63	63	61	61	57	55	63	62	62	61	61	56	64	62	59	61	64	64	62	64	65	65	65	58	65	57	52	61	61	58	58	61	54	57	
Predicted Noise Reduction (dB)	2	2	7	7	6	8	7	7	8	9	10	9	9	10	9	11	8	5	6	5	5	4	4	3	3	2	3	3	0	1	3	1	0	1	0	0	0	
Number of Benefited Receivers	--	--	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	20
16-Foot Barrier																																						
Design Year with Project Traffic Noise Level (dBA L_{eq}[h])	62	62	64	63	63	60	61	57	54	62	62	61	61	61	56	64	61	59	61	63	63	60	63	63	64	64	58	64	56	52	61	61	58	57	60	54	57	
Predicted Noise Reduction (dB)	2	2	7	7	6	9	7	7	9	10	10	10	9	10	9	11	9	5	6	6	6	6	5	5	4	3	3	4	1	1	3	1	0	2	1	0	0.5	
Number of Benefited Receivers	--	--	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	--	--	--	--	--	--	--	--	--	--	--	--	--	23

[a] Traffic noise levels that approach or exceed 67 dBA L_{eq}(h) are shown in bold.

[b] 12-foot-high barrier breaks the line of sight to an 11.5-foot truck stack, however, because of upslope conditions, 14-foot high is required at some locations.

[c] Critical Receiver.

[*] Not first row receiver.

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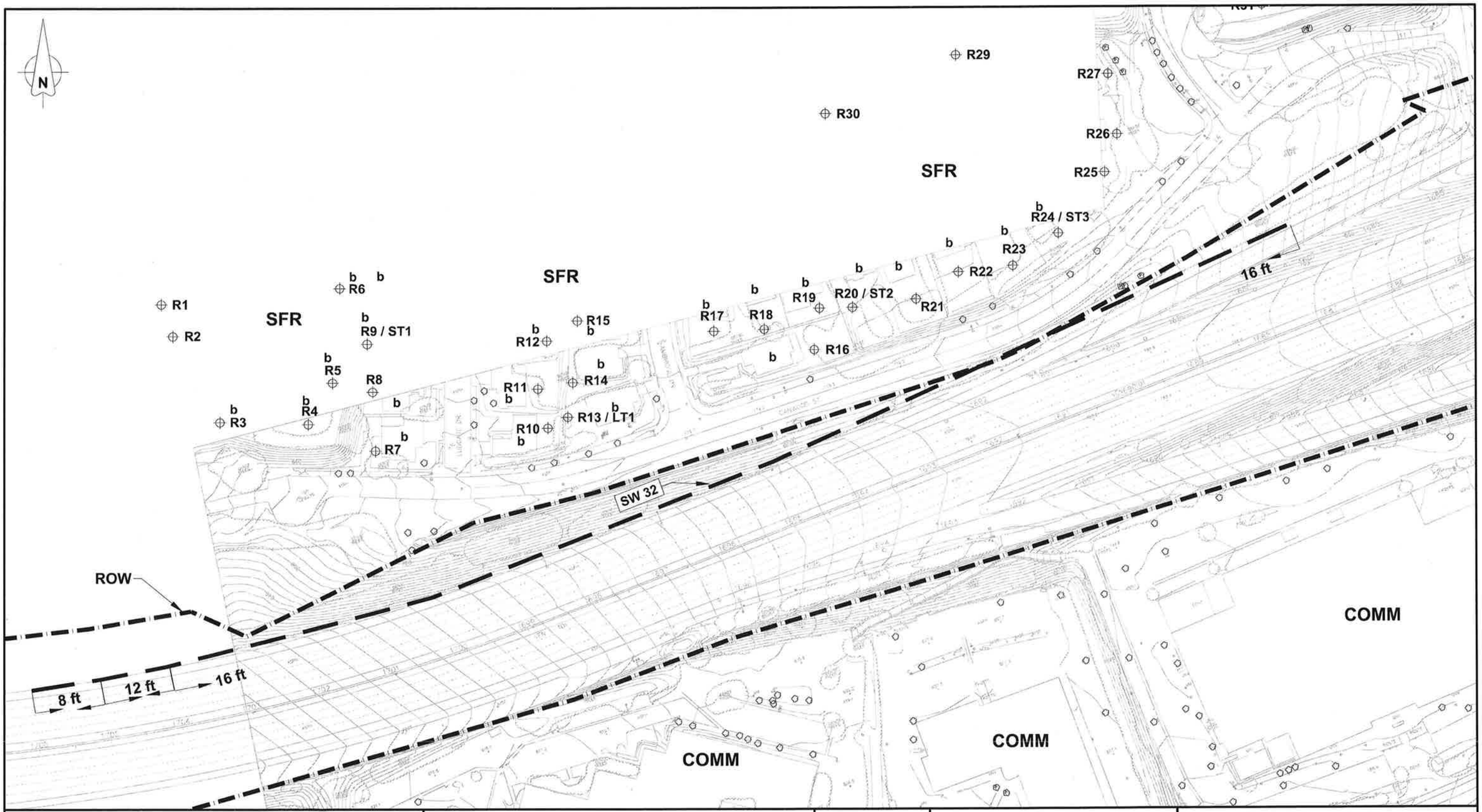
Appendix E

Receptor and Noise Barrier Locations



LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
———	SOUNDWALL	COMM	COMMERCIAL
- - - -	EXISTING MASONRY WALL	REC	RECREATIONAL
-x-x-x-	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

Caltrans

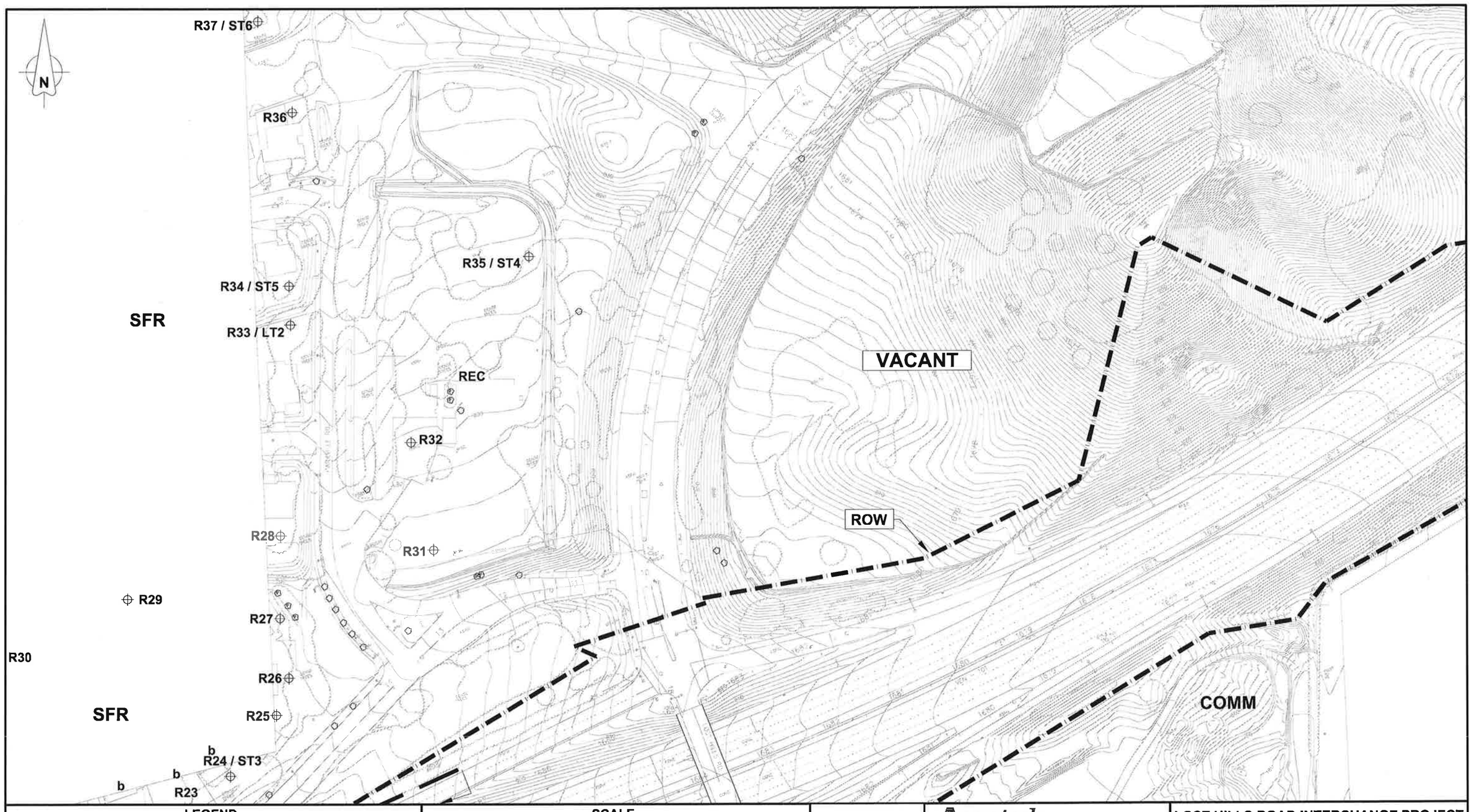
Acentech

250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 2

SHEET 1 OF 12



LEGEND			
R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

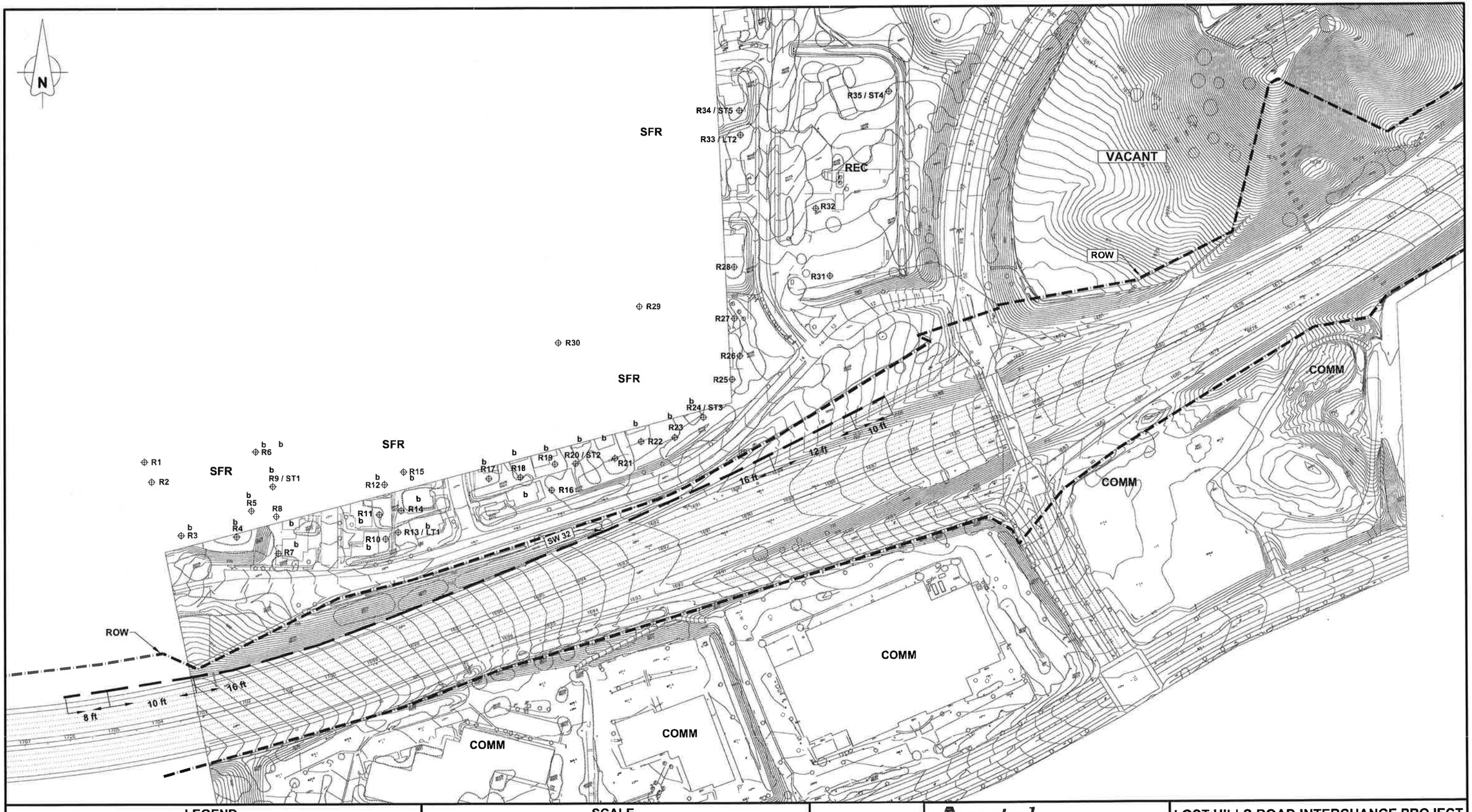
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 2



LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

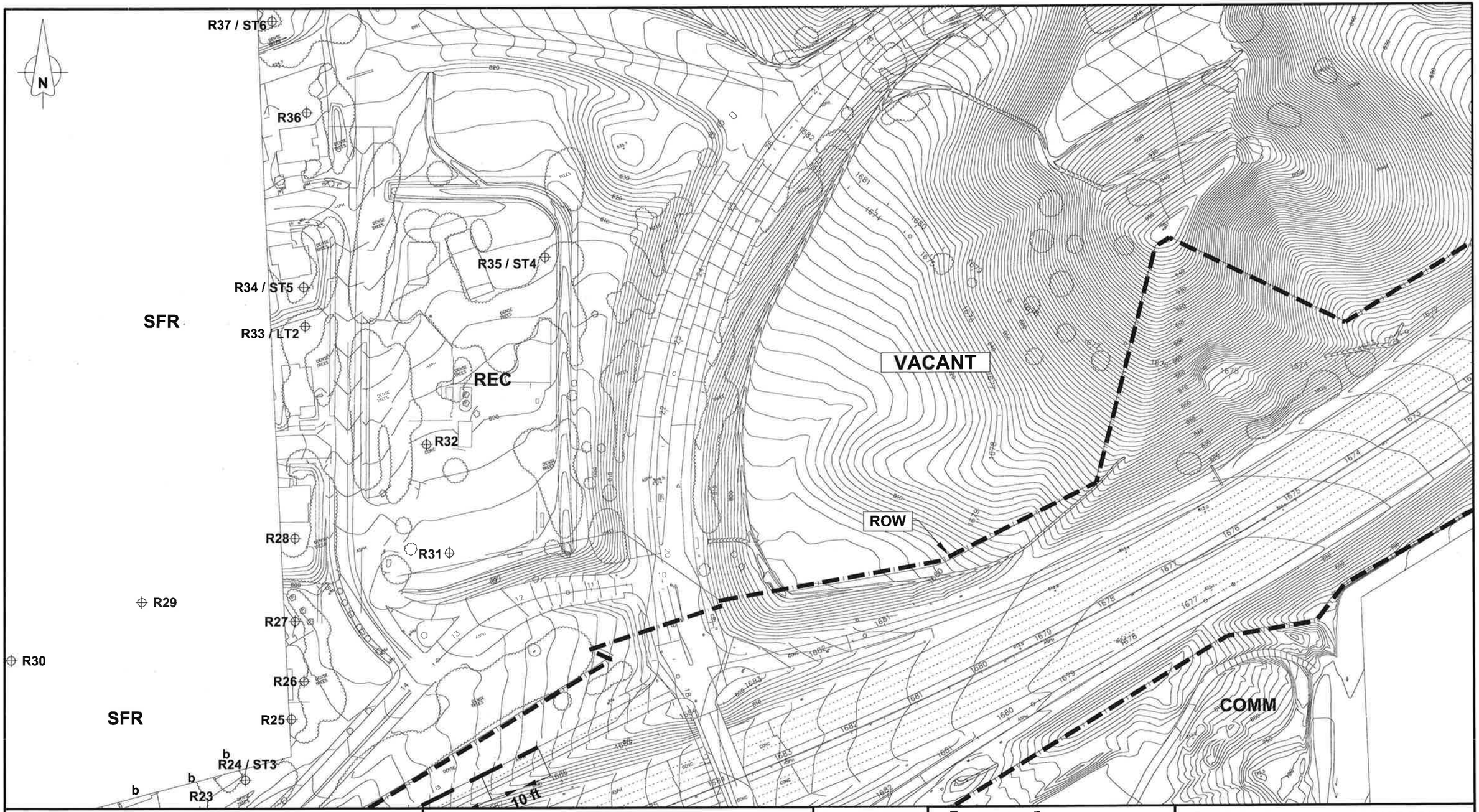
Caltrans

Acentech

250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 3



LEGEND			
R5	SENSITIVE RECEPTOR SITE	RIGHT OF WAY	
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

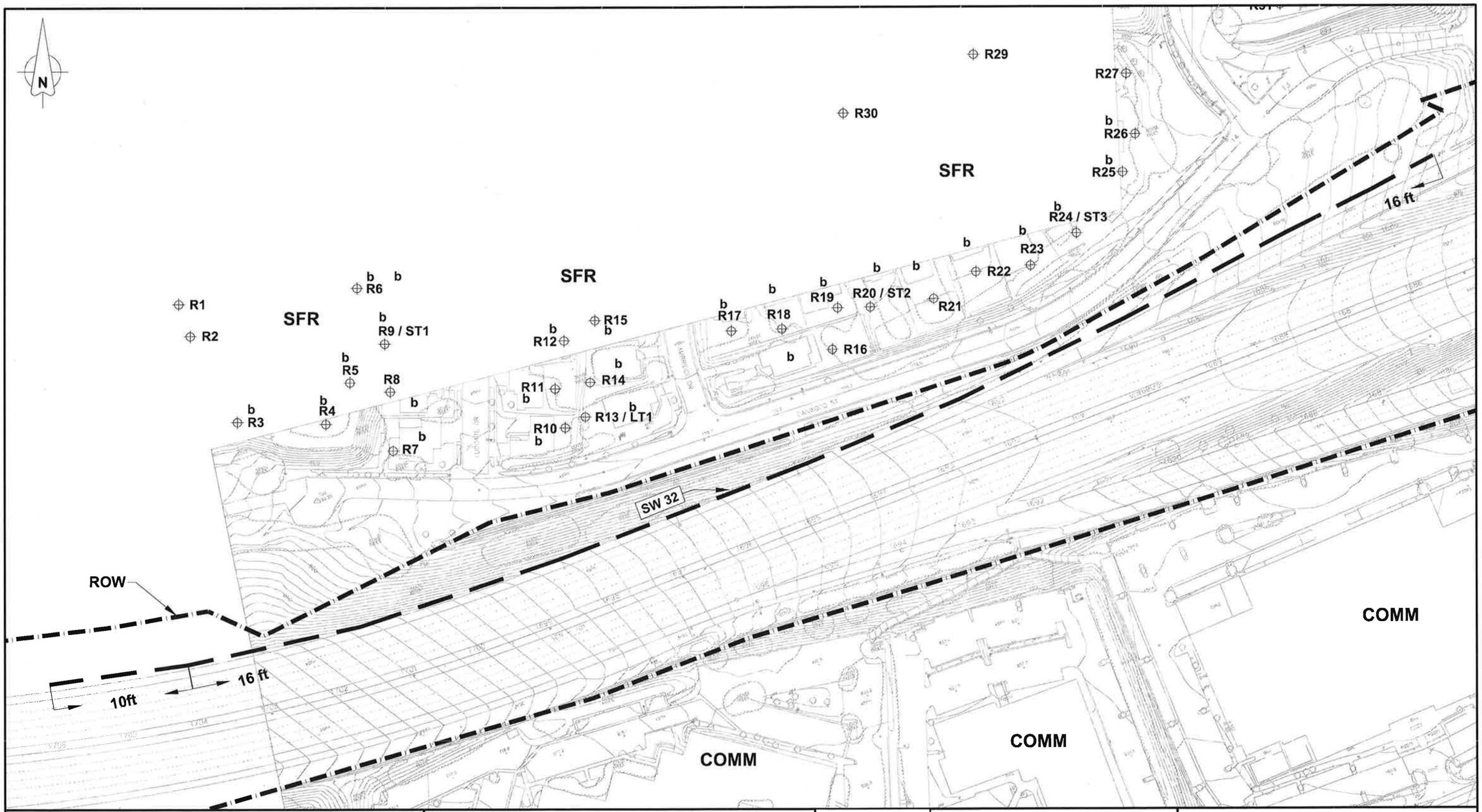
Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 3

SHEET 4 OF 12



LEGEND			
R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

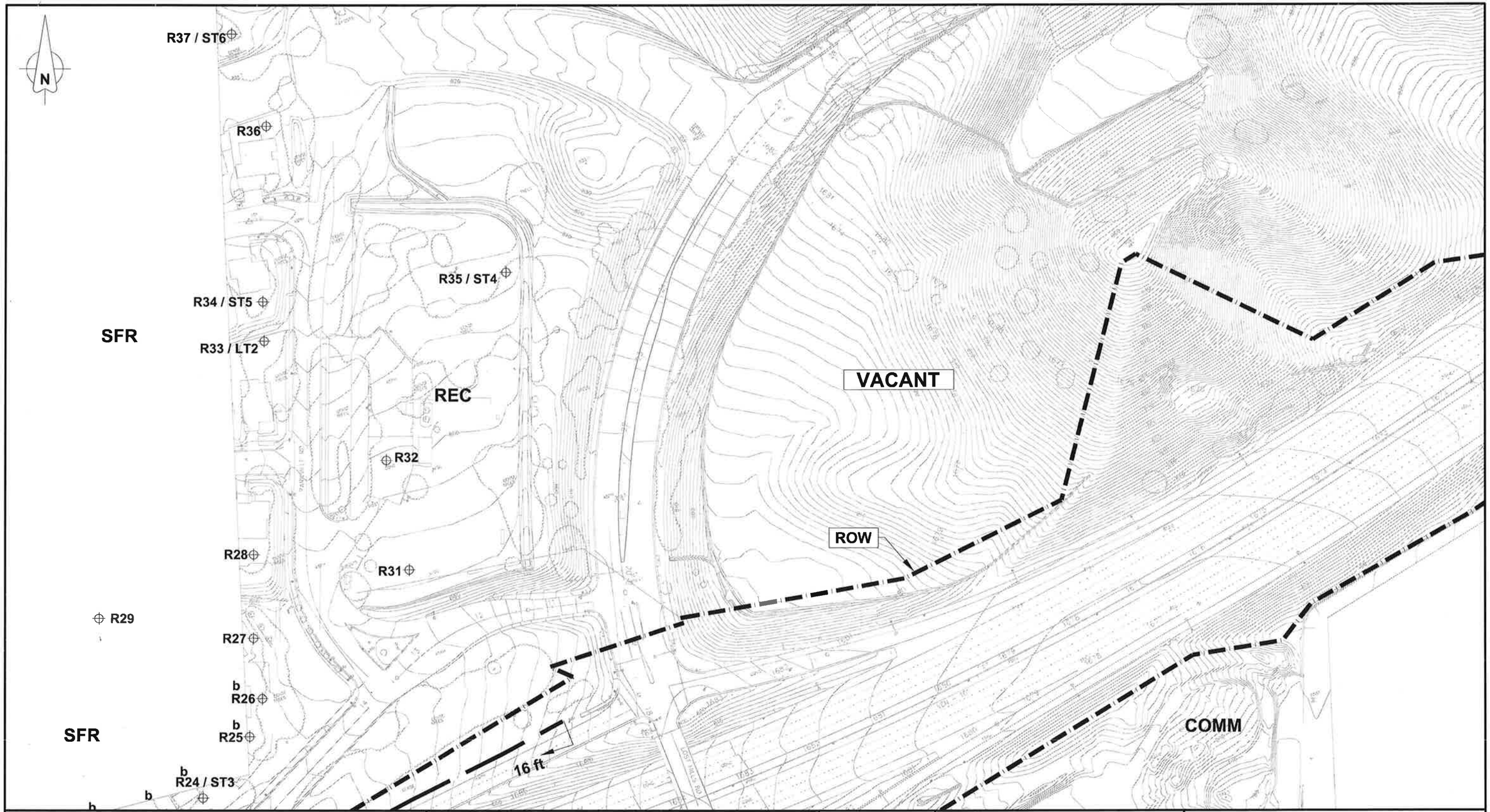
Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 4

SHEET 5 OF 12



LEGEND			
R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

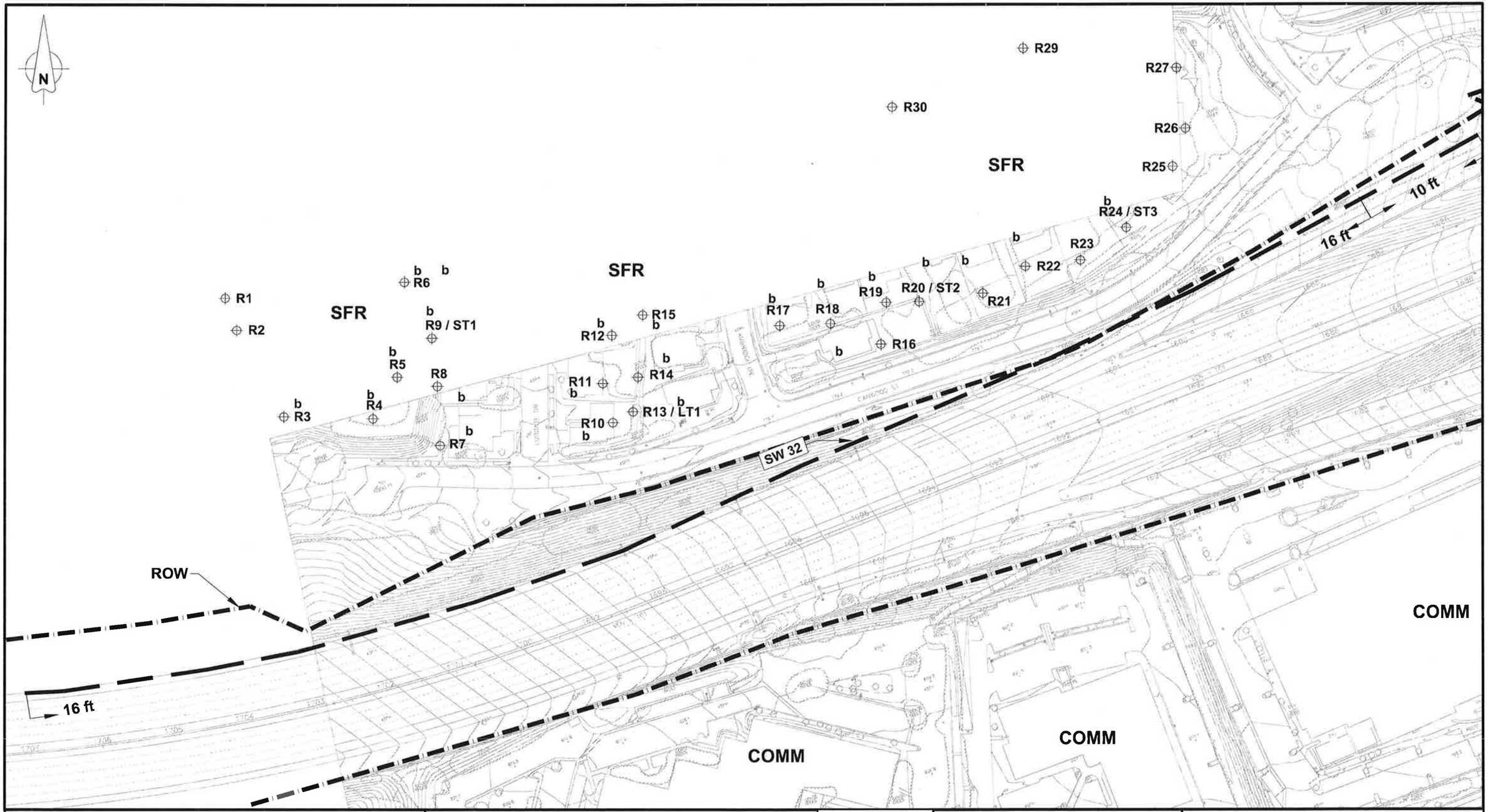
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 4



LEGEND			
R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
———	SOUNDWALL	COMM	COMMERCIAL
- - - -	EXISTING MASONRY WALL	REC	RECREATIONAL
✕—✕—✕	EXISTING WOODEN FENCE		

SCALE

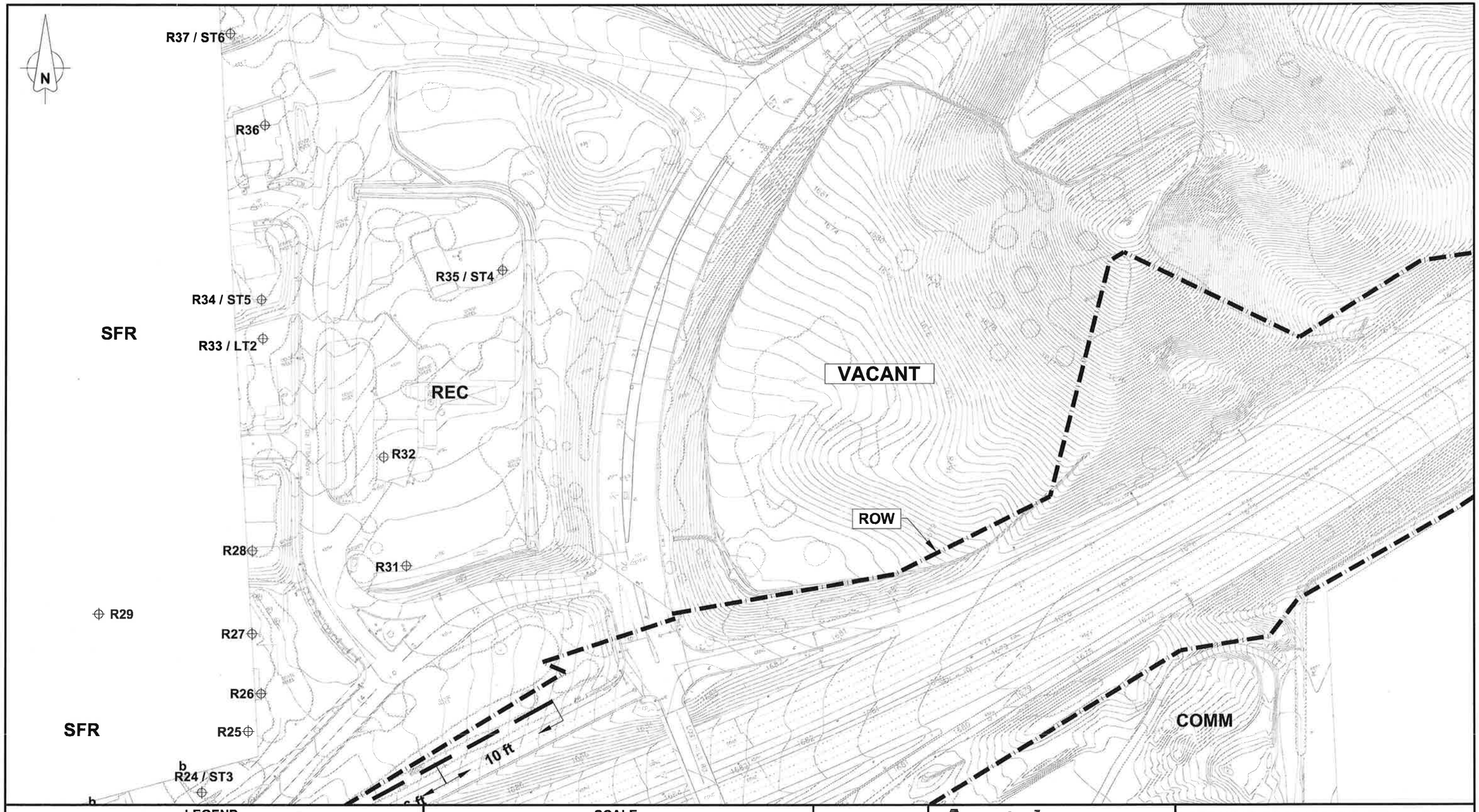
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 5



LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
———	SOUNDWALL	COMM	COMMERCIAL
- - - -	EXISTING MASONRY WALL	REC	RECREATIONAL
-×-×-	EXISTING WOODEN FENCE		

SCALE

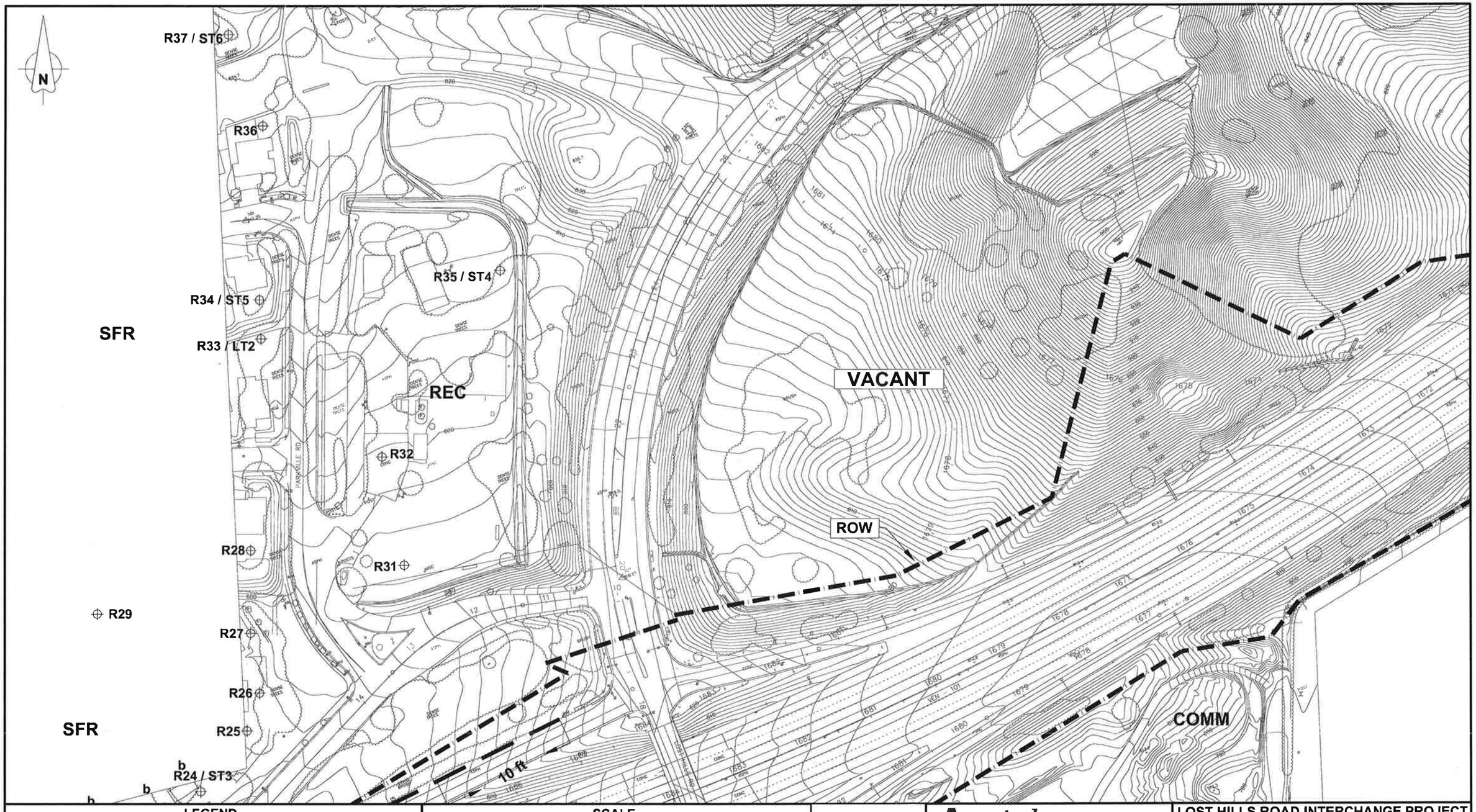
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 5



LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

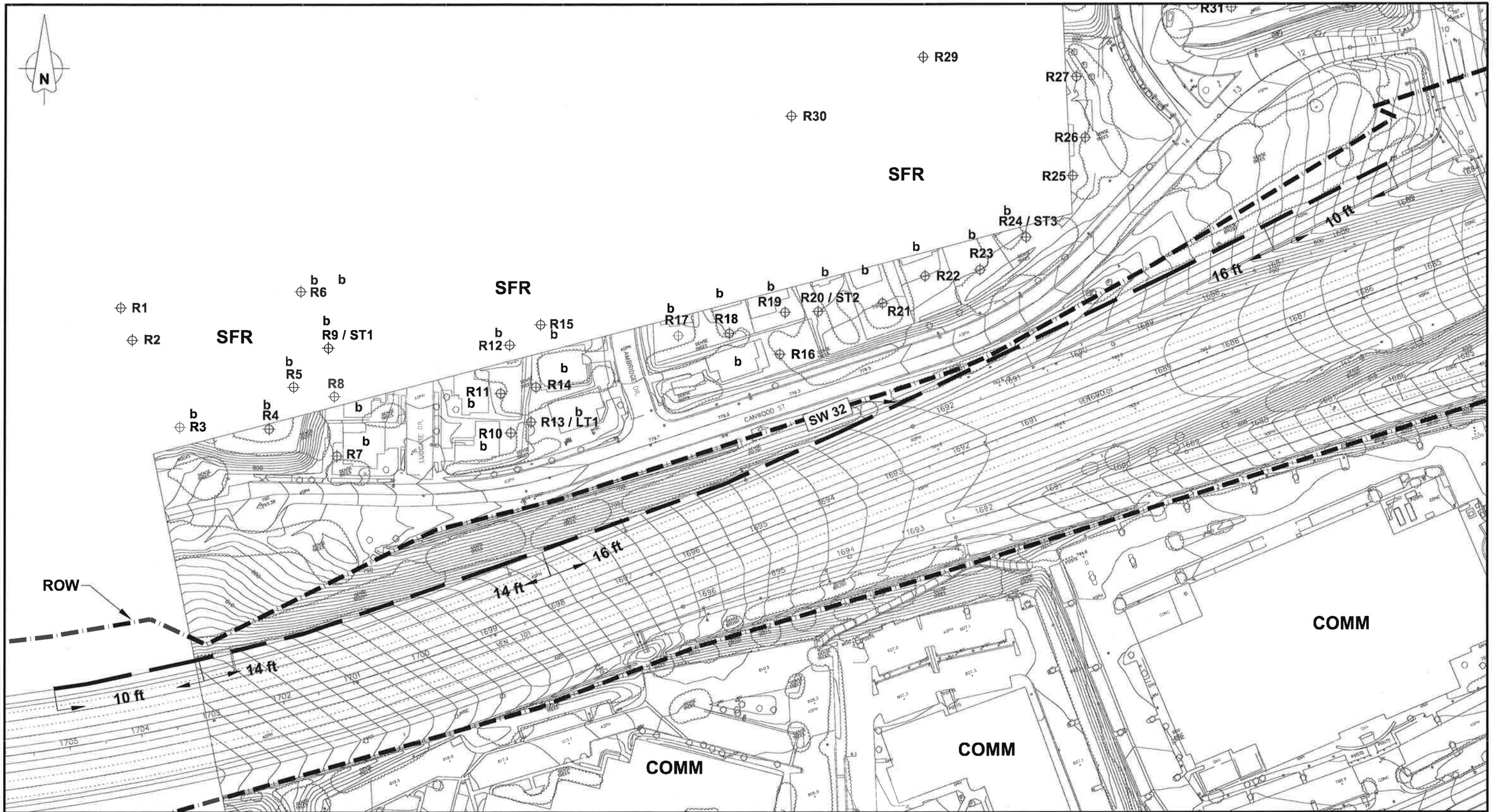
Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 6

SHEET 10 OF 12



LEGEND			
R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
———	SOUNDWALL	COMM	COMMERCIAL
- - - -	EXISTING MASONRY WALL	REC	RECREATIONAL
-x-x-x-	EXISTING WOODEN FENCE		

SCALE

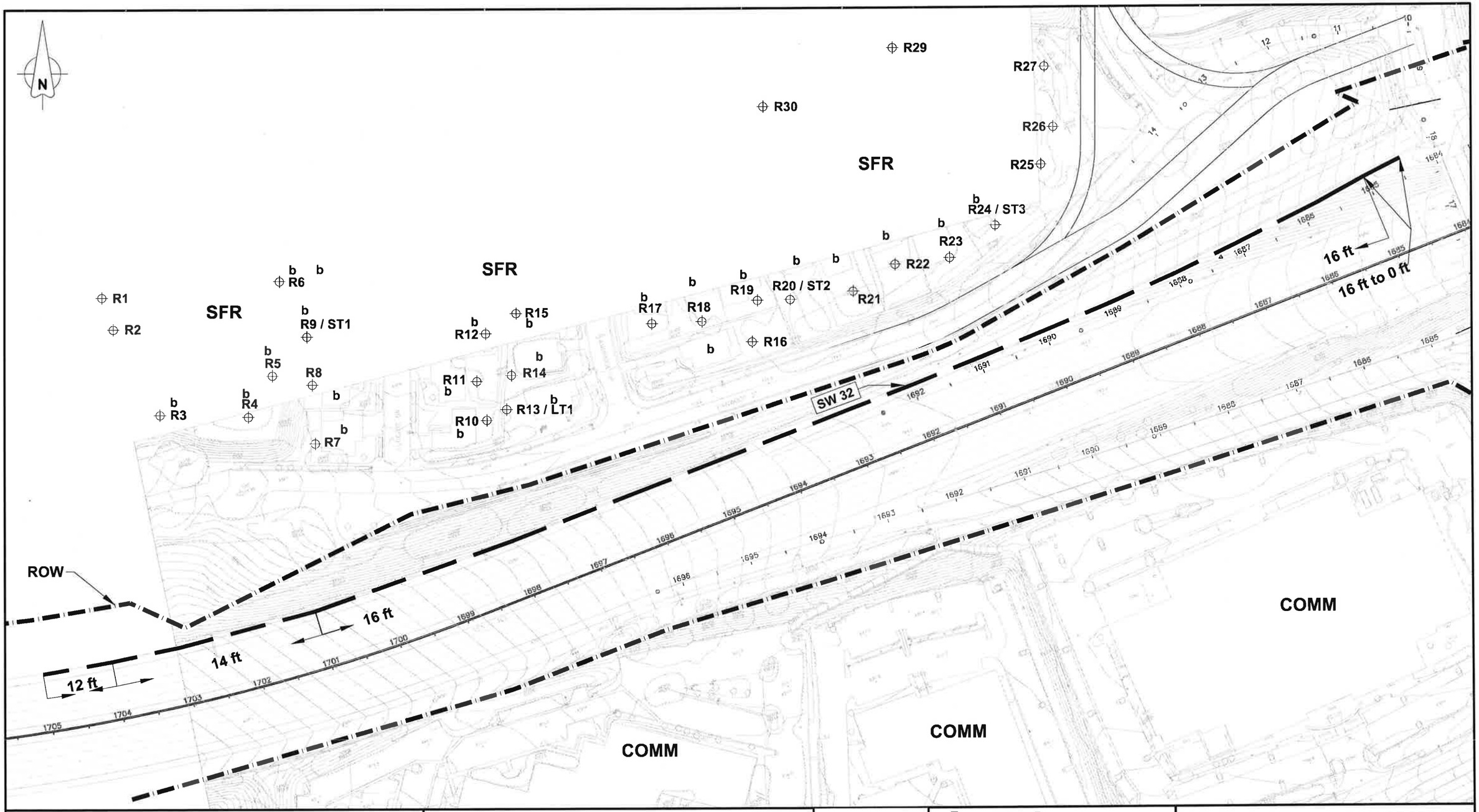
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 6



LEGEND			
R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

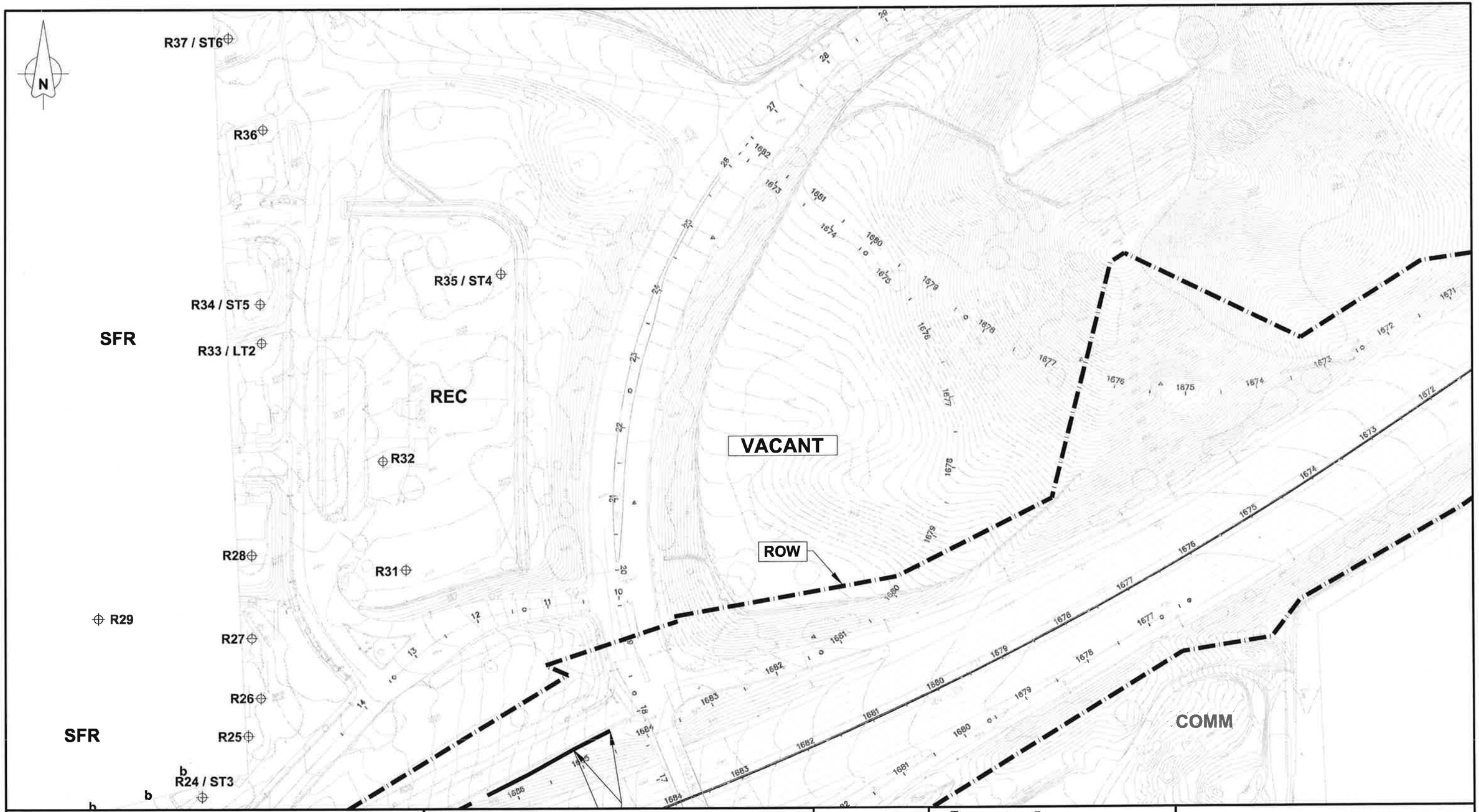
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 7



LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALTERNATIVE 7

SHEET 12 OF 12

LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 2 - ORTHOPHOTO

SHEET 1 OF 12

LEGEND

- R5 — SENSITIVE RECEPTOR SITE
- b — BENEFITED RESIDENCE
- SOUNDWALL
- EXISTING MASONRY WALL
- EXISTING WOODEN FENCE
- RIGHT OF WAY
- SFR — SINGLE FAMILY RESIDENCE
- COMM — COMMERCIAL
- REC — RECREATIONAL

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 2 - ORTHOPHOTO

SHEET 2 OF 12

LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

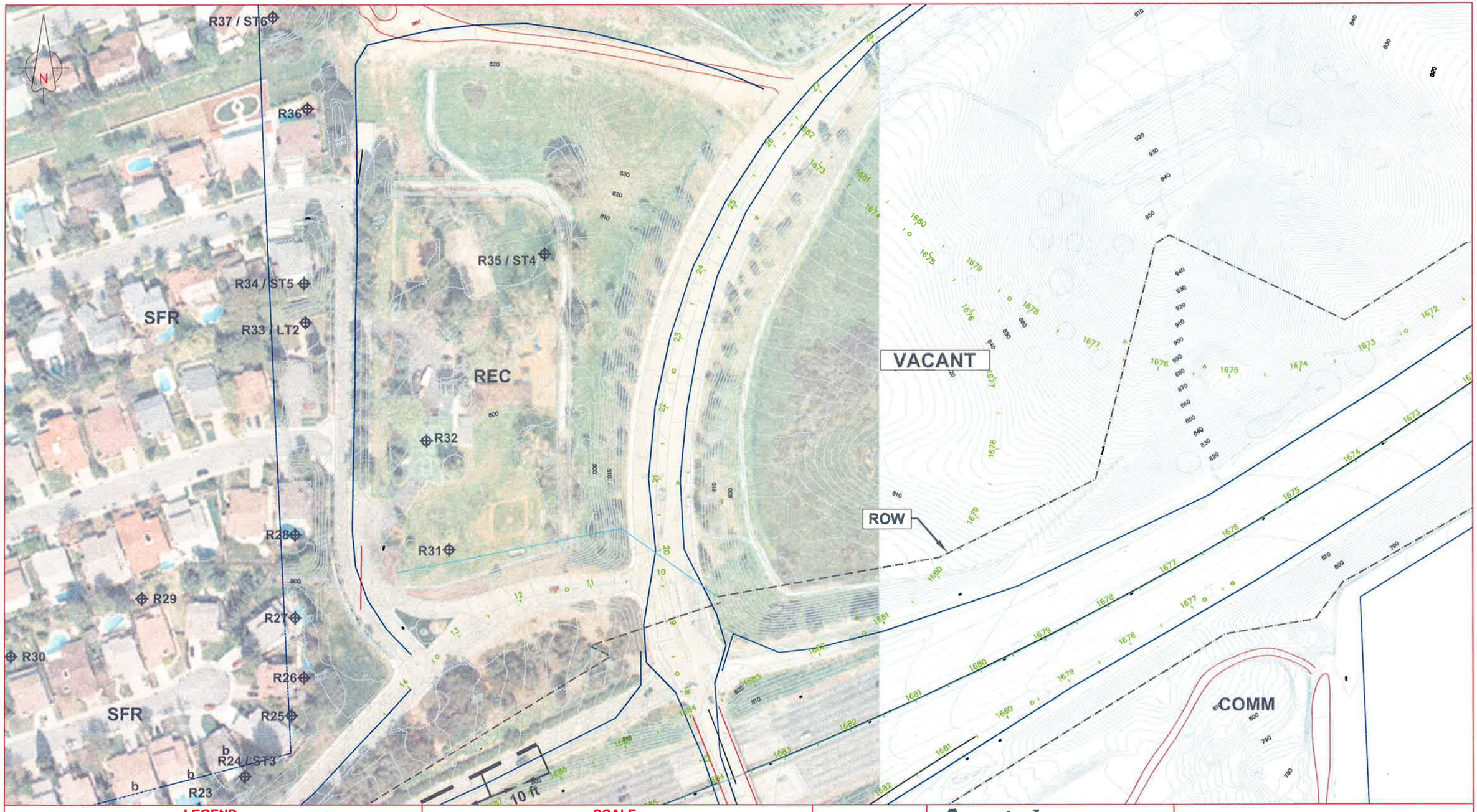
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 3 - ORTHOPHOTO



LEGEND

R5	SENSITIVE RECEPTOR SITE	RIGHT OF WAY	
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
SOUNDWALL		COMM	COMMERCIAL
EXISTING MASONRY WALL		REC	RECREATIONAL
EXISTING WOODEN FENCE			

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 3 - ORTHOPHOTO

LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

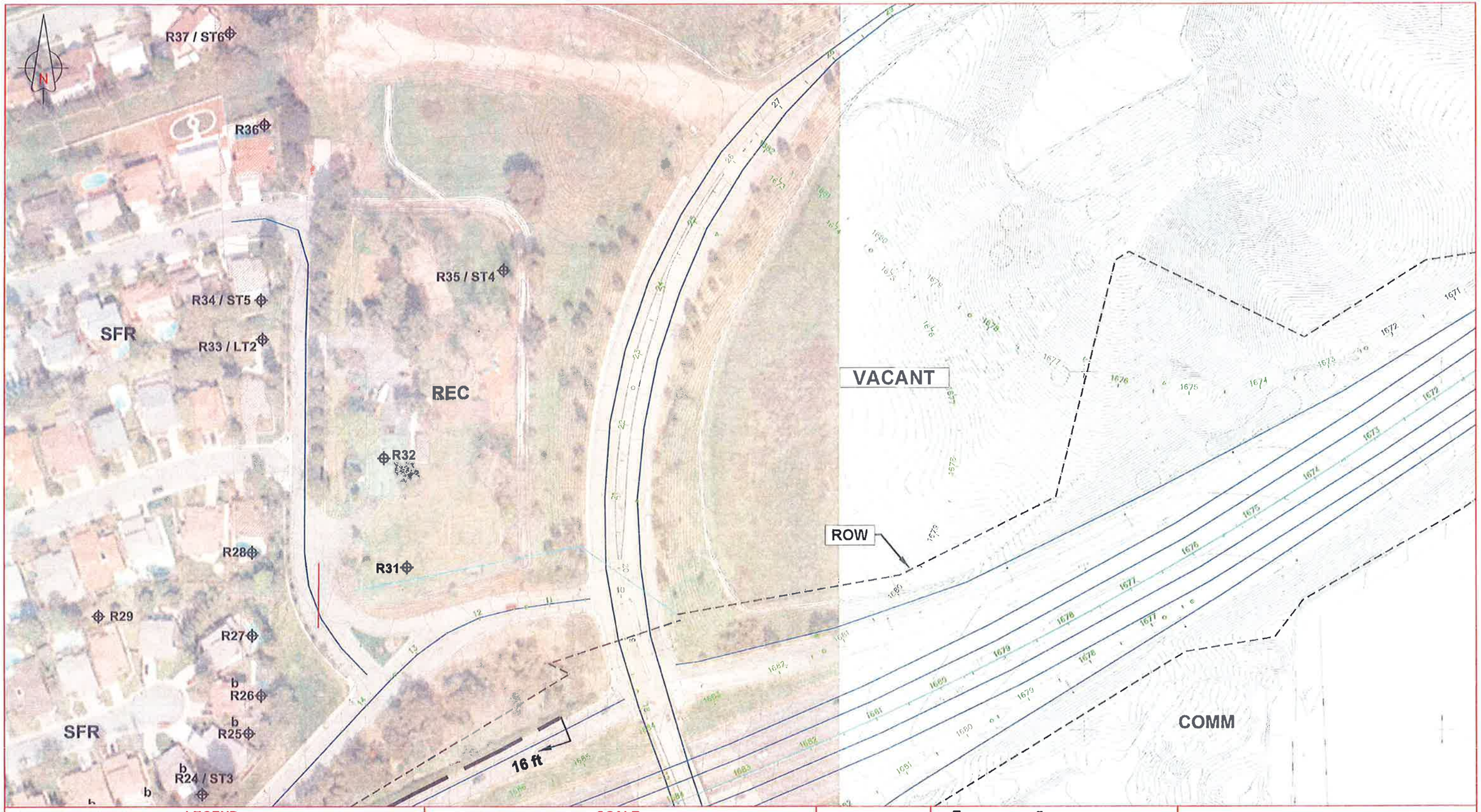
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 4 - ORTHOPHOTO



LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 4 - ORTHOPHOTO

LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

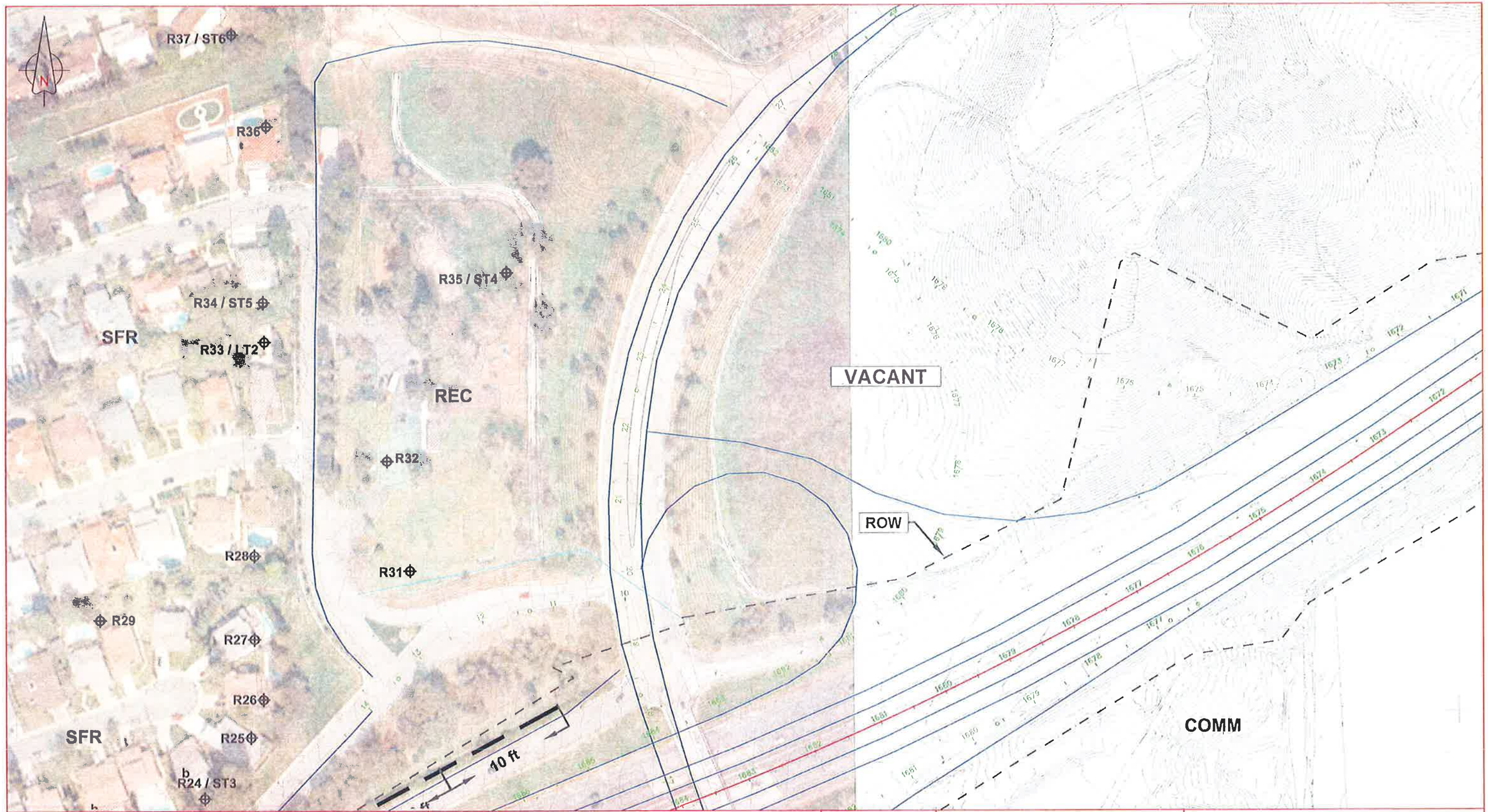
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 5 - ORTHOPHOTO



LEGEND

R5	SENSITIVE RECEPTOR SITE	RIGHT OF WAY	
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
SOUNDWALL		COMM	COMMERCIAL
EXISTING MASONRY WALL		REC	RECREATIONAL
EXISTING WOODEN FENCE			

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 5 - ORTHOPHOTO

LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

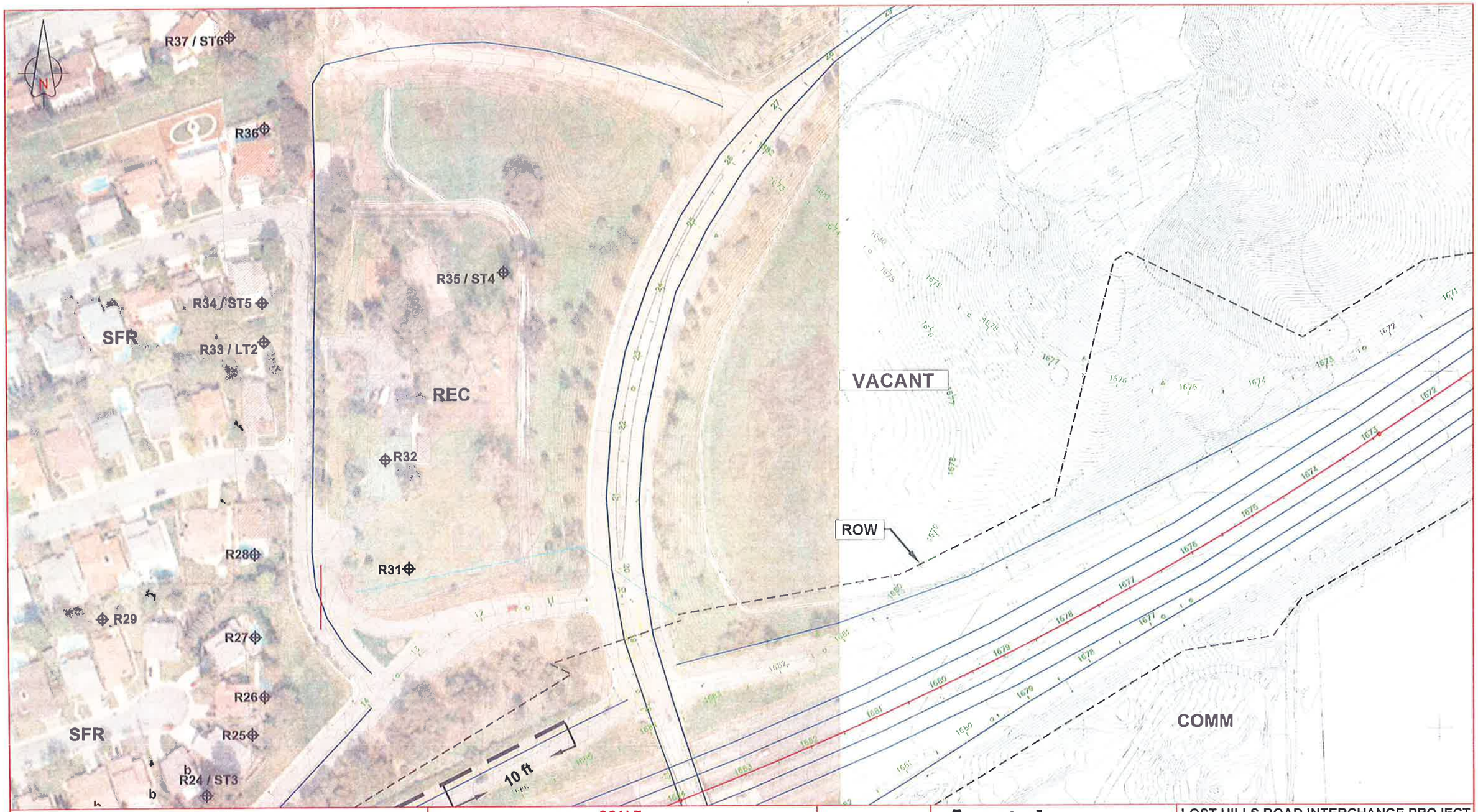
150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 6 - ORTHOPHOTO



LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 6 - ORTHOPHOTO

LEGEND

R5	SENSITIVE RECEPTOR SITE		RIGHT OF WAY
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
	SOUNDWALL	COMM	COMMERCIAL
	EXISTING MASONRY WALL	REC	RECREATIONAL
	EXISTING WOODEN FENCE		

SCALE

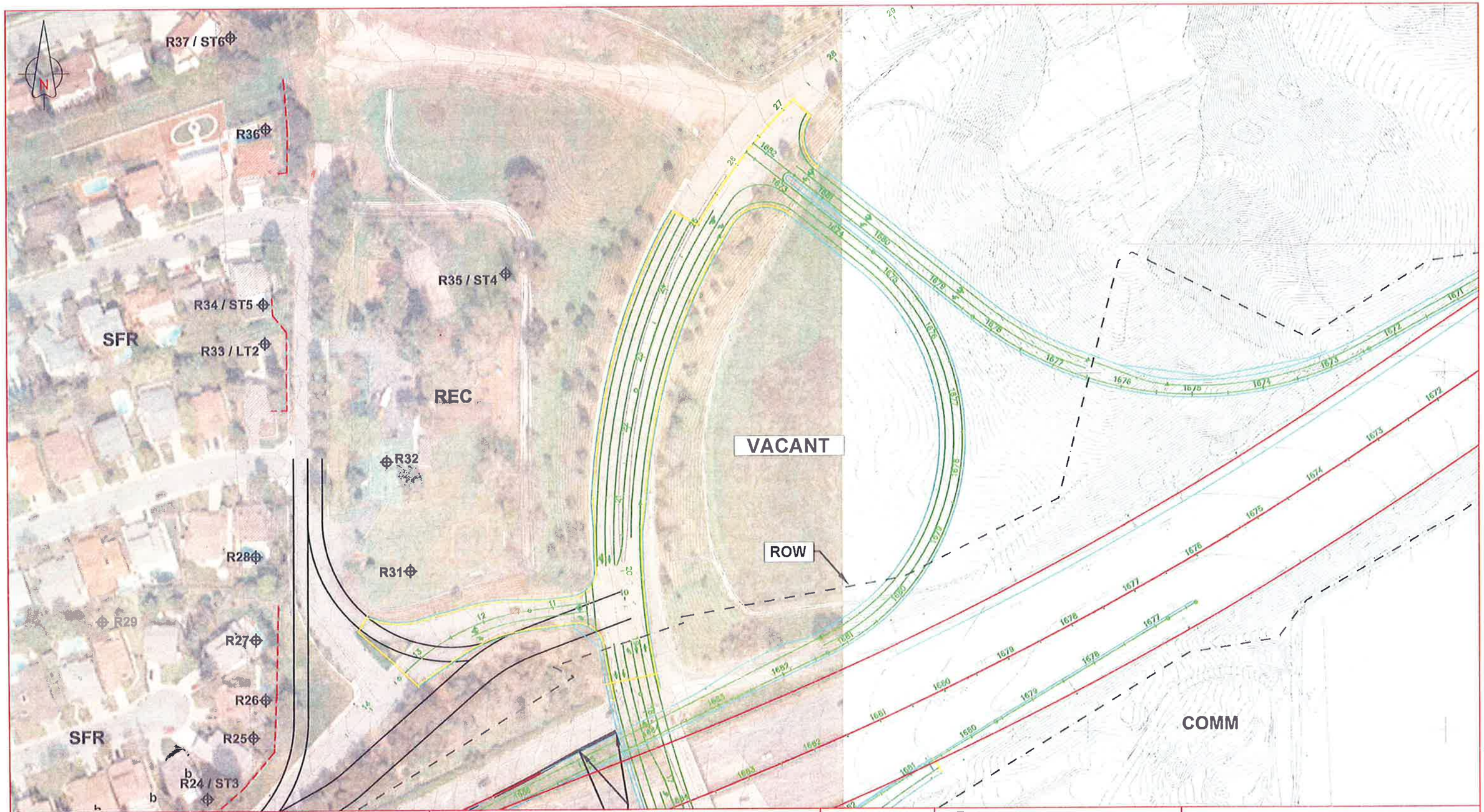
150 Feet — 0 — 150 — 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 7 - ORTHOPHOTO



LEGEND

R5	SENSITIVE RECEPTOR SITE	RIGHT OF WAY	
b	BENEFITED RESIDENCE	SFR	SINGLE FAMILY RESIDENCE
SOUNDWALL		COMM	COMMERCIAL
EXISTING MASONRY WALL		REC	RECREATIONAL
EXISTING WOODEN FENCE			

SCALE

150 Feet 0 150 300 Feet

Caltrans

Acentech
250 N. WESTLAKE BLVD
WESTLAKE VILLAGE, CA 91362
VOICE: (805) 379-5774
FAX: (805) 379-1797

LOST HILLS ROAD INTERCHANGE PROJECT

SENSITIVE RECEPTOR AND NOISE BARRIER LOCATIONS ALT. 7 - ORTHOPHOTO

ST-1

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 60923
Consultant: Mark & Matt Date: 8/8/10

Project: Lost Hills Interchange
Client: Hunt Solars
Address: 5019 Ludgate Dr.

Sound Level Meter: 820 LD-~~870~~ ☒ NL-31 ☐ S/N 1006
Pre-Amp: LD-900B ☐ NH-21 ☐ S/N 2155
LD-900C ☐ LD-828 ☒
Microphone: ☐ B&K _____ S/N _____
☒ LD 2560 S/N 2230

Microphone
Ht = 5 ft

Calibrator: ☐ B&K 4155 S/N _____
☐ _____ S/N _____

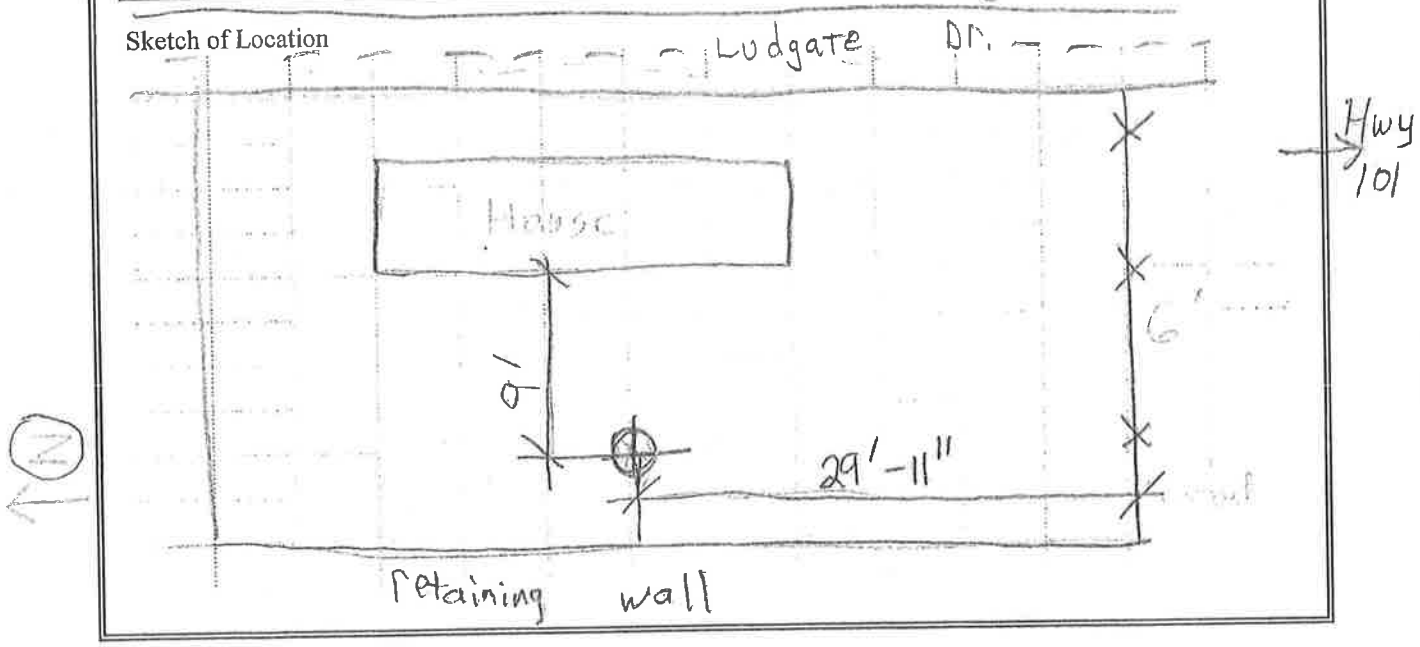
	Input		Reading	Time
Before	114	/	114	14:59
After	[illegible]	/	113.9	17:05

Meteorological Conditions
Temp 69 °F
RH 60% %
Wind Speed 1.1 mph
Toward (Dir) _____

	Date	Time
Start	8/8/10	15:00
Stop	8/8/10	17:05

Notes/Comments
Tree dripper in background when setup.
Leq 58.3 dBA

Sketch of Location



C:\DOCUME~1\MN Interval Data ST-1 - 5019 Ludgate Dr. - Meter 1006

Date	Time	Duration	Leq	SEL	Lmax	Lmin
2-Feb	15:00:27	872.9	59.3	88.8	68.2	54.5
2-Feb	15:15:00	900	59.3	88.8	65.7	52.1
2-Feb	15:30:00	900	58.5	88.1	63.3	52.3
2-Feb	15:45:00	900	58.1	87.7	62.7	53
2-Feb	16:00:00	900	58.3	87.8	65	53.4
2-Feb	16:15:00	900	59.3	88.8	65.9	54.8
2-Feb	16:30:00	900	58.6	88.1	65.7	55.7
2-Feb	16:45:00	900	58.5	88.1	62.1	52.5
~~2-Feb~~	~~17:00:00~~	~~360.1~~	~~62.7~~	~~88.2~~	~~77.3~~	~~54.6~~

Measured-hour 58.7

ST-2

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 609813

Consultant: Mark & Matt Date: 2/2/10

Project: Lost Hills Interchange

Client: Hunt - Zellars

Address: 20130 Garret Dr

Sound Level Meter:	LD-870 ☒	NL-31 ☐	S/N 120	Microphone Ht = 5 ft
Pre-Amp:	LD-900B ☒	NH-21 ☐	S/N 3299	
	LD-900C ☐			
Microphone:	☒ B&K 4189		S/N 2048448	
	☐		S/N	

Calibrator: ☐ B&K 4155 S/N ____
☐ ____ S/N ____

	Input		Reading	Time
Before	114	/	114	14:13
After	114	/	114.3	16:39

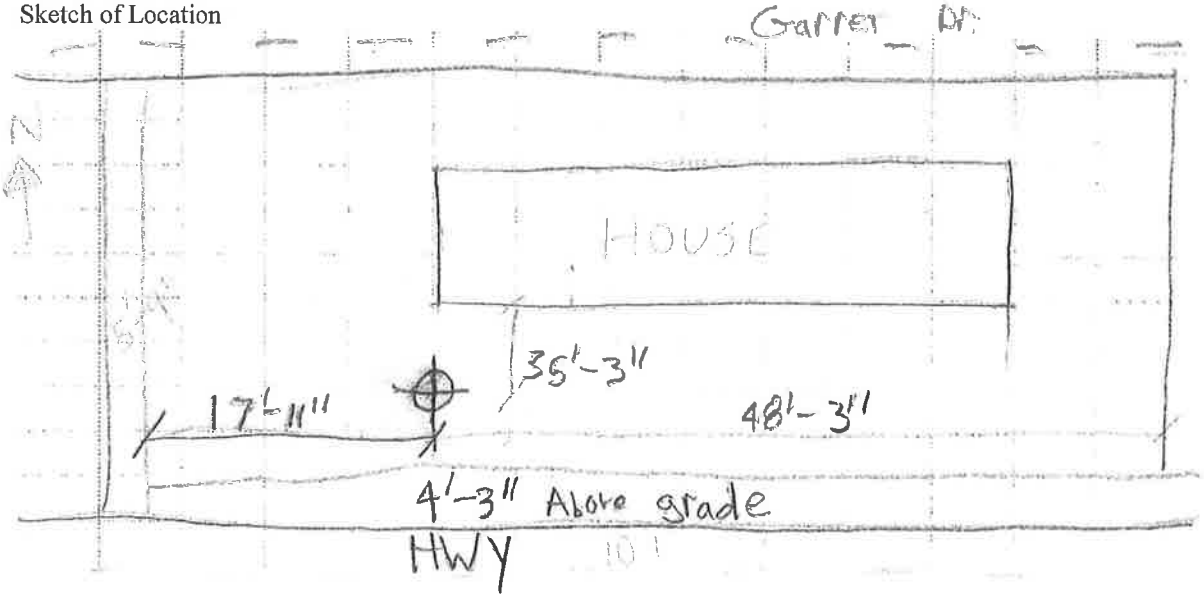
Meteorological Conditions
Temp 60.2 °F
RH 53.9 %
Wind Speed 0.2 mph
Toward (Dir) ____

	Date	Time
Start	2/2/10	14:13 pm
Stop	2/2/10	16:39 pm

Notes/Comments

Leq = 66.1 dBA

Sketch of Location



Interval Data ST-2 - 26930 Garret Dr. - Meter 120

Date	Time	Duration	Leq	Lmax	Lmin	L(1)	L(10)	L(25)	L(50)	L(90)
2/2/2010	14:20:31	1168.9	66.4	79.2	61.4	77.1	66.8	65.7	64.8	63.2
2/2/2010	14:40:00	93.2	65.2	68.8	63.7	67.3	66	65.7	65.2	64.1
2/2/2010	14:41:51	188.7	65	69.3	62	68.1	66.4	65.6	64.9	63.3
2/2/2010	14:45:00	900	65.1	69.6	62.1	67.9	66.3	65.7	65.1	63.5
2/2/2010	15:00:00	900	65.3	73.5	61.1	68	66.7	66	65.3	63.3
2/2/2010	15:15:00	900	66.6	69.5	63.2	68.9	67.8	67.2	66.5	65.1
2/2/2010	15:30:00	900	65.6	68.6	63	67.9	66.8	66.1	65.5	64.2
2/2/2010	15:45:00	900	66	70.8	63.6	67.9	67	66.5	65.8	64.8
2/2/2010	16:00:00	900	66.1	68.2	63.2	67.9	67.3	66.7	66.1	64.7
2/2/2010	16:15:00	900	66.8	70.6	64	69.7	68	67.3	66.6	65.4
2/2/2010	16:30:00	900	66.1	69.8	64.3	67.9	66.9	66.6	66.1	65.1
2/2/2010	16:45:00	210.3	66.2	72.2	64.1	69.4	67.2	66.7	66.1	64.8

Peak-hour 66.3

ST-3

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 609213
Consultant: Mark & Matt Date: 2/10/10

Project: Lost Hills Interchange
Client: Kuit Zolars
Address: 26910 Garret Dr

Sound Level Meter: LD-870 ☐ NL-31 ☒ S/N Rion S/N323 — Microphone Ht = 5 ft
Pre-Amp: LD-900B ☐ NH-21 ☒ S/N 01530
LD-900C ☐
Microphone: ☐ B&K _____ S/N _____
☒ UC 53A S/N 100957
Calibrator: ☐ B&K 4155 S/N _____
☐ _____ S/N _____

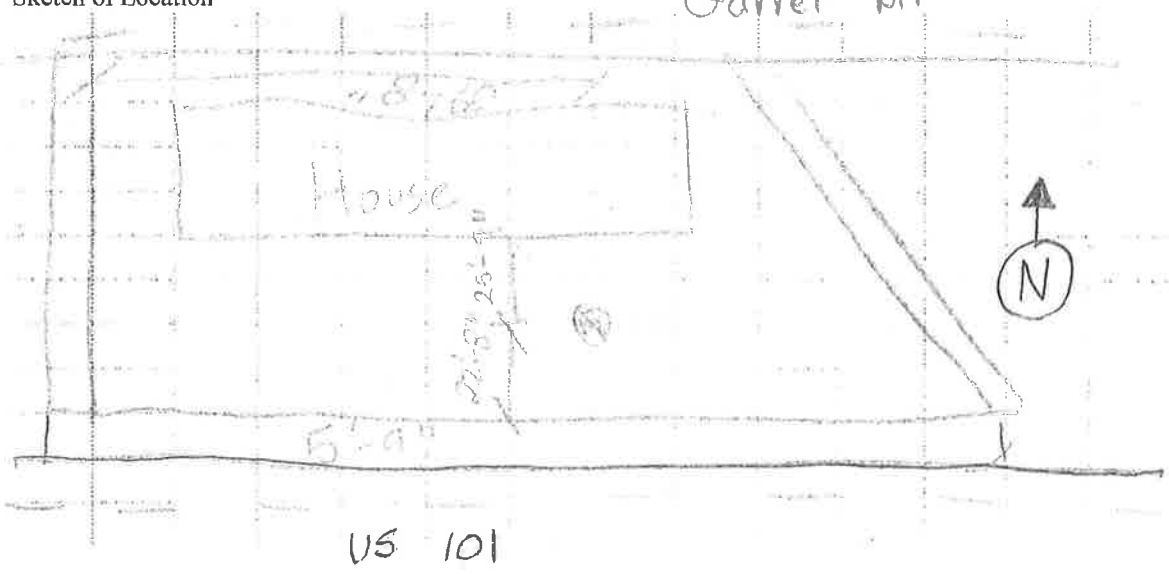
	Input		Reading	Time
Before	114	/	114	14:36
After	114	/	114	14:57

Meteorological Conditions
Temp [illegible] °F
RH 55 %
Wind Speed 0 mph
Toward (Dir) _____

	Date	Time
Start	2/2/10	14:45
Stop	2/2/10	14:58

Notes/Comments
Leq = 65.2

Sketch of Location



ST-3 - 26910 Garret Dr. - Meter 323

	Time	Measurme	LAeq	LAE	LAmax	LAmin	LA01	LA10	LA50	LA90
1	2/2/2010 14:45	0:15:00	63.7	93.2	69.7	60.2	67.6	64.7	63.4	62
2	2/2/2010 15:00	0:15:00	64.3	93.8	67.6	60.4	66.9	65.9	64.1	62.2
3	2/2/2010 15:15	0:15:00	65.5	95.1	67.6	62.5	67.1	66.5	65.5	64.2
4	2/2/2010 15:30	0:15:00	64.5	94.1	66.8	61.8	66.3	65.5	64.4	63.4
5	2/2/2010 15:45	0:15:00	65.1	94.7	69	62.4	66.8	65.9	65	64
6	2/2/2010 16:00	0:15:00	65.2	94.8	68.6	62.7	67	66.2	65.1	64
7	2/2/2010 16:15	0:15:00	65.8	95.3	70.8	63.1	68.9	66.7	65.5	64.6
8	2/2/2010 16:30	0:15:00	65.7	95.2	77.8	63.2	70.3	66.3	65.3	64.3
9	2/2/2010 16:45	0:11:48	65.8	94.3	72	62.3	69.1	66.7	65.5	64.5
		Peak-hour	65.5							

ST-4

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 607013

Consultant: [illegible] Date: 2/2/10

Project: Hart Zoning - Lost Hills Tower change

Client: Hart Zoning

Address: Park

Sound Level Meter: ~~LD-870~~ ☐ NL-31 ☐ S/N LD 824

Pre-Amp: LD-900B ☐ NH-21 ☐ S/N
LD-900C ☐

Microphone: ☐ B&K S/N
☐ S/N

Microphone
Ht = 5 ft

Calibrator: ☐ B&K 4155 S/N
☐ S/N

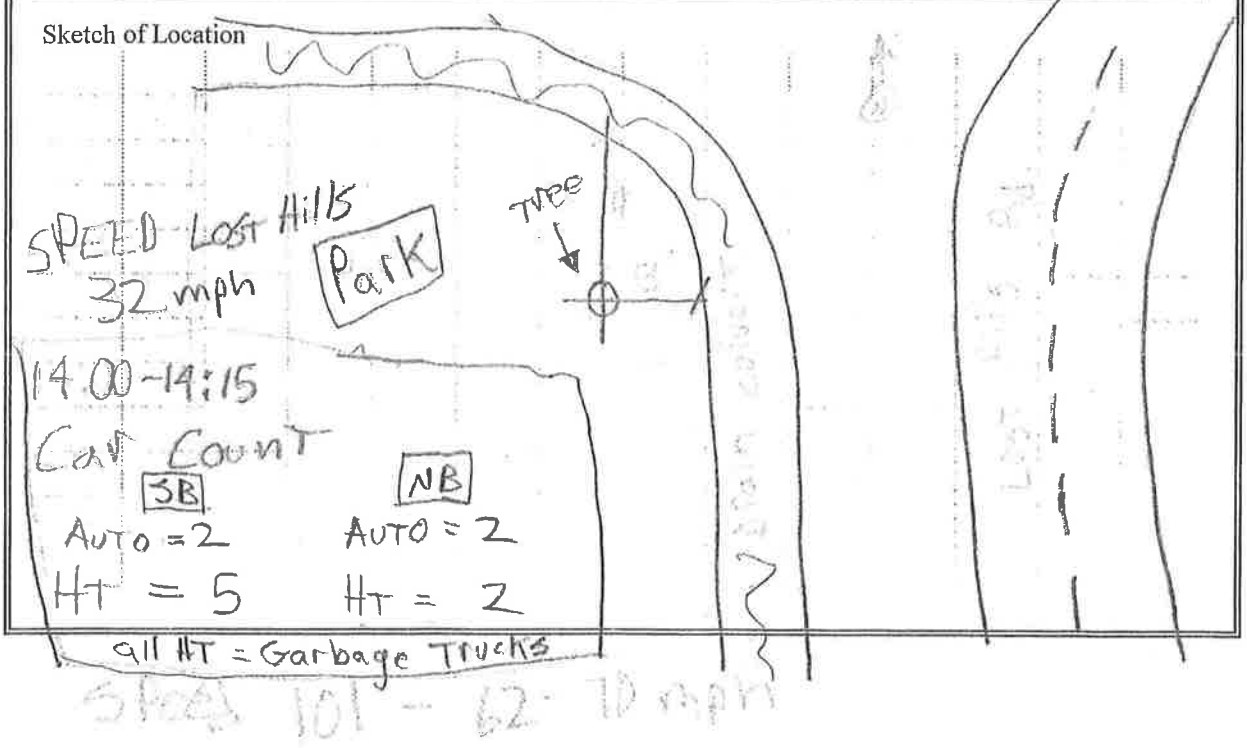
	Input		Reading	Time
Before	114	/	114	15:58
After		/		

Meteorological Conditions
Temp [illegible] °F
RH 71.6 %
Wind Speed 1 mph
Toward (Dir) SE

	Date	Time
Start	2/2	15:59
Stop	2/2	16:15

Notes/Comments
-Kids in the park
SP
File 21
16:00-16:15 = 56.5 dBA

Sketch of Location



ST-4 - Grape Arbor Park - Meter 824

Rec #	Date	Time	Duration	Leq	LMin	LMax	L1.00	L10.00	L50.00	L90.00	L95.00
1	2-Feb-10	15:57:31	02:28.6	55.5	53.7	57.4	57.4	56.8	55.4	54.2	54.1
2	2-Feb-10	16:00:00	15:00.0	56.5	53.5	62.1	60.1	57.8	56.3	54.8	54.3
3	2-Feb-10	16:15:00	00:17.9	57	54.3	59.2	59.2	58.6	56.3	54.7	54.3

ST-5

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 609813

Consultant: Mark Hall Date: 9/8/10

Project: Lost Hills Interchange

Client: Mr. Zeller

Address: 26914 Helmond Dr

Sound Level Meter: LD-870 ☐ NL-31 ☒ S/N [illegible]

Pre-Amp: LD-900B ☐ NH-21 ☒ S/N 01540
LD-900C ☐

Microphone: ☐ B&K _____ S/N _____
☒ UC53A S/N 101003

Microphone Ht = 5 ft

Calibrator: ☐ B&K 4155 S/N _____
☐ _____ S/N _____

	Input		Reading	Time
Before	114	/	115	15:14
After	114	/	113.9	16:41

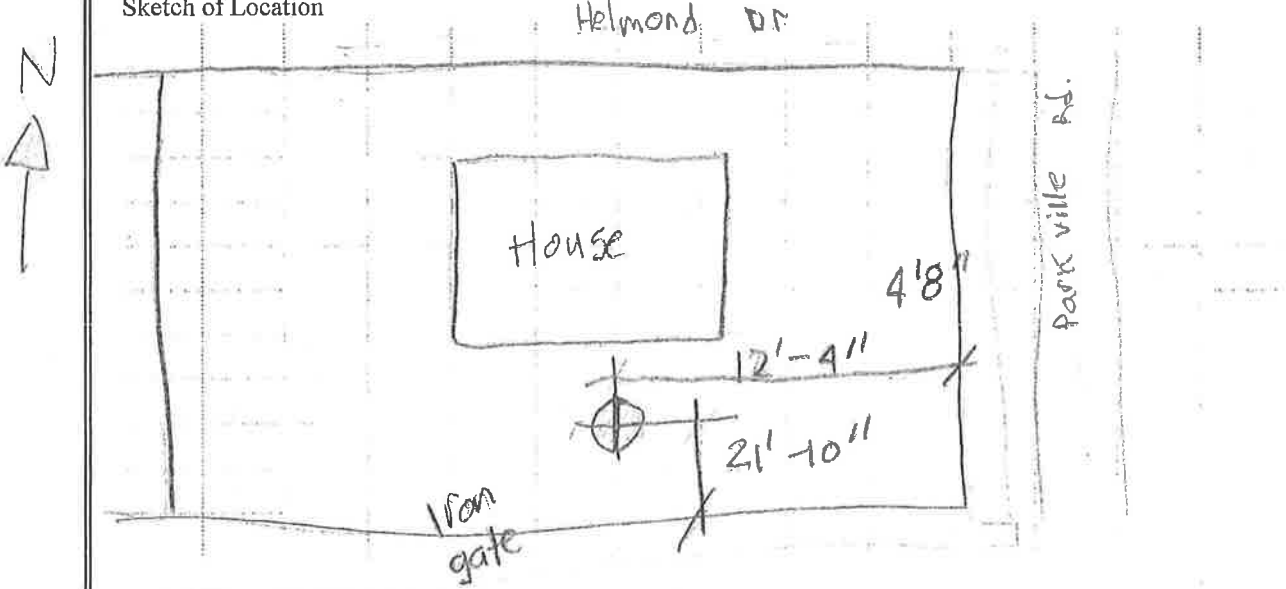
Meteorological Conditions
Temp 67 °F
RH 55.1 %
Wind Speed 0 mph
Toward (Dir) _____

	Date	Time
Start	9/8/10	15:30
Stop	9/8/10	16:45

Notes/Comments

Leq = 55.7dBA

Sketch of Location



↓ 101

ST-5 - 26914 Helmond Dr. - Meter 333

Time	Measurme	LAeq	LAE	LAmax	LAmin	LA01	LA10	LA50	LA90
2/2/2010 15:30	0:15:00	56.2	85.8	83.6	53.6	60.8	57.7	55.9	54.5
2/2/2010 15:45	0:15:00	56.2	85.8	70.5	52.2	62.5	57.2	55.5	53.9
2/2/2010 16:00	0:15:00	55.7	85.3	59.6	52.2	58.6	57	55.5	54
2/2/2010 16:15	0:15:00	57.6	87.1	70.8	52.8	66.2	59.3	55.6	54.3
2/2/2010 16:30	0:11:22	56.1	84.4	66	52.6	59.9	57.2	55.7	54.5
	Peak-hour	56.5							

ST-6

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 607013

Consultant: Mark Hall Date: 9/2/10

Project: Lodi Hills Interchange

Client: Heit Zollars

Address: 26920 Edgeware Dr

Sound Level Meter: 820 LD-~~870~~ ☒ NL-31 ☐ **S/N** 0891

Microphone Ht = 5 ft

Pre-Amp: LD-900B ☐ NH-21 ☐ **S/N** _____
LD-900C ☐

Microphone: ☐ B&K _____ **S/N** _____
☐ **S/N** _____

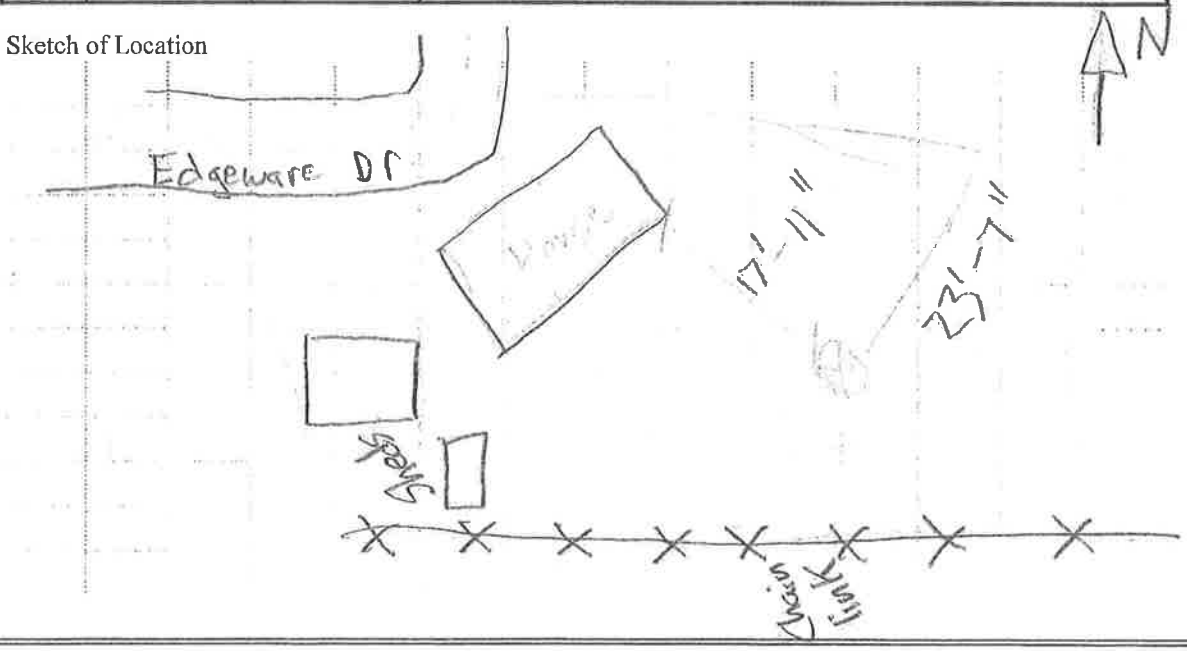
Calibrator: ☐ B&K 4155 **S/N** _____
☐ _____ **S/N** _____

	Input		Reading	Time
Before	114	/	114	1510
After	114	/	113.9	1639

Meteorological Conditions
Temp 66 °F
RH 93 %
Wind Speed 0 mph
Toward (Dir) _____

	Date	Time	Notes/Comments
Start	9/2/10	1541	
Stop	9/2/10	1632	Leq = 52.4

Sketch of Location



ST-6 - 26900 Edgware Dr. - Meter 0891

Date	Time	Duration	Leq	Lmax	Lmin	L(1)	L(10)	L(25)	L(50)	L(90)
2/2/2010	15:41:48	191.7	56.9	70.6	52.9	66.1	58.5	56.2	55.2	53.5
2/2/2010	15:45:00	900	54.3	59.4	51	57.3	55.7	54.9	54.1	52.5
2/2/2010	16:00:00	900	54.2	58.9	50.9	56.8	55.5	54.8	54.1	52.6
2/2/2010	16:15:00	900	56.3	68.5	50	66.8	57.5	54.8	53.8	52.1
2/2/2010	16:30:00	168.8	61.8	72.9	52.4	71.2	66.5	62.2	55.2	53.3
		Peak-hour	55.4							

LT-1

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 609213

Consultant: Mark & Matt Date: 2/1/10

Project: Lost Hills Interchange

Client: Huitt-Zollars

Address: 5001 Canwood St.

Sound Level Meter:	LD-870 ☒	NL-31 ☐	S/N 124	Microphone Ht = 5 ft
Pre-Amp:	LD-900B ☐	NH-21 ☐	S/N 0279	
	LD-900C ☒			
Microphone:	☒ B&K 4189		S/N 2048447	
	☐		S/N	

Calibrator: ☐ B&K 4155 S/N

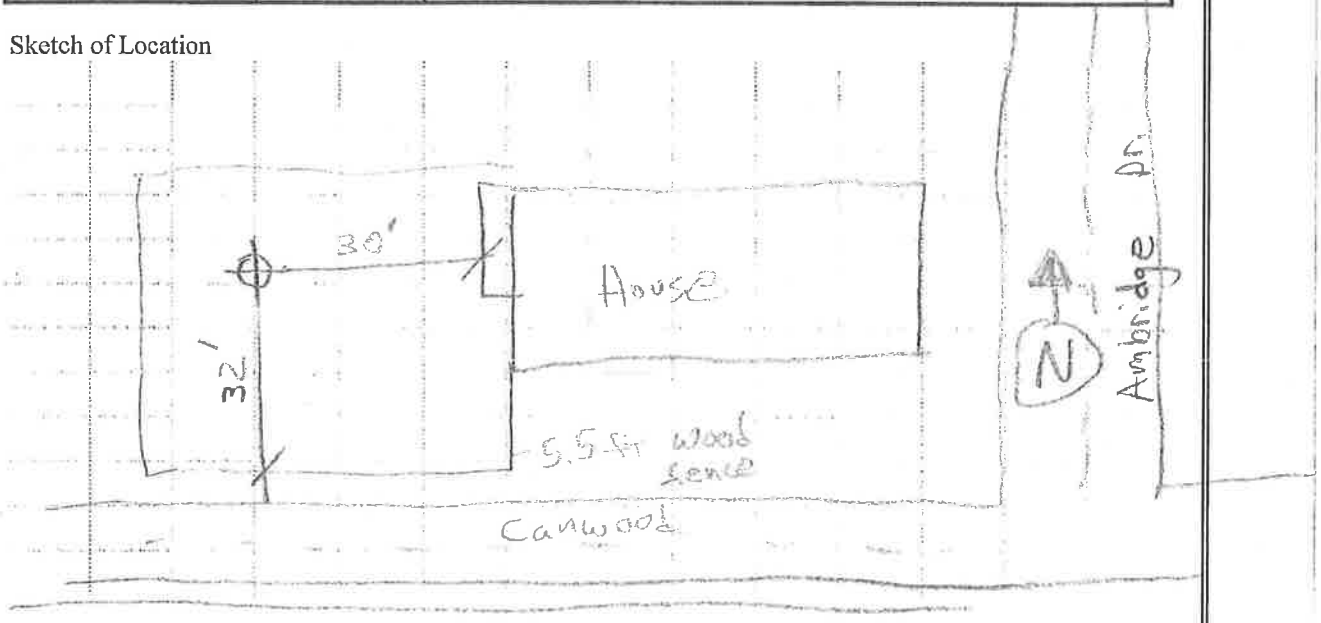
☐ S/N

	Input		Reading	Time
Before	114	/	114	10:39 offset 0.2
After	114	/	114.1	11:30

Meteorological Conditions
Temp 65.5 °F
RH 64.2 %
Wind Speed 0 mph
Toward (Dir) ____

	Date	Time	Notes/Comments
Start	2/1/10	10:45	can see Highway over fence
Stop	2/3/10	11:29	

Sketch of Location

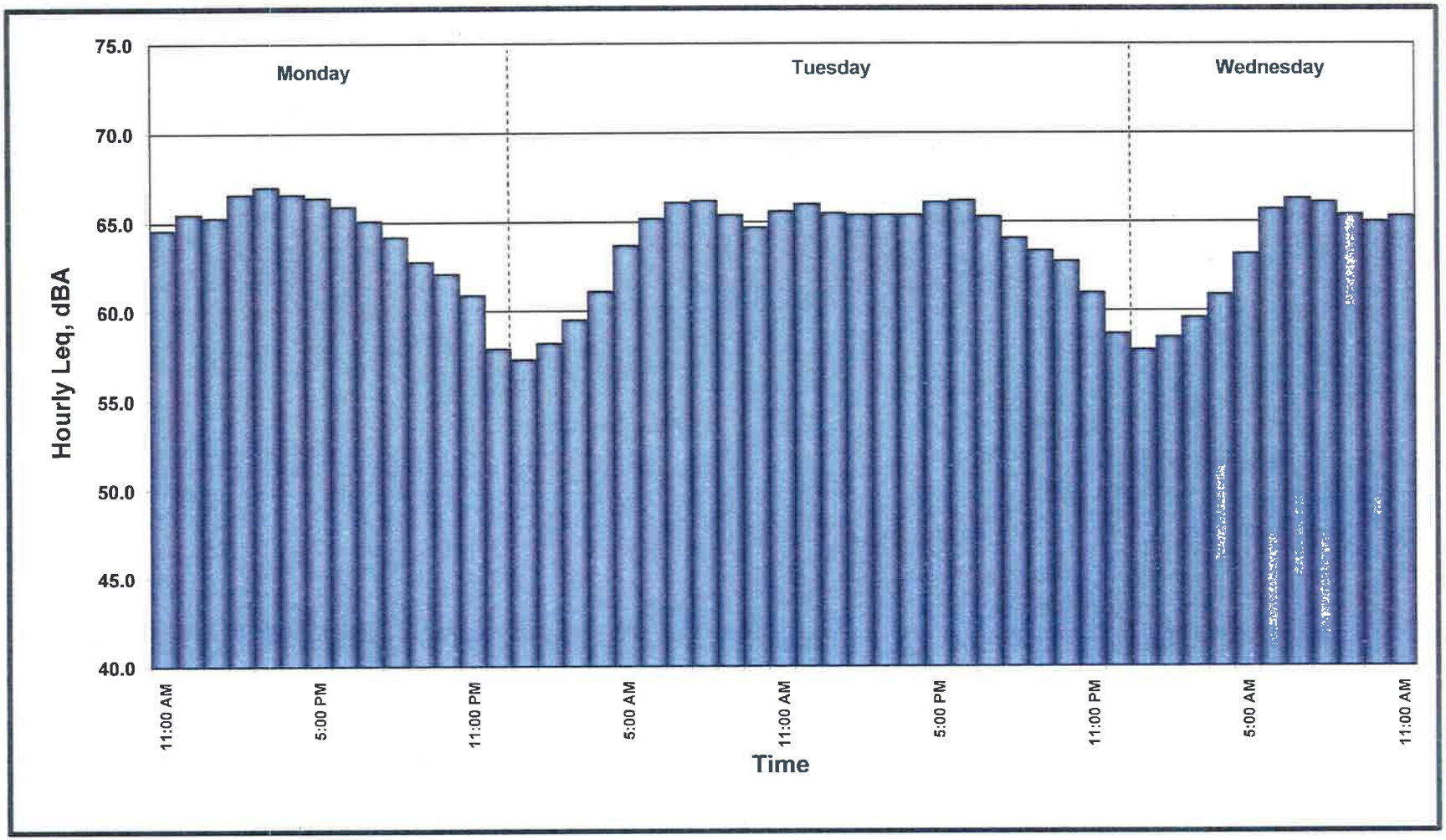


1, 10, 25, 50, 90, 99 Highway

Hourly Noise Levels, Leq(h)

Location: LT1 - 5001 Canwood Street
Position: 5 ft. - Backyard
Sources: 101 Freeway
Date: 2/1/2010 - 2/3/2010

Notes: Clear line of sight to 101 Freeway over fence



LT-2

NOISE MONITOR LOG

Acentech West Coast
Acoustical and Environmental Technologies

Job No. 6092B

Consultant: Mark & Matt **Date:** 2/1/10

Project: Lost Hills Interchange

Client: Hall - Zollars

Address: 26901 Calamine Dr.

Sound Level Meter:	LD-870 ☑	NL-31 ☐	**S/N**	1525	Microphone Ht = 5 ft
Pre-Amp:	LD-900B ☐	NH-21 ☐	**S/N**	0271	
	LD-900C ☒				
Microphone:	☒ B&K 4189		**S/N**	2021349	
	☐		**S/N**		

Calibrator: ☐ B&K 4155 **S/N** ____

☐ ____ **S/N** ____

	Input		Reading	Time
Before	114.0	/	114.0	11:10
After	114	/	114.1	11:37

Meteorological Conditions

Temp 60.1 °F

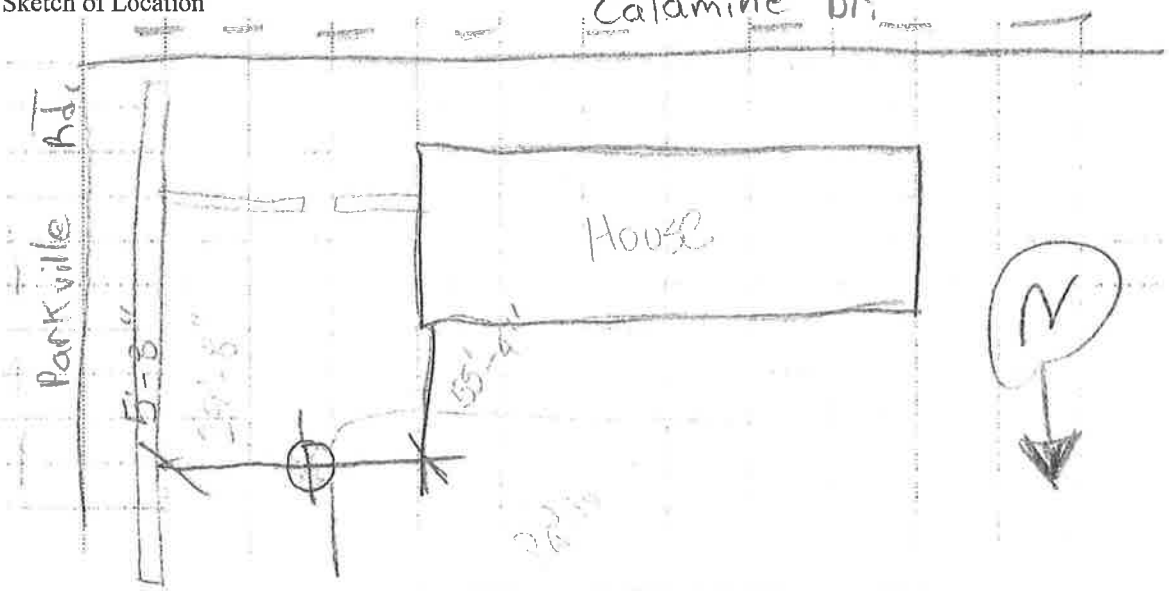
RH 54.5 %

Wind Speed 0 mph

Toward (Dir) ____

	Date	Time	Notes/Comments
Start	2/1/10	11:18	
Stop	2/3/10	11:36	

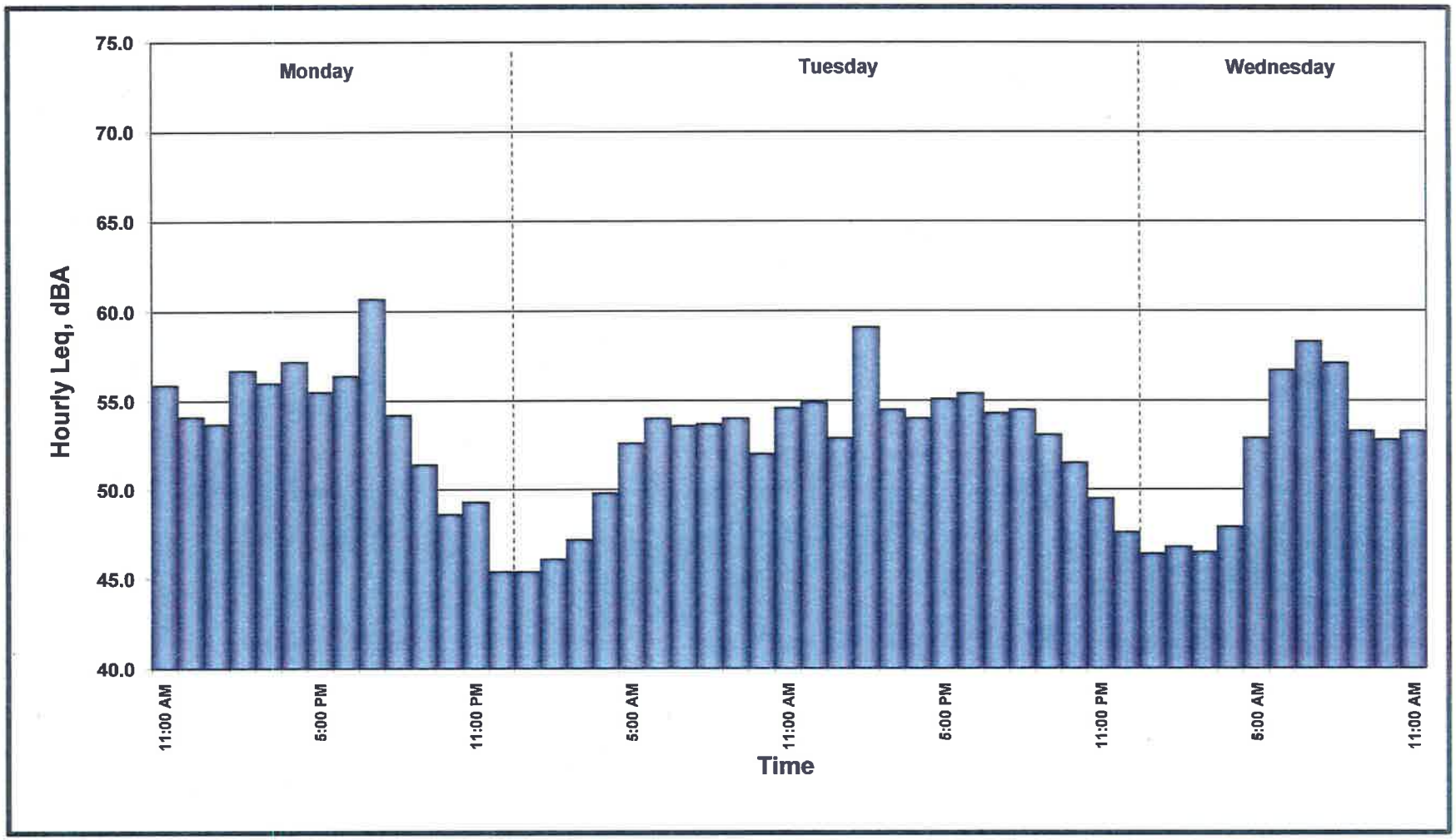
Sketch of Location



Hourly Noise Levels, Leq(h)

Location: LT2 - 26901 Calamine Drive
Position: 5 ft. - Backyard
Sources: 101 Freeway
Date: 2/1/2010 - 2/3/2010

Notes:

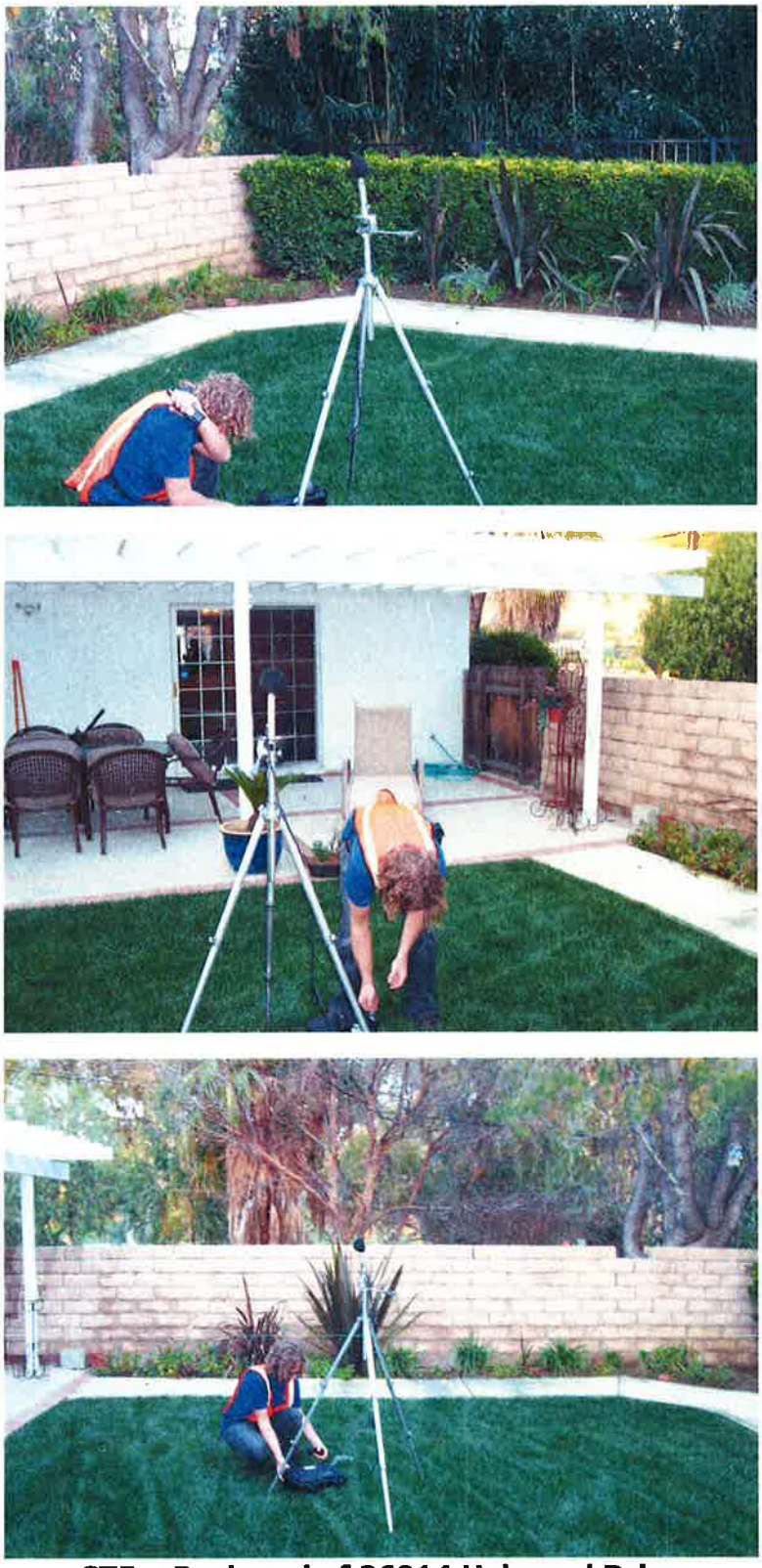


ST1 – Backyard of 5019 Ludgate Drive

ST2 – Backyard of 26930 Garret Drive

ST3 – Backyard of26910 Garret Drive

ST4 – Grape Arbor County Park



ST5 – Backyard of 26914 Helmond Drive

ST6 – Backyard of 26900 Edgeware Drive

LT1 – Backyard of 5001 Canwood Street

LT2 – Backyard of 26901 Calamine Drive

LT2 – Backyard of 26901 Calamine Drive, cont.

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