

2.12 Noise

2.12.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

2.12.1.1 California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The rest of this section will focus on the NEPA 23 Code of Federal Regulations (CFR) 772 noise analysis. (Please see Chapter 3, CEQA Checklist, of this document for further information on noise analysis under CEQA.)

2.12.1.2 National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 2.12.1 lists the noise abatement criteria for use in the NEPA 23 CFR 772 analysis.

Figure 2.12-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

According to *Caltrans Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects* (Traffic Noise Analysis Protocol), May 2011, a noise impact occurs when the predicted future noise level with the project substantially exceeds the No Build/existing noise level (defined as a 12 dBA or more increase) or when the predicted future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

Table 2.12.1: Noise Abatement Criteria

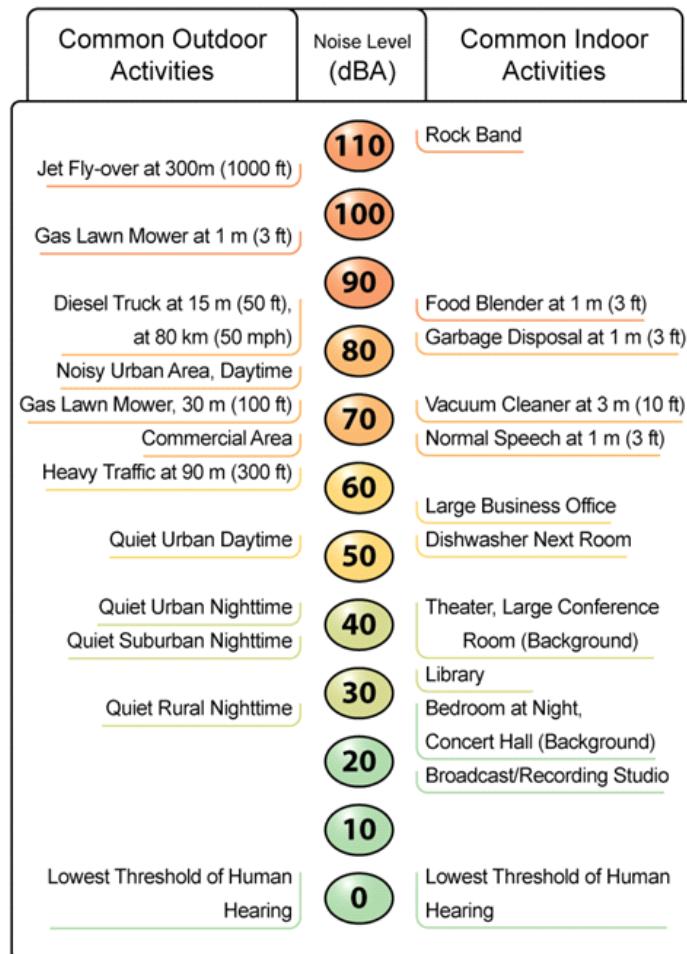
Activity Category	NAC, Hourly A-Weighted Noise Level, $L_{eq}(h)^2$	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ¹	67 (Exterior)	Residential.
C ¹	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day-care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day-care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	No NAC – reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No NAC – reporting only	Undeveloped lands that are not permitted.

¹ Includes undeveloped lands permitted for this activity category.

² The 1-hour equivalent sound level ($L_{eq}(h)$) activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are A-weighted decibels (dBA).

NAC = Noise Abatement Criteria

Figure 2.12-1: Noise Levels of Common Activities



If it is determined that the Build Alternative (including Design Option B) will have noise impacts, then potential abatement measures must be considered and evaluated for feasibility and reasonableness. Noise abatement measures that are determined to be feasible and reasonable at the time of final design are incorporated into the project plans and specifications.

This section discusses noise abatement measures that would likely be incorporated into the Build Alternatives (including Design Option B).

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is feasible and reasonable. Feasibility of noise abatement is basically an engineering consideration. A minimum 5 dBA reduction in the future noise level must be achieved at an impacted receptor for an abatement measure to be considered feasible. Other factors that may affect feasibility include topography, access requirements, other noise sources, and safety considerations. Additionally, a noise reduction of at least 7 dBA must be achieved at one or more benefited

receptors for an abatement measure to be considered initially reasonable. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance and the cost per benefited residence.

2.12.2 Affected Environment

This section is based on the Noise Study Report (NSR; December 2018), and the Noise Abatement Decision Report (NADR; February 2019), prepared for the proposed project. The NSR followed the most recent Caltrans Noise Analysis Protocol. Traffic noise levels were evaluated in the NSR within the Study Area adjacent to the project limits of the Build Alternatives. This section summarizes the NSR and NADR results.

2.12.2.1 Surrounding Land Uses and Receptors

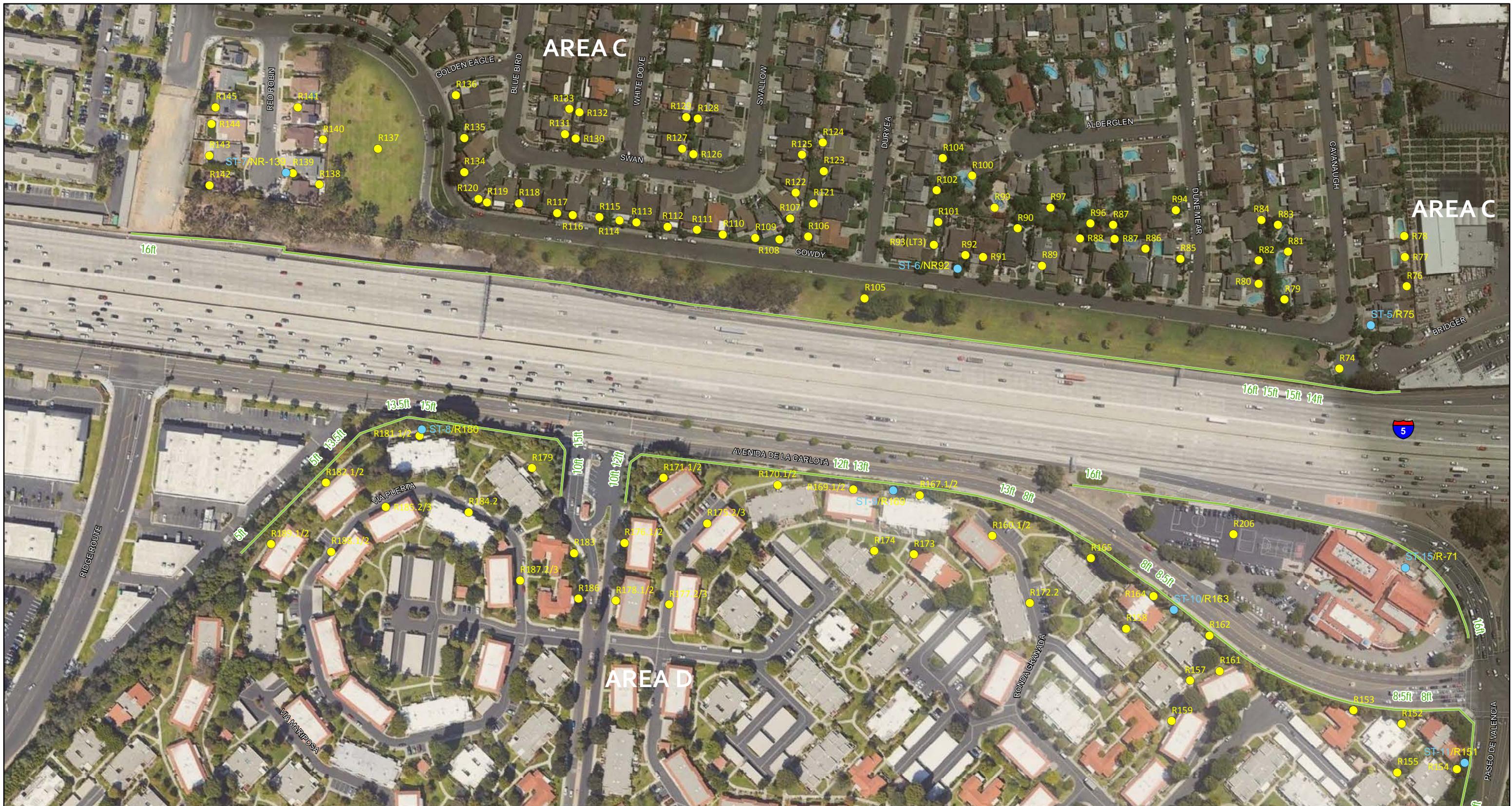
A general reconnaissance of the Study Area adjacent to the project limits was conducted to identify land uses. Receptors were identified in those areas where outdoor frequent human use would occur, such as single-family and multifamily residences, a church, a school, a park and a playground. Other land uses within Study Area adjacent to the project limits include utility and commercial uses such as restaurants, offices, and commercial retail. A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the Build Alternatives (including Design Option B). The following land uses and Activity Categories were identified in the Study Area adjacent to the project limits:

- Single-family residences and multifamily residences: Activity Category B
- Church, school, park, playground: Activity Categories C (exterior) and D (interior)
- Restaurants, offices, and commercial retail: Activity Category E
- Utility Company: Activity Category F

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 common use areas at multifamily residences.

Land uses in the Study Area adjacent to the project limits have been grouped into a series of lettered analysis areas that are identified in Figures 2.12-2 and 2.12-3; each of these analysis areas is considered to be acoustically equivalent. The existing soundwall and major property walls that were modeled as part of the analysis are shown in Figure 2.12-2. Please refer to Tables 2.12.6 and 2.12.7 for heights of the existing soundwalls.

- **Area A, Northbound I-5 between Los Alisos Boulevard and El Toro Road:** Area A is located on the east side of northbound Interstate 5 (I-5) between Los Alisos Boulevard and El Toro Road. The land uses in this area are composed of single-family residences (Activity Category B), commercial retail (Activity



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LEGEND

- Short-Term Noise Measurement Locations (ST-#)
- Existing Soundwall or Property Wall
- Modeled Receptor Locations (R# or R#.#)
- .#/# Receptor Floor Levels (i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)

0 100 200
FEET

SOURCE: Google Earth (2018); Caltrans (12/18/2018)

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FIGURE 2.12-2
Sheet 2 of 3

I-5/El Toro Road Interchange Project

Noise Measurement and Modeled Receptor Locations

12-ORA-5 PM 17.8/19.7

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LEGEND

- Short-Term Noise Measurement Locations (ST-#)
- Modeled Receptor Locations (R# or R#.#)
- .#/# Receptor Floor Levels (i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Existing Soundwall or Property Wall

0 100 200
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SOURCE: Google Earth (2018); Caltrans (12/18/2018)

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FIGURE 2.12-2
Sheet 3 of 3

I-5/El Toro Road Interchange Project

Noise Measurement and Modeled Receptor Locations

12-ORA-5 PM 17.8/19.7

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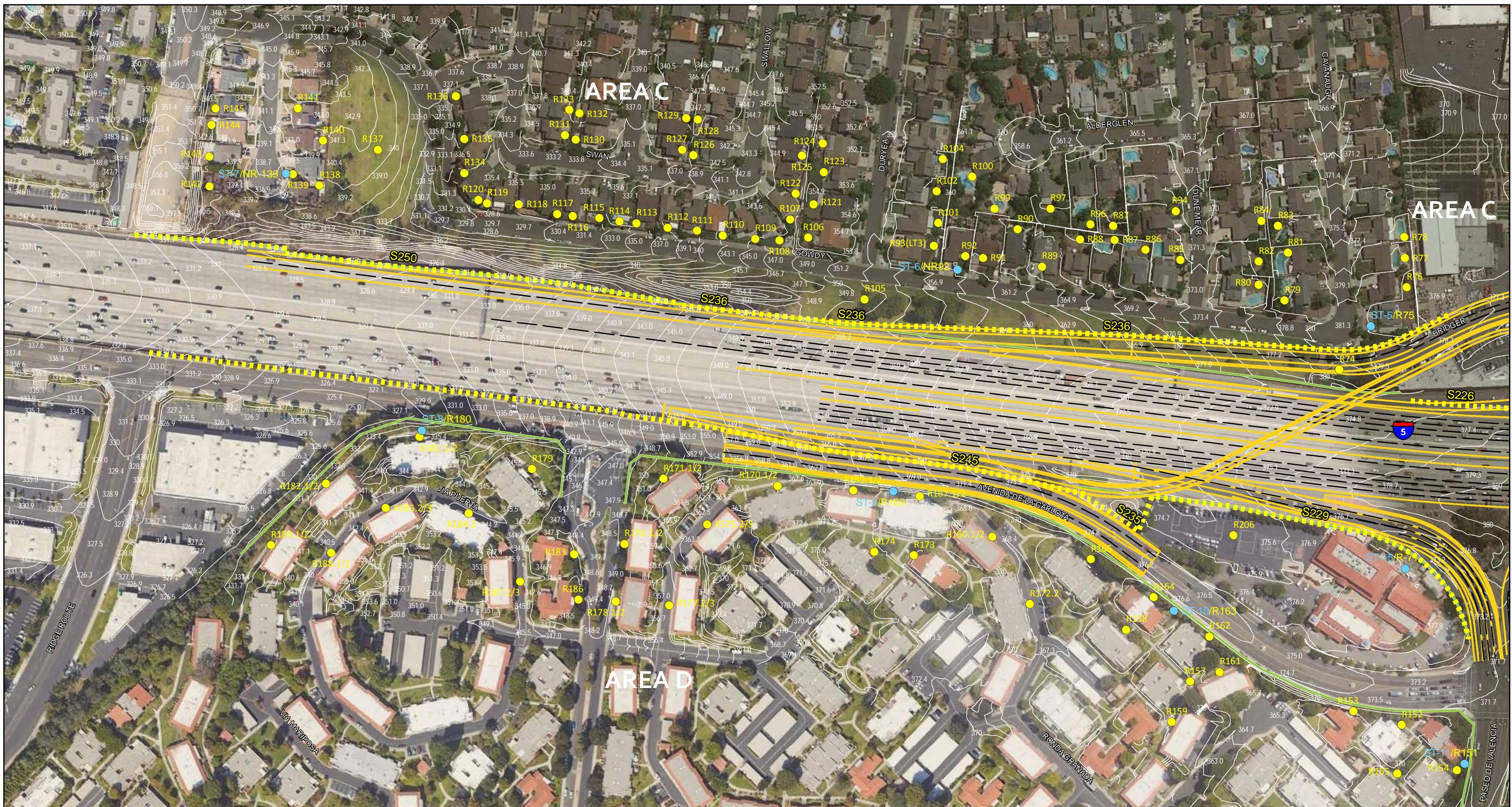
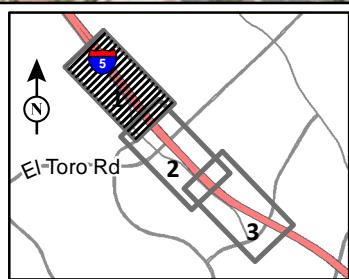
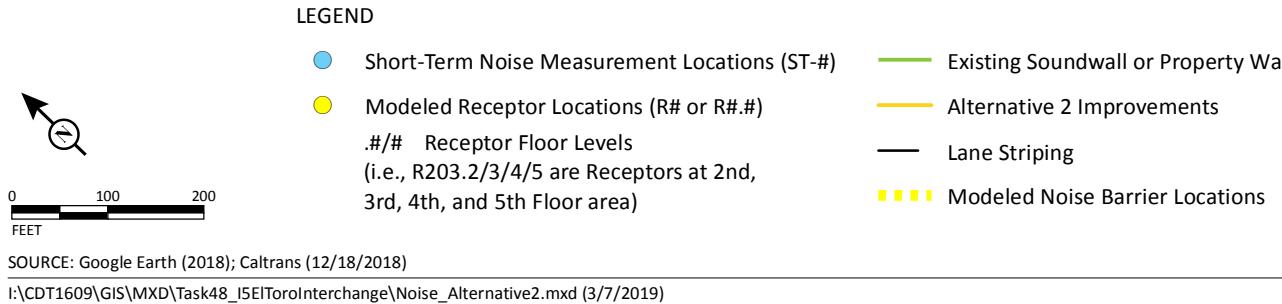


FIGURE 2.12-3
Sheet 1 of 6



I-5/El Toro Road Interchange Project
Alternative 2 Modeled Noise Barriers
12-ORA-5 PM 17.8/19.7
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LEGEND

- Short-Term Noise Measurement Locations (ST-#)
- Modeled Receptor Locations (R# or R#.#)
- #/# Receptor Floor Levels
(i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Existing Soundwall or Property Wall
- Alternative 2 Improvements
- Lane Striping
- Modeled Noise Barrier Locations

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SOURCE: Google Earth (2018); Caltrans (12/18/2018)

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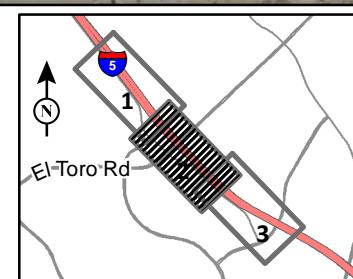


FIGURE 2.12-3
Sheet 2 of 6

I-5/El Toro Road Interchange Project
Alternative 2 Modeled Noise Barriers
12-ORA-5 PM 17.8/19.7
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LEGEND

- Short-Term Noise Measurement Locations (ST-#)
- Modeled Receptor Locations (R# or R#.#)
- #/# Receptor Floor Levels
(i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Existing Soundwall or Property Wall
- Alternative 2 Improvements
- Lane Striping
- Modeled Noise Barrier Locations

0 100 200
FEET

SOURCE: Google Earth (2018); Caltrans (12/18/2018)

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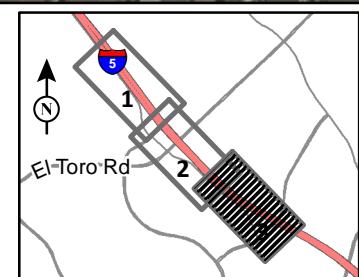


FIGURE 2.12-3
Sheet 3 of 6

I-5/El Toro Road Interchange Project
Alternative 2 Modeled Noise Barriers
12-ORA-5 PM 17.8/19.7
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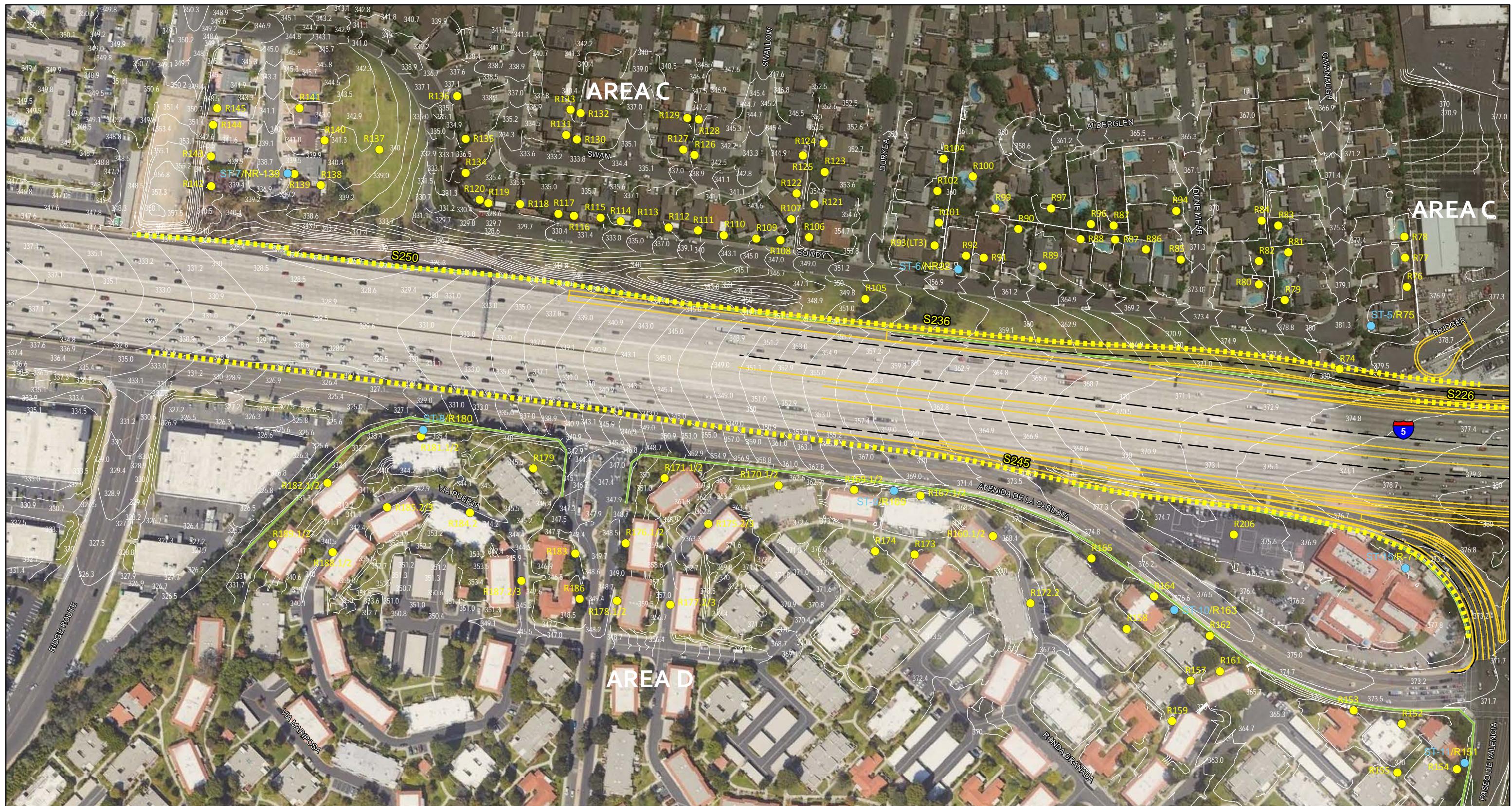
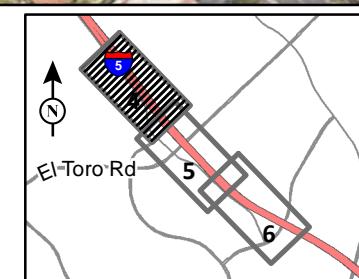


FIGURE 2.12-3
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I-5/El Toro Road Interchange Project
Alternative 4 Modeled Noise Barriers
12-ORA-5 PM 17.8/19.7
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LEGEND

- Short-Term Noise Measurement Locations (ST-#)
- Modeled Receptor Locations (R# or R#.#)
 - #/# Receptor Floor Levels
(i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Existing Soundwall or Property Wall
- Alternative 4 Improvements
- Lane Striping
- Modeled Noise Barrier Locations

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SOURCE: Google Earth (2018); Caltrans (12/18/2018)

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FIGURE 2.12-3
Sheet 5 of 6

I-5/El Toro Road Interchange Project
Alternative 4 Modeled Noise Barriers
12-ORA-5 PM 17.8/19.7
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LEGEND

- Short-Term Noise Measurement Locations (ST-#)
- Modeled Receptor Locations (R# or R#.#)
 - #/# Receptor Floor Levels
(i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Existing Soundwall or Property Wall
- Alternative 4 Improvements
- Lane Striping
- Modeled Noise Barrier Locations

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SOURCE: Google Earth (2018); Caltrans (12/18/2018)

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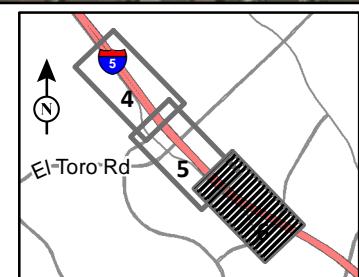


FIGURE 2.12-3
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Category E), and a utility company (El Toro Water District—Activity Category F). The terrain in this area varies in elevation ranging from approximately 15 feet (ft) below and 20 ft above the freeway. Several homes in the single-family residential land use area also have frequent human use receptors in their front yards which face the freeway; however, an existing soundwall (masonry block wall), ranging from 12 feet to 16 feet high, is between these land uses and the freeway. This wall is at the State's right-of-way (ROW) (along the edge of shoulder of northbound I-5) and currently shields traffic noise from the freeway.

- **Area B, Southbound I-5 between Los Alisos Boulevard and El Toro Road:** Area B is located on the west side of southbound I-5 between Los Alisos Boulevard and El Toro Road. The land uses in this area consists of multifamily residences (Activity Category B), commercial, retail, restaurants, and offices (Activity Category E). The terrain in this area varies in elevation ranging from approximately 20 ft below and 12 ft above the freeway. At the southwest portion of the Area B, the multifamily residences include the Reata Apartments and Sofi Laguna Hills townhomes community. Receptors at certain locations of the apartments and townhomes were placed and modeled because of balconies that are considered frequent human use areas. In addition, there are several restaurants with outdoor eating areas in this Area B that called for evaluation. A major portion of the land use area is the existing Laguna Hills Mall, which is being partially demolished for future renovations under the name of Five Lagunas. A few receptors were modeled along the edge of the current mall and are categorized as Activity Category E until further development. There are no existing soundwalls along the freeway in this area.
- **Area C, Northbound I-5 between El Toro Road and Ridge Route Drive:** Area C is on the east side of northbound I-5 between El Toro Road and Ridge Route Drive. The terrain in this area varies in elevation from approximately 15 ft below and 20 ft above the freeway. The land uses in this area is composed mostly of single-family residences (Activity Category B) to the north and a small portion of commercial use (restaurants with outdoor seating areas—Activity Category E) to the south of the Area C. There is a mini park (Activity Category C), named Cavanaugh Mini Park, and an adjacent open space between the homes along Gowdy Avenue and the freeway (Activity Category C). The park and single-family residences are shielded with an existing 16-ft high soundwall (masonry block wall) at the State's ROW and along the right edge of the northbound side of the freeway.
- **Area D, Southbound I-5 between El Toro Road and Ridge Route Drive:** Area D is on the west side of southbound I-5 between El Toro Road and Ridge Route Drive. The land uses in this area are composed of the single-family residences (Activity Category B) of Laguna Woods Village, St. George's Episcopal Church and Pathway School (Activity Categories C and D), and small commercial retail area (Activity Category E) to the south. The terrain in this area varies in elevation ranging from approximately 20 ft below and 40 ft above the freeway. Currently, there exists a 16 ft high soundwall (masonry block wall) which is between the

church/school and the freeway at the State's ROW and along the right edge of shoulder-of the I-5 southbound off-ramp to Avenida De La Carlota/Paseo De Valencia. The boundary of the Laguna Woods Village along Avenida De La Carlota, which faces the freeway, has existing property walls with heights ranging from 8 ft to 15 ft. These property walls also help to shield existing traffic noise from the freeway and adjacent local traffic.

2.12.2.2 Existing Noise Level Measurements

The existing noise environment in the Study Area adjacent to the project limits is described below based on short- and long-term noise measurements that were conducted at the representative receptor locations. Both short- and previous long-term noise monitoring and modeled receptor locations are shown on Figure 2.12-3.

Short-Term Noise Level Measurements

The primary source of noise in the Study Area adjacent to the project limits is traffic on I-5. Short-term (15-minute¹) ambient noise measurements were conducted on February 12, 2018, and February 15, 2018, using a Larson Davis Model 812 Type 1 sound level meter (Serial No. A0523), to document existing noise levels at 15 representative receptor locations along the project corridor, to calibrate the noise model, and to predict the noise levels at 230 receptor locations classified as Activity Categories B, C, D, E, F, and non-receptor locations in the Study Area adjacent to the project limits during off-peak traffic hours when traffic was free flowing. Table 2.12.2 contains the results of the 15 short-term noise level measurements conducted in the Study Area adjacent to the project limits.

Long-Term Noise Level Measurements

No long-term noise level measurements were conducted within the Study Area adjacent to the project limits during the week when the short-term noise level measurements were conducted. A previous long-term noise measurement for the I-5 Widening Project from SR-73 to El Toro Road (EA 0K0200) was conducted on the northbound side of I-5 at the single-family residence backyard (Receptor 93) at 23612 Duryea Road, Lake Forest, 92630 from 10:00 AM on Wednesday, July 18, 2012, to 9:00 AM on Thursday, July 19, 2012. Data from the nearby project, was used to describe the sound levels throughout the day rather than absolute levels at specific receptor locations within the same Study Area adjacent to the project limits.² Table 2.12.3 contains the results of previous long-term noise level measurements conducted at Location LT3/R93 in July 2012. LT3 is referenced at the same location as receptor R93.

¹ Fifteen short-term measurements were taken at 15 minutes each.

² No project improvements in the Study Area have taken place since the 2012 measurements for this specific project; therefore, the noise environment has stayed the same and is applicable to the proposed project.

Table 2.12.2: Short-Term Noise Level Measurements

Measurement No.	Date	Start Time	Duration (Mins)	Measured Noise Level (dBA L _{eq})	Location and Description	Noise Source	Comments
ST1	02/12/2018	10:02	15	69.7	24581 Bridger Rd, Lake Forest, 92630; SFR	Traffic on I-5 and Avenida De La Carlota	Front yard receptor. Shielded by 14 ft high soundwall.
ST2	02/12/2018	10:30	15	68.1	24461 Bridger Rd, Lake Forest, 92630; SFR	Traffic on I-5 and Avenida De La Carlota	Front yard receptor. Shielded by 13 ft high soundwall.
ST3	02/12/2018	10:56	15	68.7	24298 Bridger Rd, Lake Forest, 92630; SFR	Traffic on I-5 and Avenida De La Carlota	Front yard receptor. Shielded by 14 ft high soundwall.
ST4	02/12/2018	12:19	15	70.2	24288 Swartz Dr, Lake Forest, 92630; restaurant	Traffic on I-5, ramps, El Toro Rd, and Avenida De Carlota	Outdoor eating area receptor. No wall to shield traffic noise.
ST5	02/12/2018	12:50	15	67.7	23762 Cavanaugh Rd, Lake Forest, 92630; SFR	Traffic on I-5 and ramps	Front yard receptor. Shielded by 10 ft high soundwall and building.
ST6	02/12/2018	13:16	15	67.1	23911 Gowdy Ave, Lake Forest, 92630; SFR	Traffic on I-5 and Avenida De La Carlota	Front yard receptor. Shielded by 16 ft high soundwall on top of retaining wall.
ST7	02/12/2018	13:40	15	64.7	23422 Red Robin Way, Lake Forest, 92630; SFR	Traffic on I-5 and Avenida De La Carlota	Front yard receptor. Shielded by 16 ft high soundwall on top of retaining wall and 7 ft high property wall.
ST8	02/15/2018	09:34	15	71.6	2233-A Via Puerta, Laguna Woods, 92637; MFR	Traffic on I-5 and Avenida De La Carlota	At walkway in front 1st floor patio and 2nd floor balcony receptors and shielded by 15 ft high property wall.
ST9	02/15/2018	10:04	15	66.1	2121-A Ronda Granada, Laguna Woods, 92637; MFR	Traffic on I-5 and Avenida De La Carlota	At walkway in front 1st floor patio and 2nd floor balcony receptors and shielded by 15 ft high property wall.

Table 2.12.2: Short-Term Noise Level Measurements

Measurement No.	Date	Start Time	Duration (Mins)	Measured Noise Level (dBA L _{eq})	Location and Description	Noise Source	Comments
ST10	02/15/2018	10:29	15	57.6	2150 Ronda Granada, Laguna Woods, 92637; MFR	Traffic on I-5, ramps, and Avenida De Carlota	In side yard in front of 1st floor patio and 2nd floor balcony receptors and shielded by 8 ft high property wall.
ST11	02/15/2018	11:06	15	58.0	2077 Ronda Granada, Laguna Woods CA 92637; MFR	Traffic on I-5, ramps, and Avenida De Carlota	Walkway in front of patio receptor and shielded by 8 ft high property wall.
ST12	02/15/2018	12:21	15	66.7	24001 (A) Avenida De La Carlota, Laguna Hills, 92653; restaurant	Traffic on I-5, ramps, El Toro Rd, and Avenida De Carlota	At sidewalk in front of outdoor eating area receptor. No existing soundwall to shield traffic noise.
ST13	02/15/2018	12:47	15	67.8	24200 Laguna Hills Mall, Laguna Hills, CA 92653; commercial retail	Traffic on I-5, ramps and Avenida De La Carlota	No existing soundwall to shield traffic noise.
ST14	02/15/2018	13:12	15	72.3	24301 Avenida De La Carlota, Laguna Hills, 92653; restaurant	Traffic on I-5 and Avenida De La Carlota	No existing soundwall to shield traffic noise.
ST15	02/15/2018	13:43	15	68.5	23802 Avenida De La Carlota, Laguna Hills, CA 92653; church and school	Traffic on I-5, ramps, and Avenida De Carlota	At back of school's day care center receptor. Shielded by 16 ft high soundwall.

Source: *Noise Study Report* (December 2018).

dBA = A-weighted decibels

I-5 = Interstate 5

L_{eq} = equivalent continuous sound level

SFR = Single-Family Residence

MFR = Multifamily Residence

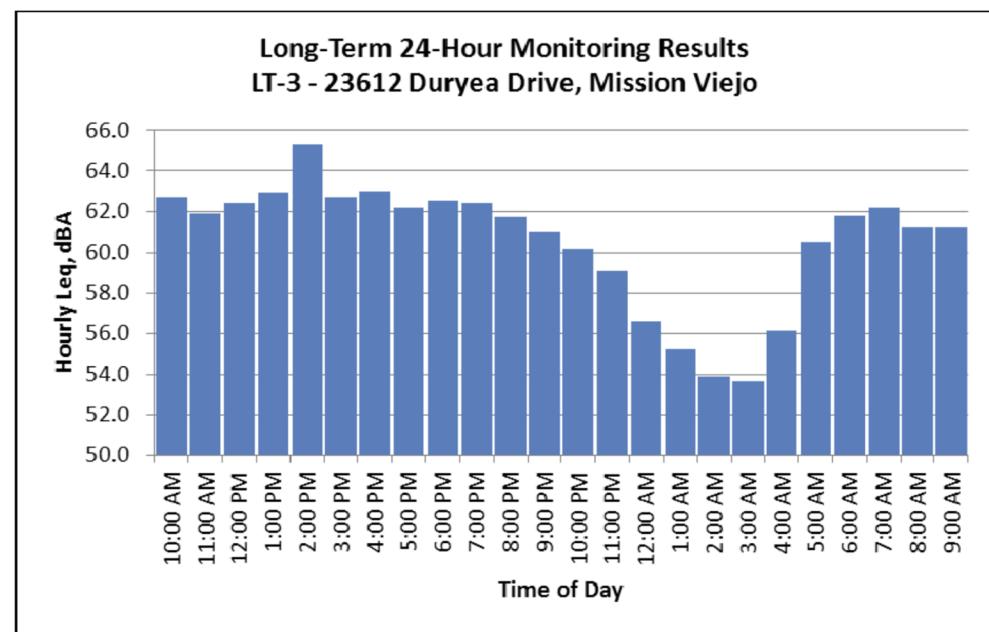
ft = feet

**Table 2.12.3: Long-Term 24-Hour Noise Level Measurement at
Location LT3/R93 (23612 Duryea Drive, Lake Forest)**

	Start Time	Date	Noise Level (dBA L _{eq})
1	10:00 AM	7/18/2012	62.7
2	11:00 AM	7/18/2012	61.9
3	12:00 AM	7/18/2012	62.4
4	1:00 PM	7/18/2012	62.9
5	2:00 PM	7/18/2012	65.3¹
6	3:00 PM	7/18/2012	62.7
7	4:00 PM	7/18/2012	63.0
8	5:00 PM	7/18/2012	62.2
9	6:00 PM	7/18/2012	62.5
10	7:00 PM	7/18/2012	62.4
11	8:00 PM	7/18/2012	61.7
12	9:00 PM	7/18/2012	61.0
13	10:00 PM	7/18/2012	60.2
14	11:00 PM	7/18/2012	59.1
15	12:00 PM	7/19/2012	56.6
16	1:00 AM	7/19/2012	55.2
17	2:00 AM	7/19/2012	53.9
18	3:00 AM	7/19/2012	53.7
19	4:00 AM	7/19/2012	56.1
20	5:00 AM	7/19/2012	60.5
21	6:00 AM	7/19/2012	61.8
22	7:00 AM	7/19/2012	62.2
23	8:00 AM	7/19/2012	61.2
24	9:00 AM	7/19/2012	61.2

Source: I-5 Widening Project Noise Study Report (April 2013). ¹Bold number represents peak traffic noise hour.

dBA L_{eq} = equivalent continuous sound level measured in A-weighted decibels.



Existing Noise Levels

Traffic volume counts and average vehicle speeds during the ambient noise monitoring were coded into Traffic Noise Model (TNM) 2.5 with existing roadway conditions to calibrate the modeling result. The results of the existing traffic noise modeling are shown in Table 2.12.4. Currently, of the 230 modeled receptor locations, 109 receptors approach or exceed the NAC. Figure 2.12-3 shows the locations of the modeled receptors.

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R1	Daleview St., Lake Forest, CA	Utility	1	F	70.3
R2	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	72.4
R3	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	64.5
R4	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	65.0
R5	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	66.6
R6	Lakewood Ln., Lake Forest, CA	Residential	1	B (67)	61.8
R7	Lakewood Ln., Lake Forest, CA	Residential	1	B (67)	62.0
R8	Lakewood Ln., Lake Forest, CA	Residential	1	B (67)	62.6
R9	Lakewood Ln., Lake Forest, CA	Residential	1	B (67)	63.5
R10	Lakewood Ln., Lake Forest, CA	Residential	1	B (67)	65.3
R11	Lakewood Ln., Lake Forest, CA	Residential	1	B (67)	65.7
R12 ²	NOT USED				
R13 ²	NOT USED				
R14/ST1	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	72.0
R15	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	72.2
R16	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	73.6
R17	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	63.9
R18	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	72.1
R19	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	71.0
R20	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	70.6
R21	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	69.7
R22	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	63.4

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R23	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	66.1
R24	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	69.8
R25	Ankerton Dr., Lake Forest, CA	Residential	1	B (67)	64.7
R26	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	66.2
R27	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.6
R28	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.7
R29	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	64.7
R30	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	64.4
R31	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.4
R32	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.6
R33/ST2	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	70.3
R34	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	63.7
R35	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	71.6
R36	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	63.9
R37	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	72.5
R38	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	64.4
R39	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	64.6
R40	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	71.5
R41	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	70.9
R42	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	71.0
R43/ST3	Bridger Rd., Lake Forest, CA	Residential	1	B (67)	71.5
R44	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	66.3
R45	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.4
R46	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.2
R47	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.6
R48	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.5

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R49	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.7
R50	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.5
R51	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.7
R52	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	65.9
R53	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	66.5
R54	Highpine Rd., Lake Forest, CA	Residential	1	B (67)	68.2
R55 R56	Silverbay Dr., Lake Forest, CA	Residential	1	B (67)	70.2
R56	Silverbay Dr., Lake Forest, CA	Residential	1	B (67)	69.6
R57	Silverbay Dr., Lake Forest, CA	Residential	1	B (67)	66.1
R58 ²	NOT USED				
R59/ST4	Swartz Dr., Lake Forest, CA	Commercial	1	E (72)	72.1
R60	Swartz Dr., Lake Forest, CA	Commercial	1	E (72)	69.1
R61	Avenida De La Carlota, Laguna Hills, CA	Office	1	E (72)	75.3
R62.2	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	73.7
R62.3	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	74.8
R62.4	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	75.4
R62.5	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	75.7
R63	Avenida De La Carlota, Laguna Hills, CA	Restaurant	1	E (72)	70.4
NR63/ST14	Avenida De La Carlota, Laguna Hills, CA	(Sidewalk)			72.5
R64	Avenida De La Carlota, Laguna Hills, CA	Restaurant	1	E (72)	64.8
R65	Laguna Hills Mall, Laguna Hills, CA	Commercial	1	E (72)	67.2
R66/ST13	Laguna Hills Mall, Laguna Hills, CA	Commercial	1	E (72)	68.7
R67	Laguna Hills Mall, Laguna Hills, CA	Restaurant	1	E (72)	64.7

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R68	Avenida De La Carlota, Laguna Hills, CA	Restaurant	1	E (72)	64.8
R69	Avenida De La Carlota, Laguna Hills, CA	Restaurant	1	E (72)	65.8
NR69/ST12	Avenida De La Carlota, Laguna Hills, CA	(Sidewalk)			65.7
R70 ²		NOT USED			
R71	Avenida De La Carlota, Laguna Hills, CA	CH/SCH/DC ¹	1	C(67)	70
R72	Bridger Rd., Lake Forest, CA	Restaurant	1	E (72)	72.4
R73	Bridger Rd., Lake Forest, CA	Restaurant	1	E (72)	76.5
R74	Cavanaugh Rd., Lake Forest, CA	Park/Sport	1	C (67)	71.6
R75/ST5	Cavanaugh Rd., Lake Forest, CA	Residential	1	B (67)	69.7
R76	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	67.9
R77	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	63.6
R78	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	61.8
R79	Cavanaugh Rd., Lake Forest, CA	Residential	1	B (67)	68.5
R80	Dune Mear Rd., Lake Forest, CA	Residential	1	B (67)	63.5
R81	Cavanaugh Rd., Lake Forest, CA	Residential	1	B (67)	63.7
R82	Dune Mear Rd., Lake Forest, CA	Residential	1	B (67)	62.3
R83	Cavanaugh Rd., Lake Forest, CA	Residential	1	B (67)	62.3
R84	Dune Mear Rd., Lake Forest, CA	Residential	1	B (67)	60.8
R85	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	61.3
R86	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	59.6
R87	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	59.0
R88	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	58.6
R89	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	67.2
R90	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	59.2
R91	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	67.0

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R92	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	67.0
NR92/ST6	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	67.3
R93	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.9
R94	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	60.3
R95	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	59.0
R96	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	58.5
R97	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	58.6
R98	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	69.1
R99	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	60.5
R100	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	61.4
R101	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	63.3
R102	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	61.3
R103 ²	NOT USED				
R104	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	61.5
R105	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	68.6
R106	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	68.3
R107	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.9
R108	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	63.2
R109	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.7
R110	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	66.9
R111	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	67.6
R112	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.9
R113	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	67.4
R114	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	66.4
R115	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	66.4
R116	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.6
R117	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	66.5

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R118	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.8
R119	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.2
R120	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.1
R121	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	66.5
R122	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.2
R123	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.3
R124	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.3
R125	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.3
R126	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.4
R127	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.0
R128	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.9
R129	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.6
R130	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.5
R131	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.0
R132	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.0
R133	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.1
R134	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	65.4
R135	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.4
R136	Gowdy Ave., Lake Forest, CA	Residential	1	B (67)	64.0
R137	Gowdy Ave., Lake Forest, CA	Park	1	C (67)	67.2
R138	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	65.2
R139	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	64.3
NR139/ST7	Red Robin Ln., Lake Forest, CA	Sidewalk			63.8
R140	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	63.4
R141	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	64.7
R142	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	65.8

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R143	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	65.4
R144	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	65.6
R145	Red Robin Ln., Lake Forest, CA	Residential	1	B (67)	64.7
R146	Avenida De La Carlota, Laguna Hills, CA	Restaurant	1	E (72)	76.1
R147	Avenida De La Carlota, Laguna Hills, CA	Restaurant	1	E (72)	72.3
R148	El Toro Rd., Laguna Hills, CA	Restaurant	1	E (72)	66.5
R149	El Toro Rd., Laguna Hills, CA	Motel Pool	1	E (72)	64.3
R150 ²	NOT USED				
R151/ST11	Ronda Granada, Laguna Woods CA	Residential	3	B (67)	55.5
R152	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	54.6
R153	Ronda Granada, Laguna Woods CA	Residential	1	B (67)	51.1
R154	Ronda Granada, Laguna Woods CA	Residential	1	B (67)	54.9
R155	Ronda Granada, Laguna Woods CA	Residential	1	B (67)	52.0
R156	Ronda Granada, Laguna Woods CA	Residential	1	B (67)	51.9
R157	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	52.3
R158	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	54.0
R159	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	52.0
R160.1	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	63.0
R160.2	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	68.9
R161	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	53.7
R162	Ronda Granada, Laguna Woods CA	Residential	1	B (67)	53.8
R163/ST10	Ronda Granada, Laguna Woods CA	Residential		B (67)	54.8
R164	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	55.8
R165	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	57.6
R166 ²	NOT USED				
R167.1	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	64.7

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R167.2	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	78.0
R168 ²	NOT USED				
R169.1	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	65.5
R169.2	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	77.5
NR169/ST9	Ronda Granada, Laguna Woods CA	Walkway			64.8
R170.1	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	67.1
R170.2	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	78.7
R171.1	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	66.0
R171.2	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	76.5
R172.2	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	61.9
R173	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	62.7
R174	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	62.7
R175.2	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	71.1
R175.3	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	76.2
R176.1	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	67.0
R176.2	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	69.9
R177.2	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	60.0
R177.3	Ronda Granada, Laguna Woods CA	Residential	4	B (67)	67.2
R178.1	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	62.7
R178.2	Ronda Granada, Laguna Woods CA	Residential	2	B (67)	66.0
R179	Via Puerta, Laguna Woods CA	Residential	4	B (67)	71.3
R180/ST8	Via Puerta, Laguna Woods CA	Walkway			68.6
R181.1	Via Puerta, Laguna Woods CA	Residential	4	B (67)	70.3
R181.2	Via Puerta, Laguna Woods CA	Residential	4	B (67)	81.7
R182.1	Via Puerta, Laguna Woods CA	Residential	2	B (67)	65.8
R182.2	Via Puerta, Laguna Woods CA	Residential	2	B (67)	76.1
R183	Via Puerta, Laguna Woods CA	Residential	2	B (67)	70.0

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R184.2	Via Puerta, Laguna Woods CA	Residential	4	B (67)	72.7
R185.2	Via Puerta, Laguna Woods CA	Residential	2	B (67)	74.8
R185.3	Via Puerta, Laguna Woods CA	Residential	2	B (67)	77.6
R186	Via Puerta, Laguna Woods CA	Residential	1	B (67)	65.9
R187.2	Via Puerta, Laguna Woods CA	Residential	2	B (67)	64.5
R187.3	Via Puerta, Laguna Woods CA	Residential	2	B (67)	71.5
R188.2	Via Puerta, Laguna Woods CA	Residential	4	B (67)	66.0
R188.3	Via Puerta, Laguna Woods CA	Residential	4	B (67)	73.2
R189.1	Via Puerta, Laguna Woods CA	Residential	2	B (67)	65.3
R189.2	Via Puerta, Laguna Woods CA	Residential	2	B (67)	68.8
R190 ²		NOT USED			
R191 ²		NOT USED			
R192 ²		NOT USED			
R193 ²		NOT USED			
R194 ²		NOT USED			
R195 ²		NOT USED			
R196 ²		NOT USED			
R197 ²		NOT USED			
R198 ²		NOT USED			
R199 ²		NOT USED			
R200 ²		NOT USED			
R201	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	61.7
R202	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	62.1
R203.2	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	71.5
R203.3	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	72.6
R203.4	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	73.3
R203.5	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	73.8
R204.2	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	70.2

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R204.3	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	71.2
R204.4	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	72.3
R204.5	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	72.7
R205.2	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	71.4
R205.3	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	72.5
R205.4	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	73.1
R205.5	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	73.6
R206	Avenida De La Carlota, Laguna Hills, CA	Sport Area	2	C (67)	67.8
R207 ²	NOT USED				
R208.2	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	74.1
R208.3	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	75
R208.4	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	75.6
R208.5	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	75.8
R209.2	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	72.8
R209.3	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	73.8
R209.4	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	74.4
R209.5	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	74.7
R210.2	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	72.1

Table 2.12.4: Existing Traffic Noise Levels

Receptor No.	General Location or Address	Type of Land Use	No. of Units Represented	Noise Abatement Category and Criterion	Existing Levels (dBA, L _{eq} [h])
R210.3	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	73.2
R210.4	Avenida De La Carlota, Laguna Hills, CA	Residential	1	B (67)	73.8
R211.2	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	67.9
R211.3	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	69.1
R211.4	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	70
R211.5	Avenida De La Carlota, Laguna Hills, CA	Residential	2	B (67)	70.7

Source: Noise Study Report (December 2018).

Numbers in **bold** represent noise levels that approach or exceed the Noise Abatement Criteria (NAC).

¹ CHC/SCH/DC = Church/School/Day Care at St. George's Episcopal Church

² These receptors were eliminated from the noise model as project alternatives were still changing during their development.

dBA = A-weighted decibels

L_{eq}(h) = 1-hour equivalent sound level

2.12.3 Environmental Consequences

The Build Alternatives (including Design Option B) are considered a Type 1 project because they involve the addition of a collector/distributor road, an auxiliary lane and the relocation of interchange lanes or ramps on the existing interchange at I-5 and El Toro Road, depending on which Build Alternative is identified. A noise analysis is required for all Type 1 projects; therefore, noise impacts of the Build Alternatives (including Design Option B) are analyzed below.

2.12.3.1 Temporary Construction Noise Impacts

Build Alternatives (Alternatives 2 and 4 [including Design Option B])

Two types of short-term noise impacts would occur during construction of the Build Alternatives. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site and would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved on site, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the vicinity of the project limits. A high single-event noise exposure potential would exist at a maximum level of 88 A-weighted decibel (dBA) maximum instantaneous noise level (L_{max}) at a distance of 50 ft from trucks passing.

However, the projected construction traffic would be minimal when compared to existing traffic volumes on I-5, and its associated long-term noise level change would not be perceptible. Therefore, short-term construction-related worker commutes and equipment transport noise impacts would be less than substantial.

The second type of short-term noise impact is related to noise generated during roadway construction. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated and the noise levels in the Study Area adjacent to the project limits as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

Table 2.12.5 lists typical construction equipment noise level (L_{max}) recommended for noise impact assessments, based on a distance of 50 ft between the equipment and a noise receptor.

Table 2.12.5: Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels (dBA L_{max} at 50 ft)	Suggested Maximum Sound Levels for Analysis (dBA L_{max} at 50 ft)
Pile drivers	95–101	101
Rock drills	83–99	96
Jackhammers	85–89	89
Pneumatic tools	78–88	85
Pumps	74–84	81
Scrapers	83–91	87
Haul trucks	83–94	88
Cranes	79–86	82
Portable generators	71–87	80
Rollers	75–82	80
Dozers	77–90	85
Tractors	77–84	84
Front-end loaders	77–90	86
Hydraulic backhoe	81–90	86
Hydraulic excavators	81–90	86
Graders	79–89	86
Air Compressors	76–89	86
Trucks	81–87	86

Source: Federal Highway Administration Construction Noise Handbook (August 2006)

dBA = A weighted decibels

ft = feet

L_{max} = maximum instantaneous noise level

Typical noise levels at 50 ft from an active construction area range up to 86 dBA L_{max} during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery (e.g., backfillers, bulldozers, and front loaders). Earthmoving and compacting equipment includes compactors, scrapers, and graders.

The construction of the Build Alternatives (including Design Option B) is expected to require the use of earthmovers, bulldozers, water trucks, and pickup trucks. Noise associated with the use of construction equipment is estimated to be between 75 and 84 dBA L_{max} at a distance of 50 ft from the active construction area for the grading phase. As seen in Table 2.12.5, the maximum noise level generated by each scraper is assumed to be approximately 84 dBA L L_{max} at 50 ft from the scraper in operation.

Each bulldozer would generate approximately 82 dBA L_{max} at 50 ft. The maximum noise level generated by water trucks and pickup trucks is approximately 75 dBA L_{max} at 50 ft from these vehicles. Each doubling of the sound source with equal strength increases the noise level by approximately 3 dBA. Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest residence during this phase of construction would be 86 dBA L_{max} (at a distance of 50 ft from an active construction area).

The closest sensitive receptors are within 50 ft of construction areas for each Build Alternative. Sensitive receptor locations may be subject to short-term noise higher than 86 dBA L_{max} generated by construction activities along the alignment of the Build Alternatives. Project Feature PF-N-1 requires compliance with Caltrans' Standard Specifications Section 14-8.02 (2018) and would minimize construction noise impacts on sensitive land uses adjacent to the project limits. The noise level from the contractor's operations between the hours of 9:00 PM and 6:00 AM will not exceed 86 dBA L_{max} at a distance of 50 ft.

PF-N-1 Caltrans Standard Specifications Section 14.8-02: Control and monitor noise resulting from work activities. Do not exceed 86 dBA L_{max} at 50 ft from the job site from 9 PM to 6 AM.

No Build Alternative

The No Build Alternative would not result in the construction of improvements within the Study Area within project limits and, therefore, would not result in temporary noise effects.

2.12.3.2 Permanent Impacts

Potential long-term noise impacts associated with operation of the Build Alternatives are compared to existing condition and to future no build condition. Tables 2.12.6 and 2.12.7 summarize the traffic noise modeling results for existing condition, future no build condition (No Build Alternative), and proposed future project build condition of Build Alternatives 2, 4, and 4 with Design Option B. Design Option B under Alternative 4 was not evaluated separately, because the predicted traffic noise levels are expected to be equal to or less than Build Alternatives 2 and 4. Locations and lengths of the potential noise barriers are shown in Figure 2.12-3 and Tables 2.12.6 and 2.12.7.

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq}(h)$, dBA	Future No Build $L_{eq}(h)$, dBA	Future Build $L_{eq}(h)$, dBA	Future No-Build minus Existing Condition $L_{eq}(h)$, dBA	Future Build minus Existing Condition $L_{eq}(h)$, dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - $L_{eq}(h)$																
														Noise Level Prediction with Barrier [$L_{eq}(h)$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																
														6 Feet		8 Feet		10 Feet		12 Feet		14 Feet		16 Feet		18 Feet		20 Feet		22 Feet
R1	A	S198	16.0	UC	1	Daleview St, LF	70.3	70.6	70.6	0.3	0.3	F	NO	λ_2	$\sim L_{eq}(h)$	$\sim I.L.$	$\sim NBR$	$\sim L_{eq}(h)$	$\sim I.L.$	$\sim NBR$	$\sim L_{eq}(h)$	$\sim I.L.$	$\sim NBR$	$\sim L_{eq}(h)$	$\sim I.L.$	$\sim NBR$	$\sim L_{eq}(h)$	$\sim I.L.$	$\sim NBR$	
R2	A			SFR	1	Bridger Rd, LF	72.4 ³	73.1	73.1	0.7	0.7	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R3	A			SFR	1	Bridger Rd, LF	64.5	64.9	65	0.4	0.5	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R4	A			SFR	1	Bridger Rd, LF	65	65.6	65.7	0.6	0.7	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R5	A			SFR	1	Bridger Rd, LF	66.6	66.8	66.8	0.2	0.2	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R6	A			SFR	1	Lakewood Ln, LF	61.8	62.5	62.5	0.7	0.7	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R7	A			SFR	1	Lakewood Ln, LF	62	62.6	62.7	0.6	0.7	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R8	A			SFR	1	Lakewood Ln, LF	62.6	63.3	63.3	0.7	0.7	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R9	A			SFR	1	Lakewood Ln, LF	63.5	63.9	64	0.4	0.5	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R10	A			SFR	1	Lakewood Ln, LF	65.3	65.8	65.8	0.5	0.5	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R11	A			SFR	1	Lakewood Ln, LF	65.7	66.3	66.3	0.6	0.6	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R12				NOT USED										\sim		\sim		\sim		\sim		\sim		\sim		\sim				
R13				NOT USED										\sim		\sim		\sim		\sim		\sim		\sim		\sim				
R14/ST1	A			SFR	1	Bridger Rd, LF	72	72.4	72.4	0.4	0.4	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R15	A			SFR	1	Bridger Rd, LF	72.2	72.4	72.5	0.2	0.3	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R16	A			SFR	1	Bridger Rd, LF	73.6	74.1	74.1	0.5	0.5	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R17	A			SFR	1	Bridger Rd, LF	63.9	64.6	64.6	0.7	0.7	B (67)	NO	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R18	A			SFR	1	Bridger Rd, LF	72.1	72.3	72.3	0.2	0.2	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R19	A			SFR	1	Bridger Rd, LF	71	71.6	71.7	0.6	0.7	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R20	A			SFR	1	Bridger Rd, LF	70.6	70.9	71	0.3	0.4	B (67)	A/E	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim	\sim
R21	A			SFR	1	Bridger Rd, LF	69.7	70</																						

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

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Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	Future No Build L _{eq(h)} , dBA	Future Build L _{eq(h)} , dBA	Future No-Build minus Existing Condition L _{eq(h)} , dBA	Future Build minus Existing Condition L _{eq(h)} , dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}												Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
														6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	L _{eq(h)}	I.L.	NBR	L _{eq(h)}	I.L.	NBR						
R71	D	S229	14.0	SCH	1	A DL Carlota, LH	70/45 ⁵	70.4/45.4	70.4/45.4	0.4	0.4	C (67)/D (52)	A/E	~	~	~	~	~	~	~	~	~	~	70.4/50.4	0	0	69.3/49.3	1.1	0	68.1/48.1	2.3	0	67.3/47.3	3.1	0	66.8/46.8	3.6	0		
R72	C	S226		RES	1	Bridger Rd, LF	72.4	72.6	74.3	0.2	1.9	E (72)	A/E	72.7	1.6	0	72.5	1.8	0	72.4	1.9	0	72.2	2.1	0	72.2	2.1	0	72.1	2.2	0	72.1	2.2	0	72	2.3	0			
R73	C			RES	1	Bridger Rd, LF	76.5	76.6	77.6	0.1	1.1	E (72)	A/E	73.1	4.5	0	72.7	4.9	0	72.1	5.5	1	71.6	6	1	71.3	6.3	1	71.1	6.5	1	71	6.6	1	70.9	6.7	1			
R74	C		REC	ELIMINATED	71.6	71.8	~	0.2	~	C (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	~	0	0	69.3/49.3	1.1	0	68.1/48.1	2.3	~	~	~	~	~				
R75/ST5	C		SFR	1	Cavanaugh Rd, LF	69.7	70	78.6	0.3	8.9	B (67)	A/E	72.5	6.1	1	71	7.6	1	69.8	8.8	1	68.6	10	1	67.1	11.5	1	65.9	12.7	1	65	13.6	1	64.3	14.3	1	63.7	14.9	1	
R76	C		SFR	1	Gowdy Ave, LF	67.9	68.4	69.9	0.5	2.0	B (67)	A/E	68.8	1.1	0	68.2	1.7	0	67.7	2.2	0	67	2.9	0	66.4	3.5	0	65.7	4.2	0	64.9	5	1	64.4	5.5	1	64	5.9	1	
R77	C		SFR	1	Gowdy Ave, LF	63.6	63.8	66.6	0.2	3.0	B (67)	A/E	65.5	1.1	0	65	1.6	0	64.5	2.1	0	63.9	2.7	0	63.3	3.3	0	62.8	3.8	0	62.1	4.5	0	61.1	5.5	1	60.7	5.9	1	
R78	C		SFR	1	Gowdy Ave, LF	61.8	62	64.9	0.2	3.1	B (67)	NO	63.9	1	0	63.5	1.4	0	63.1	1.8	0	62.4	2.5	0	61.9	3	0	61.3	3.6	0	60.7	4.2	0	59.7	5.2	1	59.1	5.8	1	
R79	C		SFR	1	Cavanaugh Rd, LF	68.5	68.9	78	0.4	9.5	B (67)	A/E	72.5	5.5	1	70.9	7.1	1	69.8	8.2	1	68.8	9.2	1	68	10	1	67	11	1	66	12	1	65.3	12.7	1	64.6	13.4	1	
R80	C		SFR	1	Dune Mear Rd, LF	63.5	63.9	69.9	0.4	6.4	B (67)	A/E	66.3	3.6	0	67	2.9	0	66.6	3.3	0	65.8	4.1	0	65.2	4.7	0	64.6	5.3	1	64	5.9	1	63.5	6.4	1	63	6.9	1	
R81	C		SFR	1	Cavanaugh Rd, LF	63.7	64	70.4	0.3	6.7	B (67)	A/E	67.5	2.9	0	66.8	3.6	0	66.1	4.3	0	65.3	5.1	1	64.6	5.8	1	64	6.4	1	63.3	7.1	1	62.7	7.7	1	62.1	8.3	1	
R82	C		SFR	1	Dune Mear Rd, LF	62.3	62.6	67.8	0.3	5.5	B (67)	A/E	64.7	3.1	0	65.4	2.4	0	64.8	3	0	64.2	3.6	0	63.6	4.2	0	63.1	4.7	0	62.5	5.3	1	62.1	5.7	1	61.6	6.2	1	
R83	C		SFR	1	Cavanaugh Rd, LF	62.3	62.6	67.7	0.3	5.4	B (67)	A/E	65.5	2.2	0	65.1	2.6	0	64.6	3.1	0	63.9	3.8	0	63.3	4.4	0	62.8	4.9	0	62.1	5.6	1	61.5	6.2	1	60.8	6.9	1	
R84	C		SFR	1	Dune Mear Rd, LF	60.8	61.1	66	0.3	5.2	B (67)	A/E	63.8	2.2	0	63.7	2.3	0	63.3	2.7	0	62.8	3.2	0	62.4	3.6	0	61.9	4.1	0	61.3	4.7	0	60.7	5.3	1	60.1	5.9	1	
R85	C		SFR	1	Gowdy Ave, LF	61.3	61.7	68.8	0.4	7.5	B (67)	A/E	65.4	3.4	0	64.9	3.9	0	64.2	4.6	0	63.5	5.3	1	62.7	6.1	1	61.8	7	1	61	7.8	1	60.2	8.6	1	59.7	9.1	1	
R86	C		SFR	1	Gowdy Ave, LF	59.6	60.2	65	0.6	5.4	B (67)	NO	64.1	0.9	0	63.6	1.4	0	62.7	2.3	0	61.9	3.1	0	60.9	4.1	0	59.9	5.1	1	58.9	6.1	1	58	7	1	57.5	7.5	1	
R87	C		SFR	1	Gowdy Ave, LF	59	59.5	64.5	0.5	5.5	B (67)	NO	63.9	0.6	0	63.4	1.1	0	62.5	2	0	61.8	2.7	0	60.6	3.9	0	59.5	5	1	58.5	6	1	57.7	6.8	1	57	7.5	1	
R88	C		SFR	1	Gowdy Ave, LF	58.6	59.2	64.4	0.6	5.8	B (67)	NO	63.8	0.6	0	63.2	1.2	0	62.4	2	0	61.6	2.8	0	60.5	3.9	0	59.3	5.1	1	58.2									

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	Future No Build L _{eq(h)} , dBA	Future Build L _{eq(h)} , dBA	Future No-Build minus Existing Condition L _{eq(h)} , dBA	Future Build minus Existing Condition L _{eq(h)} , dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}												Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)															
													6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	L _{eq(h)}	I.L.	NBR	L _{eq(h)}	I.L.	NBR							
R93	C	S236	16.0	SFR	1	Gowdy Ave, LF	64.9	65.2	72.4	0.3	7.5	B (67)	A/E	69.8	2.6	0	69	3.4	0	67.7	4.7	0	66.7	5.7	1	66.1	6.3	1	65.6	6.8	1	65.1	7.3	1	64.6	7.8	1	64.1	8.3	1
R94	C			SFR	1	Gowdy Ave, LF	60.3	60.7	66	0.4	5.7	B (67)	A/E	64.2	1.8	0	63.8	2.2	0	63.2	2.8	0	62.6	3.4	0	62	4	0	61.2	4.8	0	60.4	5.6	1	59.7	6.3	1	59.1	6.9	1
R95	C			SFR	1	Gowdy Ave, LF	59	59.6	64.9	0.6	5.9	B (67)	NO	63.9	1	0	63.4	1.5	0	62.6	2.3	0	61.9	3	0	60.9	4	0	59.8	5.1	1	58.8	6.1	1	58	6.9	1	57.5	7.4	1
R96	C			SFR	1	Gowdy Ave, LF	58.5	59.2	64.8	0.7	6.3	B (67)	NO	63.6	1.2	0	63	1.8	0	62.2	2.6	0	61.5	3.3	0	60.4	4.4	0	59.3	5.5	1	58.2	6.6	1	57.5	7.3	1	56.9	7.9	1
R97	C			SFR	1	Gowdy Ave, LF	58.6	59.2	64.9	0.6	6.3	B (67)	NO	63.5	1.4	0	62.9	2	0	62.1	2.8	0	61.4	3.5	0	60.5	4.4	0	59.5	5.4	1	58.6	6.3	1	57.9	7	1	57.4	7.5	1
R98	B	S191		RES	1	Gowdy Ave, LF	69.1	72.7	72.5	3.6	3.4	E (72)	A/E	69.6	2.9	0	69.1	3.4	0	68.7	3.8	0	68.4	4.1	0	68.3	4.2	0	68	4.5	0	68	4.5	0	67.9	4.6	0			
R99	C	S236	16.0	SFR	1	Gowdy Ave, LF	60.5	61	68.5	0.5	8.0	B (67)	A/E	64.9	3.6	0	64.3	4.2	0	63.5	5	1	62.7	5.8	1	61.9	6.6	1	61.1	7.4	1	60.2	8.3	1	59.6	8.9	1	59	9.5	1
R100	C			SFR	1	Gowdy Ave, LF	61.4	61.9	71.1	0.5	9.7	B (67)	A/E	66.4	4.7	0	65.5	5.6	1	64.7	6.4	1	63.5	7.6	1	62.8	8.3	1	62	9.1	1	61.2	9.9	1	60.5	10.6	1	59.9	11.2	1
R101	C			SFR	1	Gowdy Ave, LF	63.3	63.5	71.3	0.2	8.0	B (67)	A/E	68	3.3	0	67.1	4.2	0	66.1	5.2	1	64.9	6.4	1	64.2	7.1	1	63.6	7.7	1	63	8.3	1	62.4	8.9	1	61.8	9.5	1
R102	C			SFR	1	Gowdy Ave, LF	61.3	61.6	69.1	0.3	7.8	B (67)	A/E	65.9	3.2	0	65.3	3.8	0	64.5	4.6	0	63.1	6	1	62.3	6.8	1	61.7	7.4	1	61.1	8	1	60.5	8.6	1	60	9.1	1
R103						NOT USED																																		
R104	C	S236	16.0	SFR	1	Gowdy Ave, LF	61.5	61.9	69	0.4	7.5	B (67)	A/E	65.3	3.7	0	64.9	4.1	0	64.2	4.8	0	63.1	5.9	1	62.5	6.5	1	62.1	6.9	1	61.5	7.5	1	60.9	8.1	1	60.4	8.6	1
R105	C			PRK	1	Gowdy Ave, LF	68.6	68.9	82.4	0.3	13.8	C (67)	A/E	74.1	8.3	1	72.5	9.9	1	71.2	11.2	1	70.3	12.1	1	69.6	12.8	1	69	13.4	1	68.4	14	1	67.9	14.5	1	67.4	15	1
R106	C			SFR	1	Gowdy Ave, LF	68.3	68.8	79.4	0.5	11.1	B (67)	A/E	74.3	5.1	1	71.9	7.5	1	71	8.4	1	69.6	9.8	1	69	10.4	1	68.5	10.9	1	67.7	11.7	1	67	12.4	1	66.4	13	1
R107	C			SFR	1	Gowdy Ave, LF	64.9	65.4	71.7	0.5	6.8	B (67)	A/E	67.1	4.6	0	66.7	5	1	66.2	5.5	1	65.8	5.9	1	65.6	6.1	1	65.4	6.3	1	65	6.7	1	64.7	7	1	64.3	7.4	1
R108	C			SFR	1	Gowdy Ave, LF	63.2	63.7	71.3	0.5	8.1	B (67)	A/E	66.3	5	1	65.7	5.6	1	65.1	6.2	1	64.5	6.8	1	64.1	7.2	1	63.7	7.6	1	63.3	8	1	63.1	8.2	1	63	8.3	1
R109	C			SFR	1	Gowdy Ave, LF	64.7	65.2	72.6	0.5	7.9	B (67)	A/E	66.8	5.8																									

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq}(h)$, dBA	Future No Build $L_{eq}(h)$, dBA	Future Build $L_{eq}(h)$, dBA	Future No-Build minus Existing Condition $L_{eq}(h)$, dBA	Future Build minus Existing Condition $L_{eq}(h)$, dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - $L_{eq}(h)$																											
													Noise Level Prediction with Barrier [$L_{eq}(h)$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																											
													6 Feet		8 Feet		10 Feet		12 Feet		14 Feet		16 Feet		18 Feet		20 Feet		22 Feet											
R116	C	S250	16.0	SFR	1	Gowdy Ave, LF	65.6	66	73.6	0.4	8.0	B (67)	A/E	66.6	7	1	66.5	7.1	1	66.4	7.2	1	66.2	7.4	1	66.1	7.5	1	66	7.6	1	65.7	7.9	1	65.6	8	1	65.2	8.4	1
R117	C			SFR	1	Gowdy Ave, LF	66.5	67	73.4	0.5	6.9	B (67)	A/E	67.4	6	1	67.3	6.1	1	67.2	6.2	1	67.1	6.3	1	67	6.4	1	67	6.4	1	66.6	6.8	1	65.9	7.5	1	65.4	8	1
R118	C			SFR	1	Gowdy Ave, LF	64.8	65.3	72.5	0.5	7.7	B (67)	A/E	65.9	6.6	1	65.7	6.8	1	65.6	6.9	1	65.4	7.1	1	65.3	7.2	1	65.3	7.2	1	65.1	7.4	1						
R119	C			SFR	1	Gowdy Ave, LF	65.2	65.6	73	0.4	7.8	B (67)	A/E	66.2	6.8	1	66	7	1	65.9	7.1	1	65.8	7.2	1	65.7	7.3	1	65.6	7.4	1	64.8	8.2	1	64.5	8.5	1			
R120	C			SFR	1	Gowdy Ave, LF	65.1	65.5	72.8	0.4	7.7	B (67)	A/E	66.2	6.6	1	65.9	6.9	1	65.8	7	1	65.7	7.1	1	65.6	7.2	1	65	7.8	1	64.6	8.2	1	64.2	8.6	1			
R121	C	S236	16.0	SFR	1	Gowdy Ave, LF	66.5	67	76.6	0.5	10.1	B (67)	A/E	71	5.6	1	69.1	7.5	1	68.5	8.1	1	67.4	9.2	1	67.1	9.5	1	66.7	9.9	1	66	10.6	1	65.3	11.3	1	64.6	12	1
R122	C			SFR	1	Gowdy Ave, LF	65.2	65.7	72.7	0.5	7.5	B (67)	A/E	67.4	5.3	1	67	5.7	1	66.8	5.9	1	66.2	6.5	1	65.9	6.8	1	65.7	7	1	65	7.7	1	64.4	8.3	1	63.8	8.9	1
R123	C			SFR	1	Gowdy Ave, LF	65.3	65.8	74.4	0.5	9.1	B (67)	A/E	68.9	5.5	1	67.6	6.8	1	67.3	7.1	1	66.2	8.2	1	65.9	8.5	1	65.6	8.8	1	64.8	9.6	1	64.1	10.3	1	63.4	11	1
R124	C			SFR	1	Gowdy Ave, LF	64.3	64.8	73.2	0.5	8.9	B (67)	A/E	67.8	5.4	1	66.7	6.5	1	66.3	6.9	1	65.4	7.8	1	65	8.2	1	64.8	8.4	1	64.1	9.1	1	63.4	9.8	1			
R125	C			SFR	1	Gowdy Ave, LF	64.3	64.9	72.6	0.6	8.3	B (67)	A/E	66.6	6	1	66.5	6.1	1	66	6.6	1	65.2	7.4	1	64.9	7.7	1	64.7	7.9	1	64.1	8.5	1	63.4	9.2	1			
R126	C			SFR	1	Gowdy Ave, LF	65.4	65.9	74.7	0.5	9.3	B (67)	A/E	67.1	7.6	1	66.9	7.8	1	66.6	8.1	1	66.2	8.5	1	66	8.7	1	65.8	8.9	1	65.1	9.6	1	64.4	10.3	1	63.8	10.9	1
R127	C			SFR	1	Gowdy Ave, LF	65	65.5	73.3	0.5	8.3	B (67)	A/E	66.5	6.8	1	66.3	7	1	66.1	7.2	1	65.7	7.6	1	65.5	7.8	1	65.4	7.9	1	64.7	8.6	1	64.1	9.2	1	63.5	9.8	1
R128	C			SFR	1	Gowdy Ave, LF	64.9	65.3	74	0.4	9.1	B (67)	A/E	67.1	6.9	1	66.5	7.5	1	66.2	7.8	1	65.7	8.3	1	65.4	8.6	1	65.3	8.7	1	64.6	9.4	1	63.8	10.2	1	63.2	10.8	1
R129	C			SFR	1	Gowdy Ave, LF	64.6	65.1	73.7	0.5	9.1	B (67)	A/E	66.5	7.2	1	66.2	7.5	1	65.9	7.8	1	65.4	8.3	1	65.2	8.5	1	65	8.7	1	64.3	9.4	1	63.7	10	1	63	10.7	1
R130	C	S250	16.0	SFR	1	Gowdy Ave, LF	64.5	65	72.8	0.5	8.3	B (67)	A/E	65.6	7.2	1	65.5	7.3	1	65.4	7.4	1	65.2	7.6	1	65.1	7.7	1	65	7.8	1	64.4	8.4	1	63.7	9.1	1	63	9.8	1
R131	C			SFR	1	Gowdy Ave, LF	64	64.4	72	0.4	8.0	B (67)	A/E	65	7	1	64.9	7.1	1	64.8	7.2	1	64.6	7.4	1	64.5	7.5	1	64.4	7.6	1	64	8	1	63.4	8.6	1	62.7	9.3	1
R132	C			SFR	1	Gowdy Ave, LF	64	64.5	72.3	0.5	8.3	B (67)	A/E	65.4	6.9	1	65	7.3	1	64.9	7.4	1	64.7	7.6	1	64.5	7.8	1	64.4	7.9	1	63.7	8.6	1	63.1	9.2				

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq}(h)$, dBA	Future No Build $L_{eq}(h)$, dBA	Future Build $L_{eq}(h)$, dBA	Future No-Build minus Existing Condition $L_{eq}(h)$, dBA	Future Build minus Existing Condition $L_{eq}(h)$, dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - $L_{eq}(h)$																											
													Noise Level Prediction with Barrier [$L_{eq}(h)$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																											
													6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 Feet			
R139	C	S250	16.0	SFR	1	Red Robin Ln, LF	64.3	65.1	69.9	0.8	5.6	B (67)	A/E	65.2	4.7	0	65.2	4.7	0	65.1	4.8	0	65.1	4.8	0	65.1	4.8	0	64.6	5.3	1	65	4.9	0	65.5	4.4	0			
NR139/ ST7	C			NMS	1	Red Robin Ln, LF	63.8	64.7	69.6	0.9	5.8	B (67)	A/E	64.8	4.8	0	64.8	4.8	0	64.7	4.9	0	64.7	4.9	0	64.7	4.9	0	63.8	5.8	1	63.8	5.8	1	65.1	4.5	0			
R140	C			SFR	1	Red Robin Ln, LF	63.4	64.5	68.2	1.1	4.8	B (67)	A/E	64.7	3.5	0	64.6	3.6	0	64.5	3.7	0	64.5	3.7	0	64.5	3.7	0	64.4	3.8	0	64.3	3.9	0	63.5	4.7	0	62.8	5.4	1
R141	C			SFR	1	Red Robin Ln, LF	64.7	65.3	67.5	0.6	2.8	B (67)	A/E	65.4	2.1	0	65.3	2.2	0	65.3	2.2	0	65.4	2.1	0	65.3	2.2	0	65.2	2.3	0	64.2	3.3	0	63.4	4.1	0			
R142	C			SFR	1	Red Robin Ln, LF	65.8	66.5	70.7	0.7	4.9	B (67)	A/E	66.5	4.2	0	66.5	4.2	0	66.5	4.2	0	66.5	4.2	0	66.4	4.3	0	65.5	5.2	1	64.6	6.1	1	63.7	7	1			
R143	C			SFR	1	Red Robin Ln, LF	65.4	65.9	69.3	0.5	3.9	B (67)	A/E	66	3.3	0	66	3.3	0	65.9	3.4	0	65.8	3.5	0	65.8	3.5	0	65.9	3.4	0	65	4.3	0	64.2	5.1	1			
R144	C			SFR	1	Red Robin Ln, LF	65.6	66	68.7	0.4	3.1	B (67)	A/E	66.4	2.3	0	66.3	2.4	0	66.1	2.6	0	66.1	2.6	0	66	2.7	0	65.9	2.8	0	65	3.7	0	64.3	4.4	0	63.5	5.2	1
R145	C			SFR	1	Red Robin Ln, LF	64.7	65.1	68.2	0.4	3.5	B (67)	A/E	65.6	2.6	0	65.5	2.7	0	65.3	2.9	0	65.2	3	0	65.1	3.1	0	65	3.2	0	64.4	3.8	0	63.7	4.5	0	63	5.2	1
R146	D	S227	8.0	RES	1	A DL Carlota, LH	76.1	74.8	74.7	-1.3	-1.4	E (72)	A/E	72.1	2.6	0	71.2	3.5	0	70.6	4.1	0	70	4.7	0	69.6	5.1	1	69.3	5.4	1	69	5.7	1	68.8	5.9	1	68.6	6.1	1
R147	D			RES	1	A DL Carlota, LH	72.3	71.4	71.3	-0.9	-1.0	E (72)	A/E	69.2	2.1	0	68.5	2.8	0	67.5	3.8	0	66.8	4.5	1	66.2	5.1	1	65.9	5.4	1	65.6	5.7	1	65.3	6	1	65	6.3	1
R148	D			RES	1	El Toro Rd, LH	66.5	66.9	66.8	0.4	0.3	E (72)	NO	66	0.8	0	65.8	1	0	65.6	1.2	0	65.4	1.4	0	65.3	1.5	0	65.3	1.5	0	65.2	1.6	0	65.1	1.7	0	65.1	1.7	0
R149	D			MOT	1	El Toro Rd, LH	64.3	64.8	64.8	0.5	0.5	B (67)	NO	64.6	0.2	0	64.5	0.3	0	64.5	0.3	0	64.4	0.4	0	64.3	0.5	0	64.2	0.6	0	64.2	0.6	0	64.1	0.7	0	64.1	0.7	0
R150				NOT USED																																				
R151/ST11	D	S229	8.5	MFR	3	R Granada, LW	55.5	54.3	54.2	-1.2	-1.3	B (67)	NO	54.1	0.1	0	54.1	0.1	0	54.1	0.1	0	54.1	0.1	0	54.1	0.1	0	54	0.2	0	54	0.2	0	53.9	0.3	0	53.9	0.3	0
R152	D			MFR	2	R Granada, LW	54.6	53.9	54.1	-0.7	-0.5	B (67)	NO	53.8	0.3	0	53.7	0.4	0	53.7	0.4	0	53.7	0.4	0	53.6	0.5	0	53.6	0.5	0	53.4	0.7	0	53.3	0.8	0	53.1	1	0
R153	D			MFR	1	R Granada, LW	51.1	50.9	51.5	-0.2	0.4	B (67)	NO	50.8	0.7	0	50.7	0.8	0	50.7	0.8	0	50.6	0.9	0	50.6	0.9	0	50.4	1.1	0	50.3	1.2	0	50.1	1.4	0	49.9	1.6	0
R154	D	S229	8.5	MFR	1	R Granada, LW	54.9	54.4	54.5	-0.5	-0.4	B (67)	NO	54.3	0.2	0	54.3	0.2	0	54.3	0.2	0	54.3	0.2	0	54.2	0.3	0	54.2	0.3	0	54.1	0.4	0	54.1	0.4	0	54.1	0.4	0
R155	D			MFR	1	R Granada, LW	52	51.8	52.6	-0.2	0.6	B (67)	NO	51.8	0.8	0	51.7	0.9	0	51.7	0.9	0	51.6	1	0	51.6	1	0	51.5	1.										

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	Future No Build L _{eq(h)} , dBA	Future Build L _{eq(h)} , dBA	Future No-Build minus Existing Condition L _{eq(h)} , dBA	Future Build minus Existing Condition L _{eq(h)} , dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}												Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)															
													6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	L _{eq(h)}	I.L.	NBR	L _{eq(h)}	I.L.	NBR							
R161	D	S229	8.5	MFR	2	R Granada, LW	53.7	54	57.9	0.3	4.2	B (67)	NO	54.8	3.1	0	54.6	3.3	0	54.5	3.4	0	54.4	3.5	0	54.3	3.6	0	53.9	4	0	53.6	4.3	0	53.3	4.6	0	53	4.9	0
R162	D			MFR	1	R Granada, LW	53.8	54.2	56.3	0.4	2.5	B (67)	NO	54.1	2.2	0	53.9	2.4	0	53.7	2.6	0	53.6	2.7	0	53.5	2.8	0	53	3.3	0	52.6	3.7	0	52.3	4	0	51.9	4.4	0
NR163/ ST10	D			NMS		R Granada, LW	54.8	55.2	57.8	0.4	3.0	B (67)	NO	55.1	2.7	~	54.9	2.9	~	54.7	3.1	~	54.5	3.3	~	54.4	3.4	~	53.9	3.9	~	53.4	4.4	~	52.9	4.9	~	52.5	5.3	~
R164	D			MFR	4	R Granada, LW	55.8	56.3	59	0.5	3.2	B (67)	NO	56.2	2.8	0	55.9	3.1	0	55.7	3.3	0	55.5	3.5	0	55.4	3.6	0	54.8	4.2	0	54.3	4.7	0	53.7	5.3	4	53.2	5.8	4
R165	D	S235	8.0	MFR	4	R Granada, LW	57.6	58.2	60.3	0.6	2.7	B (67)	NO	57.7	2.6	0	57.6	2.7	0	57.3	3	0	57	3.3	0	56.7	3.6	0	56.2	4.1	0	55.6	4.7	0	55.3	5	4	54.9	5.4	4
R166	D			MFR		NOT USED								~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	
R167.1	D			MFR	4	R Granada, LW	64.7	65.1	64.8	0.4	0.1	B (67)	NO	62.8	2	0	61.3	3.5	0	59.5	5.3	4	58.2	6.6	4	57.5	7.3	4	57	7.8	4	56.5	8.3	4	56.3	8.5	4	56.1	8.7	4
R167.2	D			MFR	4	R Granada, LW	78	78.4	78.1	0.4	0.1	B (67)	A/E	76.6	1.5	0	75.4	2.7	0	71.9	6.2	4	70	8.1	4	68.6	9.5	4	67.3	10.8	4	66.4	11.7	4	65.3	12.8	4	64.6	13.5	4
R168	D			MFR		NOT USED								~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	
R169.1	D	S245	12.0	MFR	2	R Granada, LW	65.5	65.9	65.8	0.4	0.3	B (67)	A/E	64.1	1.7	0	63.2	2.6	0	61	4.8	0	59.6	6.2	2	58.8	7	2	58.2	7.6	2	57.6	8.2	2	57.3	8.5	2	57	8.8	2
R169.2	D			MFR	2	R Granada, LW	77.5	77.8	77.8	0.3	0.3	B (67)	A/E	76.8	1	0	76.2	1.6	0	73	4.8	0	70.9	6.9	2	69.4	8.4	2	67.9	9.9	2	66.9	10.9	2	65.8	12	2	64.8	13	2
NR169/ ST9	D			NMS		R Granada, LW	64.8	65.2	65	0.4	0.2	B (67)	NO	63.2	1.8	~	62.1	2.9	~	59.8	5.2	~	58.4	6.6	~	57.7	7.3	~	57	8	~	56.5	8.5	~	56	9	~	55.7	9.3	~
R170.1	D			MFR	4	R Granada, LW	67.1	67.6	67.5	0.5	0.4	B (67)	A/E	65.6	1.9	0	64.3	3.2	0	62.6	4.9	0	61.3	6.2	4	60.5	7	4	59.8	7.7	4	59.3	8.2	4	59.1	8.4	4	61.4	6.1	4
R170.2	D			MFR	4	R Granada, LW	78.7	79	79	0.3	0.3	B (67)	A/E	77.1	1.9	0	76.2	2.8	0	73.6	5.4	4	71.6	7.4	4	69.8	9.2	4	68.6	10.4	4	67.3	11.7	4	66.2	12.8	4	65.2	13.8	4
R171.1	D	8.0	12.0	MFR	2	R Granada, LW	66	66.5	66.5	0.5	0.5	B (67)	A/E	64.9	1.6	0	63.8	2.7	0	62.3	4.2	0	60.7	5.8	2	59.6	6.9	2	58.8	7.7	2	58.2	8.3	2	57.9	8.6	2	61.1	5.4	2
R171.2	D			MFR	2	R Granada, LW	76.5	76.9	77	0.4	0.5	B (67)	A/E	76.2	0.8	0	75	2	0	73	4	0	71.3	5.7	2	69.6	7.4	2	68.2	8.8	2	66.8	10.2	2	65.8	11.2	2	64.4	12.6	2
R172.2	D			MFR	4	R Granada, LW	61.9	62.2	63.4	0.3	1.5	B (67)	NO	61.1	2.3	0	60.8	2.6	0	60.5	2.9	0	60.2	3.2	0	60.7	2.7	0	60.2	3.2	0	59.7	3.7	0	59.2	4.2	0	59.5	3.9	0
R173	D			MFR	2	R Granada, LW	62.7	63	62.3	0.3	-0.4	B (67)	NO	61.5	0.8	0	60.9	1.4	0	60.2	2.1	0	59.1	3.2	0	58	4.3													

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq}(h)$, dBA	Future Build $L_{eq}(h)$, dBA	Future No Build $L_{eq}(h)$, dBA	Future Build minus Existing Condition $L_{eq}(h)$, dBA	Future Build minus Existing Condition $L_{eq}(h)$, dBA	Impact Type (A/E - Approach or Exceed the NAC) ⁴	Noise Activity Category (NAC) ⁴	I-5 Future Noisiest Hour Noise Levels - $L_{eq}(h)$																										
														Noise Level Prediction with Barrier [$L_{eq}(h)$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																										
														6 Feet		8 Feet		10 Feet		12 Feet		14 Feet		16 Feet		18 Feet		20 Feet		22 Feet										
R177.3	D	S245	12.0	MFR	4	R Granada, LW	67.2	67.5	67.6	0.3	0.4	B (67)	A/E	67.1	0.5	0	66.7	0.9	0	66.4	1.2	0	65.8	1.8	0	64.7	2.9	0	63.6	4	0	62.9	4.7	0	62.1	5.5	4	61.4	6.2	4
R178.1	D			MFR	2	R Granada, LW	62.7	63.7	62.4	1	-0.3	B (67)	NO	59.2	3.2	0	58.7	3.7	0	57.7	4.7	0	57	5.4	2	56.6	5.8	2	56.5	5.9	2	56.1	6.3	2	55.7	6.7	2			
R178.2	D			MFR	2	R Granada, LW	66	66.4	66.4	0.4	0.4	B (67)	A/E	63.4	3	0	62	4.4	0	61.1	5.3	2	60.3	6.1	2	59.6	6.8	2	59.3	7.1	2	58.5	7.9	2	57.9	8.5	2	57.3	9.1	2
R179	D		15.0	MFR	4	Via Puerta, LW	71.3	72.4	72.4	1.1	1.1	B (67)	A/E	71.7	0.7	0	71.1	1.3	0	70.3	2.1	0	69.3	3.1	0	68.2	4.2	0	67.5	4.9	0	68.1	4.3	0	68	4.4	0	67.3	5.1	4
R180/ST8	D			NMS		Via Puerta, LW	68.6	68.1	68.1	-0.5	-0.5	B (67)	~	67.4	0.7	~	66.7	1.4	~	65.4	2.7	~	64.2	3.9	~	62.5	5.6	~	60.8	7.3	~	59.8	8.3	~	58.9	9.2	~	58.1	10	~
R181.1	D			MFR	4	Via Puerta, LW	70.3	71.2	71.2	0.9	0.9	B (67)	A/E	70.7	0.5	0	69.8	1.4	0	68.6	2.6	0	67.8	3.4	0	66	5.2	4	64.2	7	4	64.3	6.9	4	63.9	7.3	4	63.7	7.5	4
R181.2	D		13.5	MFR	4	Via Puerta, LW	81.7	83.3	83.4	1.6	1.7	B (67)	A/E	82.9	0.5	0	82.3	1.1	0	81.3	2.1	0	79.9	3.5	0	78.5	4.9	0	75.8	7.6	4	73.2	10.2	4	71.6	11.8	4	70	13.4	4
R182.1	D			MFR	2	Via Puerta, LW	65.8	66.4	66.5	0.6	0.7	B (67)	A/E	65.9	0.6	0	65.1	1.4	0	64.5	2	0	64.2	2.3	0	62.2	4.3	0	60.7	5.8	2	60.8	5.7	2	60.7	5.8	2	60.5	6	2
R182.2	D		5.0	MFR	2	Via Puerta, LW	76.1	76.7	76.7	0.6	0.6	B (67)	A/E	75.9	0.8	0	74.6	2.1	0	73.5	3.2	0	72.2	4.5	0	70.8	5.9	2	69.4	7.3	2	67.8	8.9	2	66.6	10.1	2	65.7	11	2
R183	D			MFR	2	Via Puerta, LW	70	70.6	69.7	0.6	-0.3	B (67)	A/E	65.9	3.8	0	65.1	4.6	0	64	5.7	2	63.1	6.6	2	62.9	6.8	2	63	6.7	2	62.5	7.2	2	61.9	7.8	2	61.4	8.3	2
R184.2	D		15.0	MFR	4	Via Puerta, LW	72.7	73	73.1	0.3	0.4	B (67)	A/E	72.9	0.2	0	72.6	0.5	0	72.3	0.8	0	71.6	1.5	0	69.8	3.3	0	68.2	4.9	0	67.1	6	4	65.3	7.8	4	64.3	8.8	4
R185.2	D			MFR	2	Via Puerta, LW	74.8	75.5	75.5	0.7	0.7	B (67)	A/E	75.2	0.3	0	74.7	0.8	0	74	1.5	0	73.1	2.4	0	72.4	3.1	0	70.3	5.2	2	68.3	7.2	2	67	8.5	2	65.8	9.7	2
R185.3	D		13.5	MFR	2	Via Puerta, LW	77.6	78.3	78.4	0.7	0.8	B (67)	A/E	78.2	0.2	0	77.8	0.6	0	77.3	1.1	0	76.8	1.6	0	76.2	2.2	0	75.8	2.6	0	74.6	3.8	0	72.5	5.9	2	70.2	8.2	2
R186	D			MFR	1	Via Puerta, LW	65.9	67.2	65.7	1.3	-0.2	B (67)	A/E	62.3	3.4	0	61.6	4.1	0	60.6	5.1	1	60	5.7	1	60.1	5.6	1	59.6	6.1	1	59.2	6.5	1	58.7	7	1	58.2	7.5	1
R187.2	D		15.0	MFR	2	Via Puerta, LW	64.5	63.7	63.7	-0.8	-0.8	B (67)	NO	63.1	0.6	0	62.8	0.9	0	62.2	1.5	0	61.7	2	0	60.9	2.8	0	60.1	3.6	0	59.2	4.5	0	58.5	5.2	2	57.6	6.1	2
R187.3	D			MFR	2	Via Puerta, LW	71.5	71.5	71.7	0	0.2	B (67)	A/E	70.7	1	0	70.1	1.6	0	69.1	2.6	0	68.2	3.5	0	67.1	4.6	0	65.9	5.8	2	64.9	6.8	2	64.2	7.5	2	63.9	7.8	2
R188.2	D			MFR	4	Via Puerta, LW	66	67.8	67.8	1.8	1.8	B (67)	A/E	67.5	0.3	0	67.1	0.7	0	66.7	1.1	0	66.1	1.7	0	65.2	2.6	0	64.3	3.5	0	63.2	4.6	0	62.1	5.7	4	61.8	6	4
R188.3	D			MFR																																				

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}																													
								Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																													
								6 Feet		8 Feet		10 Feet		12 Feet		14 Feet		16 Feet		18 Feet		20 Feet		22 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	L _{eq(h)}	I.L.	NBR	L _{eq(h)}	I.L.	NBR									
R197			NOT USED					~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~								
R198			NOT USED					~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~								
R199			NOT USED					~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~								
R200			NOT USED					~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~								
R201	B	S191	MFR 1 A DL Carlota, LH	61.7	62.7	63.7	1	2.0	B (67)	NO	59.9	3.8	0	59.4	4.3	0	58.9	4.8	0	58.4	5.3	1	58	5.7	1	57.6	6.1	1	57.4	6.3	1	57.1	6.6	1	56.9	6.8	1
R202	B		MFR 1 A DL Carlota, LH	62.1	63.4	64.4	1.3	2.3	B (67)	NO	60.2	4.2	0	59.5	4.9	0	59.1	5.3	1	58.4	6	1	58	6.4	1	57.6	6.8	1	57.4	7	1	57.1	7.3	1	56.9	7.5	1
R203.2	B		MFR 1 A DL Carlota, LH	71.5	73.1	73.1	1.6	1.6	B (67)	A/E	69.9	3.2	0	68.3	4.8	0	66.8	6.3	1	66.2	6.9	0	64.8	8.3	1	64.3	8.8	1	63.8	9.3	1	63.5	9.6	1	63.8	9.3	1
R203.3	B		MFR 1 A DL Carlota, LH	72.6	73.9	74	1.3	1.4	B (67)	A/E	71.8	2.2	0	70.8	3.2	0	69.7	4.3	0	68.2	5.8	1	66.6	7.4	1	65.7	8.3	1	64.8	9.2	1	64.2	9.8	1	64.8	9.2	1
R203.4	B		MFR 1 A DL Carlota, LH	73.3	74.4	74.4	1.1	1.1	B (67)	A/E	73.3	1.1	0	72.5	1.9	0	71.6	2.8	0	71.1	3.3	0	69.8	4.6	0	67.9	6.5	1	66.5	7.9	1	65.5	8.9	1	66.5	7.9	1
R203.5	B		MFR 1 A DL Carlota, LH	73.8	74.7	74.7	0.9	0.9	B (67)	A/E	74	0.7	0	73.6	1.1	0	72.8	1.9	0	72.2	2.5	0	71.7	3	0	71	3.7	0	69.7	5	1	67.8	6.9	1	69.7	5	1
R204.2	B		MFR 2 A DL Carlota, LH	70.2	72	72	1.8	1.8	B (67)	A/E	68.9	3.1	0	66.6	5.4	1	66	6	1	65.6	6.4	2	64.5	7.5	2	64.1	7.9	2	63.7	8.3	2	63.7	8.3	2			
R204.3	B		MFR 2 A DL Carlota, LH	71.2	72.6	72.7	1.4	1.5	B (67)	A/E	70	2.7	0	69.3	3.4	0	68	4.7	0	66.7	6	2	65.7	7	2	65	7.7	2	64.4	8.3	2	64.4	8.3	2			
R204.4	B		MFR 2 A DL Carlota, LH	72.3	73.4	73.4	1.1	1.1	B (67)	A/E	72	1.4	0	70.9	2.5	0	70.3	3.1	0	69.4	4	0	67.7	5.7	2	66.4	7	2	65.6	7.8	2	64.9	8.5	2	65.6	7.8	2
R204.5	B		MFR 2 A DL Carlota, LH	72.7	73.7	73.7	1	1.0	B (67)	A/E	72.9	0.8	0	72.2	1.5	0	71.4	2.3	0	70.8	2.9	0	70.3	3.4	0	69.1	4.6	0	67.2	6.5	2	66.2	7.5	2	67.2	6.5	2
R205.2	B		MFR 1 A DL Carlota, LH	71.4	72.8	72.8	1.4	1.4	B (67)	A/E	69.5	3.3	0	68	4.8	0	66.1	6.7	1	64.8	8	1	62.8	10	1	61.6	11.2	1	60.6	12.2	1	59.7	13.1	1	60.6	12.2	1
R205.3	B		MFR 1 A DL Carlota, LH	72.5	73.7	73.7	1.2	1.2	B (67)	A/E	71.9	1.8	0	70.6	3.1	0	69.8	3.9	0	68.2	5.5	1	66	7.7	1	64.3	9.4	1	62.7	11	1	61.4	12.3	1	62.7	11	1
R205.4	B		MFR 1 A DL Carlota, LH	73.1	74.2	74.2	1.1	1.1	B (67)	A/E	73.2	1	0	72.4	1.8	0	71.5	2.7	0	70.8	3.4	0	70	4.2	0	68.2	6	1	66.2	8	1	64.1	10.1	1	66.2	8	1
R205.5	B		MFR 1 A DL Carlota, LH	73.6	74.5	74.5	0.9	0.9	B (67)	A/E	73.9	0.6	0	73.4	1.1	0	72.8	1.7	0	72.1	2.4	0	71.4	3.1	0	70.8	3.7	0	70	4.5	0	68.4	6.1	1	70	4.5	0
R206	D	S245	14.0 SPT 2 A DL Carlota, LH	67.8	68.2	71	0.4	3.2	C (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	71	0	0	70.2	0.8	0	69.3	1.7	0	68.6	2.4	0	68	3	0	
R207			NOT USED								~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~		
R208.2	B	S191	MFR 2 A DL Carlota, LH	74.1	75.4	75.5	1.3	1.4	B (67)	A/E	72.2	3.3	0	71.1	4.4	0	69.2	6.3	1	67.8	7.7	2	65.8	9.7	2	64.9	10.6	2	63.9	11.6	2	63.9	11.6	2			
R208.3	B		MFR 2 A DL Carlota, LH	75	76.2	76.2	1.2	1.2	B (67)	A/E	74.9	1.3	0	73.9	2.3	0	72.9	3.3	0	72.2	4	0	69.9	6.3	2	67.8	8.4	2	66.5	9.7	2	64.8	11.4	2	66.5	9.7	2
R208.4	B																																				

Table 2.12.6: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 2

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq}(h)$, dBA	Future No Build $L_{eq}(h)$, dBA	Future Build $L_{eq}(h)$, dBA	Future No-Build minus Existing Condition $L_{eq}(h)$, dBA	Future Build minus Existing Condition $L_{eq}(h)$, dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - $L_{eq}(h)$												Noise Level Prediction with Barrier [$L_{eq}(h)$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
														6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR						
R209.4	B	S191	MFR	1	A D L Carlota, LH	74.4	75.4	75.4	1	1.0	B (67)	A/E	74.6	0.8	0	73.9	1.5	0	73	2.4	0	72.3	3.1	0	71.7	3.7	0	70.2	5.2	1	68.1	7.3	1	66.8	8.6	1	68.1	7.3	1	
R209.5	B		MFR	1	A D L Carlota, LH	74.7	75.6	75.7	0.9	1.0	B (67)	A/E	75.2	0.5	0	74.8	0.9	0	74.2	1.5	0	73.6	2.1	0	72.8	2.9	0	72.3	3.4	0	71.7	4	0	70.6	5.1	1	71.7	4	0	
R210.2	B		MFR	1	A D L Carlota, LH	72.1	73.5	73.6	1.4	1.5	B (67)	A/E	70.3	3.3	0	68.8	4.8	0	67.1	<u>6.5</u>	1	66.4	<u>7.2</u>	1	65	<u>8.6</u>	1	64.3	<u>9.3</u>	1	63.8	<u>9.8</u>	1	63.4	<u>10.2</u>	1	63.8	<u>9.8</u>	1	
R210.3	B		MFR	1	A D L Carlota, LH	73.2	74.4	74.4	1.2	1.2	B (67)	A/E	72.4	2	0	71.3	3.1	0	70.7	3.7	0	68.8	<u>5.6</u>	1	67.2	<u>7.2</u>	1	66	<u>8.4</u>	1	64.9	<u>9.5</u>	1	64.2	<u>10.2</u>	1	64.9	<u>9.5</u>	1	
R210.4	B		MFR	1	A D L Carlota, LH	73.8	74.8	74.9	1	1.1	B (67)	A/E	73.9	1	0	73.1	1.8	0	72.2	2.7	0	71.6	3.3	0	70.7	4.2	0	68.7	<u>6.2</u>	1	67.1	<u>7.8</u>	1	66	<u>8.9</u>	1	67.1	<u>7.8</u>	1	
R211.2	B		MFR	2	A D L Carlota, LH	67.9	70.1	70.1	2.2	2.2	B (67)	A/E	67	3.1	0	65.4	4.7	0	65	<u>5.1</u>	1	64.6	<u>5.5</u>	2	63.9	<u>6.2</u>	2	63.6	<u>6.5</u>	2	63.3	<u>6.8</u>	1	63.2	<u>6.9</u>	2	63.3	<u>6.8</u>	2	
R211.3	B		MFR	2	A D L Carlota, LH	69.1	70.6	70.6	1.5	1.5	B (67)	A/E	68	2.6	0	66.9	3.7	0	66.3	4.3	0	65.5	<u>5.1</u>	2	64.9	<u>5.7</u>	2	64.4	<u>6.2</u>	2	64.1	<u>6.5</u>	1	63.9	<u>6.7</u>	2	64.1	<u>6.5</u>	2	
R211.4	B		MFR	2	A D L Carlota, LH	70	71.4	71.4	1.4	1.4	B (67)	A/E	69.4	2	0	68.8	2.6	0	67.9	3.5	0	66.7	4.7	0	65.8	<u>5.6</u>	2	65.3	<u>6.1</u>	2	64.8	<u>6.6</u>	1	64.5	<u>6.9</u>	2	64.8	<u>6.6</u>	2	
R211.5	B		MFR	2	A D L Carlota, LH	70.7	71.9	71.9	1.2	1.2	B (67)	A/E	70.6	1.3	0	69.7	2.2	0	69.2	2.7	0	68.7	3.2	0	67.1	4.8	0	66.2	<u>5.7</u>	2	65.5	<u>6.4</u>	2	65.5	<u>6.4</u>	2				

Source: Noise Study Report (December 2018)

This symbol “~” represents 1) Noise barriers that were not analyzed in this location and height because the predicted noise level at the modeled receptor did not approach or exceed the NAC.

- 2) Noise barrier heights that were not evaluated because the height was shorter than the existing wall height.
- 3) Receptors that were eliminated due to the project improvement or receptors not used within the project.

Numbers in **bold** represent noise levels that approach or exceed the Noise Abatement Criteria (NAC).

Underlined numbers represent noise level reductions that achieve at least 5 decibels (dB) at the modeled receptor after the insertion of the noise barrier and its evaluated height. This noise barrier is considered feasible from an acoustical perspective.

Underlined and bold numbers represent noise level reductions that achieve at least 7 dB at one or more benefited receptor after the insertion of the noise barrier and its evaluated height. The 7-dB Noise Reduction Design Goal is one factor that must be met for it to be considered reasonable.

¹ Not all receptors are shielded directly by the referenced wall height; however, they are further behind the soundwall or property wall.

² Abbreviations for the Land Use consists of: UC-Utility Company, SFR-Single Family Residence, RES-Restaurant, OFC-Office, MFR-Multi Family Residence, COM-Commercial, MOT-Motel, NMS-Noise Measurement Site, PRK-Park, REC-Recreational Area, SCH-School, SPT-Sports Playground.

³ Abbreviations for the Cities in the General Location consists of: LF-Lake Forest, LW-Laguna Woods, and LH-Laguna Hills.

⁴ All Noise Abatement Criteria (NAC) are exterior unless noted otherwise.

⁵ Exterior/Interior Noise Level. The interior noise level was determined by applying a 20 dB noise level reduction from the exterior noise level for building (light framing with sash windows normally closed) based on FHWA *Highway Traffic Noises: Analysis and Abatement Guidance*.

⁶ This impacted receptor, which is in front of JCPenney in Laguna Hills Mall, does not have any human frequent use area. It was place, however, for reporting purposes only for future Five Lagunas Redevelopment Plan. No barrier was evaluated for this impacted receptor.

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	Future Build L _{eq(h)} , dBA	Future No Build minus Existing Condition L _{eq(h)} , dBA	Future Build minus Existing Condition L _{eq(h)} , dBA	Impact Type (A/E - Approach or Exceed the NAC)	L _{eq(h)}	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}										Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)									
													6 Feet		8 Feet		10 Feet		12 Feet		14 Feet		16 Feet		18 Feet		20 Feet		22 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	L _{eq(h)}	I.L.	NBR		
R1 ¹	A	S198	16.0	UC	1	Daleview St, LF	70.3	70.6	70.7	0.3	0.4	F	NO	~2	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	
R2	A			SFR	1	Bridger Rd, LF	72.4 ³	73.1	73.2	0.7	0.8	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	~	73	0.2	0	72.7	0.5	0
R3	A			SFR	1	Bridger Rd, LF	64.5	64.9	65.1	0.4	0.6	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	65.1	0	0	64.2	0.9	0	
R4	A			SFR	1	Bridger Rd, LF	65	65.6	65.9	0.6	0.9	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	65.8	0.1	0	64.8	1.1	0	
R5	A			SFR	1	Bridger Rd, LF	66.6	66.8	67.1	0.2	0.5	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	67	0.1	0	65.9	1.2	0	
R6	A			SFR	1	Lakewood Ln, LF	61.8	62.5	62.7	0.7	0.9	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	~	62.2	0.5	0	62.1	0.6	0
R7	A			SFR	1	Lakewood Ln, LF	62	62.6	62.8	0.6	0.8	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	62.1	0.7	0	61.5	1.3	0	
R8	A			SFR	1	Lakewood Ln, LF	62.6	63.3	63.5	0.7	0.9	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	63	0.5	0	62.5	1	0	
R9	A			SFR	1	Lakewood Ln, LF	63.5	63.9	64.2	0.4	0.7	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	64.1	0.1	0	63.5	0.7	0	
R10	A			SFR	1	Lakewood Ln, LF	65.3	65.8	66.1	0.5	0.8	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	66	0.1	0	65	1.1	0	
R11	A			SFR	1	Lakewood Ln, LF	65.7	66.3	66.5	0.6	0.8	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	66.4	0.1	0	65.3	1.2	0	
R12						NOT USED																										
R13						NOT USED																										
R14/ST1	A	S198	14.0	SFR	1	Bridger Rd, LF	72	72.4	72.6	0.4	0.6	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	72.5	0.1	0	71.6	1.0	0	
R15	A			SFR	1	Bridger Rd, LF	72.2	72.4	72.6	0.2	0.4	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	72.6	0	0	71.6	1.0	0	
R16	A			SFR	1	Bridger Rd, LF	73.6	74.1	74.2	0.5	0.6	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	74.2	0	0	73.4	0.8	0	
R17	A			SFR	1	Bridger Rd, LF	63.9	64.6	64.8	0.7	0.9	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	64.6	0.2	0	63.6	1.2	0	
R18	A			SFR	1	Bridger Rd, LF	72.1	72.3	72.5	0.2	0.4	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	72.4	0.1	0	71.3	1.2	0	
R19	A			SFR	1	Bridger Rd, LF	71	71.6	71.9	0.6	0.9	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	71.6	0.3	0	70.7	1.2	0	
R20	A			SFR	1	Bridger Rd, LF	70.6	70.9	71.2	0.3	0.6	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	70.8	0.4	0	70	1.2	0	
R21	A			SFR	1	Bridger Rd, LF	69.7	70	70.4	0.3	0.7	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	69.8	0.6	0	69	1.4	0	
R22	A	13.0	13.0	SFR	1	Bridger Rd, LF	63.4	63.9	64.3	0.5	0.9	B (67)	NO	~	~	~	~	~	~	~	~	~	~	~	~	63.5	0.8	0	62.5	1.8	0	
R23	A			SFR	1	Bridger Rd, LF	66.1	66.7	67	0.6	0.9	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	~	~	66.3	0.7	0	65.3	1.7	0	

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall in Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq(h)}$, dBA	Future Build $L_{eq(h)}$, dBA	I-5 Future Noisiest Hour Noise Levels - $L_{eq(h)}$												Noise Level Prediction with Barrier [$L_{eq(h)}$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																										
									Future No Build			Future No-Build minus Existing Condition $L_{eq(h)}$, dBA			Future Build minus Existing Condition $L_{eq(h)}$, dBA			Impact Type (A/E - Approach or Exceed the NAC) ⁴			6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 Feet		
									Existing	No-Build	Build	Existing	No-Build	Build	Existing	No-Build	Build	Impact	Approach	Exceed	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	Leq(h)	I.L.	NBR									
R24	A	S198	13.0	SFR	1	Bridger Rd, LF	69.8	70.1	70.2	0.3	0.4	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	69.9	0.3	0	69.3	0.9	0	68.5	1.7	0	67.8	2.4	0	67.7	2.5	0									
R25	A			SFR	1	Ankerton Dr, LF	64.7	65.4	65.6	0.7	0.9	B (67)	NO	~	~	~	~	~	~	~	~	~	~	65.5	0.1	0	64.7	0.9	0	63.5	2.1	0	62.7	2.9	0	62.1	3.5	0									
R26	A		14.0	SFR	1	Highpine Rd, LF	66.2	66.9	67.1	0.7	0.9	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	67	0.1	0	66.1	1	0	64.5	2.6	0	63.6	3.5	0	63.1	4	0									
R27	A			SFR	1	Highpine Rd, LF	65.6	66.4	66.6	0.8	1.0	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	66.4	0.2	0	65.4	1.2	0	63.7	2.9	0	62.9	3.7	0	62.4	4.2	0									
R28	A			SFR	1	Highpine Rd, LF	65.7	66.3	66.6	0.6	0.9	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	66.3	0.3	0	65.4	1.2	0	63.8	2.8	0	62.8	3.8	0	62	4.6	0									
R29	A			SFR	1	Highpine Rd, LF	64.7	66	66.3	1.3	1.6	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	65.9	0.4	0	64.9	1.4	0	63.4	2.9	0	62.4	3.9	0	61.7	4.6	0									
R30	A		13.0	SFR	1	Highpine Rd, LF	64.4	64.9	65.3	0.5	0.9	B (67)	NO	~	~	~	~	~	~	~	~	~	~	64.6	0.7	0	63.5	1.8	0	62.3	3	0	61.7	3.6	0	61.3	4	0									
R31	A			SFR	1	Highpine Rd, LF	65.4	66	66.3	0.6	0.9	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	65.6	0.7	0	64.6	1.7	0	63.5	2.8	0	62.8	3.5	0	62	4.3	0									
R32	A			SFR	1	Highpine Rd, LF	65.6	66.2	66.5	0.6	0.9	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	65.8	0.7	0	64.8	1.7	0	63.7	2.8	0	62.9	3.6	0	62.4	4.1	0									
R33/ST2	A			SFR	1	Bridger Rd, LF	70.3	70.7	71.1	0.4	0.8	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	70.3	0.8	0	69.5	1.6	0	68.9	2.2	0	68.3	2.8	0	67.8	3.3	0									
R34	A	12.0	SFR	1	Bridger Rd, LF	63.7	64.2	64.5	0.5	0.8	B (67)	NO	~	~	~	~	~	~	~	~	~	~	64.4	0.1	0	63.8	0.7	0	62.6	1.9	0	61.4	3.1	0	60.5	4	0	59.9	4.6	0							
R35	A			SFR	1	Bridger Rd, LF	71.6	71.9	72.1	0.3	0.5	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	72	0.1	0	71.1	1	0	70.2	1.9	0	69.4	2.7	0	68.6	3.5	0	68.1	4	0						
R36	A			SFR	1	Bridger Rd, LF	63.9	64.4	64.6	0.5	0.7	B (67)	NO	~	~	~	~	~	~	~	~	~	~	64.6	0	0	64	0.6	0	62.9	1.7	0	61.5	3.1	0	60.6	4	0	59.9	4.7	0						
R37	A		SFR	1	Bridger Rd, LF	72.5	72.8	72.9	0.3	0.4	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	72.9	0	0	71.8	1.1	0	70.8	2.1	0	69.9	3	0	69.2	3.7	0	68.5	4.4	0							
R38	A			SFR	1	Bridger Rd, LF	64.4	65	65.2	0.6	0.8	B (67)	NO	~	~	~	~	~	~	~	~	~	~	65.1	0.1	0	64.6	0.6	0	63.5	1.7	0	62	3.2	0	61	4.2	0	60.3	4.9	0						
R39	A			SFR	1	Bridger Rd, LF	64.6	65.1	65.3	0.5	0.7	B (67)	NO	~	~	~	~	~	~	~	~	~	~	65	0.3	0	64.6	0.7	0	63.5	1.8	0	62.3	3	0	61.3	4	0	60.5	4.8	0						
R40	A	14.0	SFR	1	Bridger Rd, LF	71.5	71.9	72	0.4	0.5	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	71.5	0.5	0	70.5	1.5	0	69.6	2.4	0	68.8	3.2	0	68.1	3.9	0										
R41	A			SFR	1	Bridger Rd, LF	70.9	71.3	71.4	0.4	0.5	B (67)	A/E	~	~	~	~	~	~	~	~	~	~	71.1	0.3	0	70.2	1.2	0	69.3	2.1	0	68.6	2.8	0	67.9	3.5	0									
R42	A		SFR	1	B																																										

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Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	Future No Build L _{eq(h)} , dBA	Future Build L _{eq(h)} , dBA	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}																														
										Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																														
										6 Feet		8 Feet		10 Feet		12 Feet		14 Feet		16 Feet		18 Feet		20 Feet		22 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	L _{eq(h)}	I.L.	NBR													
R65	B			COM	1	LH Mall, LH	67.2	70.3	69.7	3.1	Future No-Build minus Existing Condition L _{eq(h)} , dBA	2.5	Future Build minus Existing Condition L _{eq(h)} , dBA	E (72)	NO	N/A	N/A	N/A	N/A	N/A																				
R66/ ST13	B			COM	1	ELIMINATED	68.7	73.4	~	4.7	~	E (72)	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
R67	B			RES	1	LH Mall, LH	64.7	68	67.7	3.3	3.0	E (72)	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
R68	B			RES	1	LH Mall, LH	64.8	67.1	67	2.3	2.2	E (72)	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
R69	B			RES	1	A D L Carlota, LH	65.8	66.9	67.1	1.1	1.3	E (72)	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
NR69/ ST12	B			NMS		NOT RECEPTOR	65.7	66.95	69.2	1.25	3.5	E (72)	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A												
R70						NOT USED																																		
R71	D	S245	14.0	SCH	1	A D L Carlota, LH	70/45 ⁵	70.4/45.4	81.6/56.6	0.4	11.6	C (67)/ D(52)	A/E	80.6/60 .6	1	0	78.2/58.2	3.4	0	74.1/54.1	7.5	1	72.1/52.1	9.5	1	70.4/50.4	11.2	1	69.3/49.3	12.3	1	68.2/48.2	13.4	1	67.5/47.5	14.1	1	66.9/46.9	14.7	1
R72	C	S226		RES	1	Bridger Rd, LF	72.4	72.6	73.3	0.2	0.9	E (72)	A/E	70.6	2.7	0	70.3	3	0	70	3.3	0	69.6	3.7	0	69.5	3.8	0	69.4	3.9	0	69.3	4	0	69.2	4.1	0	69.1	4.2	0
R73	C			RES	1	Bridger Rd, LF	76.5	76.6	78.5	0.1	2.0	E (72)	A/E	73.5	5	1	72.6	5.9	1	71.9	6.6	1	71.1	7.4	1	70.7	7.8	1	70.4	8.1	1	70.2	8.3	1	70.3	8.2	1	70.1	8.4	1
R74	C	14.0		REC	1	ELIMINATED	71.6	71.8		0.2		C (67)	NO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
R75/ ST5	C			SFR	1	Cavanaugh Rd, LF	69.7	70	79.8	0.3	10.1	B (67)	A/E	78.3	1.5	0	76.5	3.3	0	74.2	5.6	1	72.1	7.7	1	70.4	9.4	1	69.3	10.5	1	68.4	11.4	1	67.6	12.2	1	67	12.8	1
R76	C			SFR	1	Gowdy Ave, LF	67.9	68.4	71.2	0.5	3.3	B (67)	A/E	70.4	0.8	0	69.6	1.6	0	68.8	2.4	0	67.6	3.6	0	67.3	3.9	0	66.4	4.8	0	65.6	5.6	1	64.8	6.4	1	64.1	7.1	1
R77	C			SFR	1	Gowdy Ave, LF	63.6	63.8	68.5	0.2	4.9	B (67)	A/E	67.5	1	0	66.7	1.8	0	65.8	2.7	0	64.8	3.7	0	64.1	4.4	0	63.2	5.3	1	62.4	6.1	1	61.6	6.9	1	60.9	7.6	1
R78	C			SFR	1	Gowdy Ave, LF	61.8	62	65.9	0.2	4.1	B (67)	NO	65.5	0.4	0	64.8	1.1	0	64.3	1.6	0	63.2	2.7	0	62	3.9	0	61.5	4.4	0	60.7	5.2	1	60.1	5.8	1	59.5	6.4	1
R79	C			SFR	1	Cavanaugh Rd, LF	68.5	68.9	78.9	0.4	10.4	B (67)	A/E	77.1	1.8	0	75.4	3.5	0	73	5.9	1	71.1	7.8	1	69.5	9.4	1	68.5	10.4	1	67.5	11.4	1	66.7	12.2	1	66	12.9	1
R80	C			SFR	1	Dune Mear Rd, LF	63.5	63.9	70.7	0.4	7.2	B (67)	A/E	68.5	2.2	0	67.2	3.5	0	66	4.7	0	65.2	5.5	1	65.2	5.5	1	64.8	5.9	1	64	6.7	1	63.4	7.3	1	62.8	7.9	1
R81	C			SFR	1	Cavanaugh Rd, LF	63.7	64	71.2	0.3	7.5	B (67)	A/E	66.3	4.9	0	67.7	3.5	0	67.1	4.1	0	66.1	5.1	1	65.2	6	1	64.5	6.7	1	63.7	7.5	1	63	8.2	1	62.4	8.8	1
R82	C			SFR	1	Dune Mear Rd, LF	62.3	62.6	68.7	0.3	6.4	B (67)	A/E	69.1	-0.4	0	65.5	3.2	0	64.4	4.3	0	63.9	4.8	0	63.8	4.9	0	63.1	5.6	1	62.4	6.3	1	61.9	6.8	1	61.4	7.3	1
R83	C			SFR	1	Cavanaugh Rd, LF	62.3	62.6	68.6	0.3	6.3	B (67)	A/E	66.7	1.9	0	65.3	3.3	0	65.1	3.5	0	64.6	4	0	63.9	4.7	0	63.2	5.4	1	62.6	6	1	62	6.6	1	61.4	7.2	1
R84 ¹	C	16.0		SFR	1	Dune Mear Rd, LF	60.8	61.1	66.4	0.3	5.6	B (67)	A/E	64.4	2	0	63.7	2.7	0	62.8	3.6	0	62.6	3.8	0	62.3	4.1	0	61.9	4.5	0	61.3	5.1	1	60.8	5.6	1	60.3	6.1	1
R85	C			SFR	1	Gowdy Ave, LF	61.3	61.7	70.9	0.4	9.6	B (67)	A/E	67.2	3.7	0	66.6	4.3	0	65.6	5.3	1	64.9	6	1	64.3	6.6	1	63.8	7.1	1	63.2	7.7	1	62.8	8.1	1	62.4	8.5	1

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Receptor No.	Area	Noise Barrier No.	Existing Wall In Front of Receptor (Height, FT)	Land Use ²	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}																																	
							Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																																	
							6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 Feet									
R86	C	S236	16.0	SFR	1	Gowdy Ave, LF	59.6	60.2	65.8	0.6	6.2	B (67)	NO	64.6	1.2	0	63.9	1.9	0	63.3	2.5	0	62.7	3.1	0	61.7	4.1	0	60.5	5.3	1	59.4	6.4	1	58.6	7.2	1	58	7.8	1
R87	C			SFR	1	Gowdy Ave, LF	59	59.5	64.8	0.5	5.8	B (67)	NO	64.4	0.4	0	64.1	0.7	0	63.1	1.7	0	62.5	2.3	0	61.4	3.4	0	60	4.8	0	58.7	6.1	1	57.9	6.9	1	57.2	7.6	1
R88	C			SFR	1	Gowdy Ave, LF	58.6	59.2	64.7	0.6	6.1	B (67)	NO	64.3	0.4	0	63.7	1	0	62.9	1.8	0	62.4	2.3	0	61.2	3.5	0	59.8	4.9	0	58.6	6.1	1	57.8	6.9	1	57.1	7.6	1
R89	C			SFR	1	Gowdy Ave, LF	67.2	67.6	79.1	0.4	11.9	B (67)	A/E	74.4	4.7	0	72.3	6.8	1	71.1	8	1	69.5	9.6	1	68.6	10.5	1	68	11.1	1	67.3	11.8	1	66.8	12.3	1	66.3	12.8	1
R90	C			SFR	1	Gowdy Ave, LF	59.2	59.9	65.1	0.7	5.9	B (67)	NO	64.6	0.5	0	63.9	1.2	0	63.2	1.9	0	62.6	2.5	0	61.5	3.6	0	60.4	4.7	0	59.4	5.7	1	58.8	6.3	1	58.3	6.8	1
R91	C			SFR	1	Gowdy Ave, LF	67	67.4	79.1	0.4	12.1	B (67)	A/E	73.7	5.4	1	72.1	7	1	70.9	8.2	1	69.3	9.8	1	68.4	10.7	1	67.8	11.3	1	67.2	11.9	1	66.6	12.5	1	66.2	12.9	1
R92	C			SFR	1	Gowdy Ave, LF	67	67.4	76.1	0.4	9.1	B (67)	A/E	72	4.1	0	71.3	4.8	0	70.4	5.7	1	69	7.1	1	68.3	7.8	1	67.7	8.4	1	67.1	9	1	66.5	9.6	1	66.1	10	1
NR92/ ST6	C			SFR	1	Gowdy Ave, LF	67.3	67.6	79.9	0.3	12.6	B (67)	A/E	73.7	6.2	1	72.4	7.5	1	71.1	8.8	1	69.8	10.1	1	69.1	10.8	1	68.6	11.3	1	68.1	11.8	1	67.6	12.3	1	67.2	12.7	1
R93	C			SFR	1	Gowdy Ave, LF	64.9	65.2	73.2	0.3	8.3	B (67)	A/E	70.4	2.8	0	69.6	3.6	0	68.5	4.7	0	67.1	6.1	1	66.5	6.7	1	66	7.2	1	65.5	7.7	1	65.2	8	1	64.8	8.4	1
R94	C			SFR	1	Gowdy Ave, LF	60.3	60.7	67.6	0.4	7.3	B (67)	A/E	64.6	3	0	64.1	3.5	0	63.1	4.5	0	62.9	4.7	0	62.4	5.2	1	61.5	6.1	1	60.7	6.9	1	60.1	7.5	1	59.6	8	1
R95	C			SFR	1	Gowdy Ave, LF	59	59.6	64.9	0.6	5.9	B (67)	NO	64.3	0.6	0	63.8	1.1	0	63	1.9	0	62.5	2.4	0	61.5	3.4	0	60.2	4.7	0	59	5.9	1	58.4	6.5	1	57.8	7.1	1
R96	C			SFR	1	Gowdy Ave, LF	58.5	59.2	64.4	0.7	5.9	B (67)	NO	64	0.4	0	63.5	0.9	0	62.7	1.7	0	62.2	2.2	0	61.1	3.3	0	59.7	4.7	0	58.5	5.9	1	57.9	6.5	1	57.3	7.1	1
R97	C			SFR	1	Gowdy Ave, LF	58.6	59.2	64.2	0.6	5.6	B (67)	NO	64	0.2	0	63.4	0.8	0	62.7	1.5	0	62.1	2.1	0	61.1	3.1	0	59.9	4.3	0	59	5.2	1	58.5	5.7	1	58.1	6.1	1
R98	B	S191		RES	1	A DL Carlota, LH	69.1	72.7	74.1	3.6	5.0	E (72)	A/E	70.7	3.4	0	70.3	3.8	0	69.9	4.2	0	69.7	4.4	0	69.5	4.6	0	69.4	4.7	0	69.3	4.8	0	69.3	4.8	0	69.2	4.9	0
R99	C	S236	16.0	SFR	1	Gowdy Ave, LF	60.5	61	68.3	0.5	7.8	B (67)	A/E	65.5	2.8	0	64.9	3.4	0	64	4.3	0	63.1	5.2	1	62.1	6.2	1	61.2	7.1	1	60.3	8	1	59.8	8.5	1	59.2	9.1	1
R100	C			SFR	1	Gowdy Ave, LF	61.4	61.9	71.1	0.5	9.7	B (67)	A/E	67.1	4	0	66.1	5	1	65.3	5.8	1	64	7.1	1	63.1	8	1	62.3	8.8	1	61.5	9.6	1	60.9	10.2	1	60.4	10.7	1
R101	C			SFR	1	Gowdy Ave, LF	63.3	63.5	71.9	0.2	8.6	B (67)	A/E	68.5	3.4	0	67.6	4.3	0	66.8	5.1	1	65.3	6.6	1	64.6	7.3	1	64	7.9	1	63.4	8.5	1	62.8	9.1	1	62.3	9.6	1
R102	C			SFR	1	Gowdy Ave, LF	61.3	61.6	69.6	0.3	8.3	B (67)	A/E	66.4	3.2	0	65.8	3.8	0	65.1	4.5	0	63.6	6	1	62.8	6.8	1	62.1	7.5	1	61.5	8.1	1	60.9	8.7	1	60.5	9.1	1
R103	C			SFR		NOT USED																																		
R104	C			SFR	1	Gowdy Ave, LF	61.5	61.9	68.7	0.4	7.2	B (67)	A/E	65.7	3	0	65.4	3.3	0	64.7	4																			

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall in Front of Receptor (Height, FT)	Land Use ²	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	Future Build L _{eq(h)} , dBA	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}																																
								Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																																
								6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 Feet								
R108	C	S236	16.0	SFR	1	Gowdy Ave, LF	63.2	63.7	71.1	0.5	7.9	B (67)	A/E	67.5	3.6	0	66.6	4.5	0	65.6	5.5	1	64.8	6.3	1	64.2	6.9	1	63.7	7.4	1	63.5	7.6	1	63.6	7.5	1	63.3	7.8	1
R109	C			SFR	1	Gowdy Ave, LF	64.7	65.2	72.2	0.5	7.5	B (67)	A/E	68.4	3.8	0	67.4	4.8	0	66.5	5.7	1	65.9	6.3	1	65.6	6.6	1	65.6	6.6	1	66	6.2	1	65.9	6.3	1	65.5	6.7	1
R110	C			SFR	1	Gowdy Ave, LF	66.9	67.4	72.9	0.5	6.0	B (67)	A/E	69	3.9	0	68.2	4.7	0	67.4	5.5	1	66.8	6.1	1	67.4	5.5	1	67.6	5.3	1	67.2	5.7	1	66.9	6	1	66.5	6.4	1
R111	C			SFR	1	Gowdy Ave, LF	67.6	68.2	78	0.6	10.4	B (67)	A/E	71.9	6.1	1	70.8	7.2	1	69.9	8.1	1	68.8	9.2	1	68.4	9.6	1	68	10	1	67.6	10.4	1	67.3	10.7	1	67.1	10.9	1
R112	C			SFR	1	Gowdy Ave, LF	65.9	66.5	71.1	0.6	5.2	B (67)	A/E	68.1	3	0	67.6	3.5	0	67.1	4	0	66.7	4.4	0	66.5	4.6	0	66.6	4.5	0	66.6	4.5	0	66.5	4.6	0	66.4	4.7	0
R113	C			SFR	1	Gowdy Ave, LF	67.4	67.8	75.4	0.4	8.0	B (67)	A/E	70.2	5.2	1	69.5	5.9	1	68.8	6.6	1	68.2	7.2	1	67.9	7.5	1	67.7	7.7	1	67.5	7.9	1	67.3	8.1	1	67.1	8.3	1
R114	C			SFR	1	Gowdy Ave, LF	66.4	66.9	73.6	0.5	7.2	B (67)	A/E	68.9	4.7	0	68.3	5.3	1	67.8	5.8	1	67.2	6.4	1	67	6.6	1	66.8	6.8	1	66.6	7	1	66.5	7.1	1	66.4	7.2	1
R115	C			SFR	1	Gowdy Ave, LF	66.4	66.8	72.7	0.4	6.3	B (67)	A/E	68.6	4.1	0	68.1	4.6	0	67.7	5	1	67.2	5.5	1	67	5.7	1	66.8	5.9	1	66.7	6	1	66.5	6.2	1	66.4	6.3	1
R116	C			SFR	1	Gowdy Ave, LF	65.6	66	73.9	0.4	8.3	B (67)	A/E	67.5	6.4	1	67.2	6.7	1	66.8	7.1	1	66.3	7.6	1	66	7.9	1	65.8	8.1	1	65.6	8.3	1	65.7	8.2	1	65.4	8.5	1
R117	C			SFR	1	Gowdy Ave, LF	66.5	67	73.5	0.5	7.0	B (67)	A/E	67.8	5.7	1	67.6	5.9	1	67.4	6.1	1	67.3	6.2	1	67.1	6.4	1	66.9	6.6	1	66.6	6.9	1	66	7.5	1	65.4	8.1	1
R118	C			SFR	1	Gowdy Ave, LF	64.8	65.3	72.8	0.5	8.0	B (67)	A/E	67.1	5.7	1	66.2	6.6	1	65.9	6.9	1	65.4	7.4	1	65.2	7.6	1	65.1	7.7	1	64.7	8.1	1	65.3	7.5	1	65.2	7.6	1
R119	C			SFR	1	Gowdy Ave, LF	65.2	65.6	73.1	0.4	7.9	B (67)	A/E	67.3	5.8	1	66.6	6.5	1	66.2	6.9	1	65.9	7.2	1	65.7	7.4	1	65.5	7.6	1	65.1	8	1	64.8	8.3	1	64.5	8.6	1
R120	C			SFR	1	Gowdy Ave, LF	65.1	65.5	73	0.4	7.9	B (67)	A/E	67.1	5.9	1	66.7	6.3	1	66.1	6.9	1	65.8	7.2	1	65.5	7.5	1	65.4	7.6	1	64.9	8.1	1	64.6	8.4	1	64.2	8.8	1
R121	C	S236	16.0	SFR	1	Gowdy Ave, LF	66.5	67	76.3	0.5	9.8	B (67)	A/E	72.6	3.7	0	70.2	6.1	1	69.3	7	1	67.8	8.5	1	67.3	9	1	66.8	9.5	1	66.3	10	1	65.8	10.5	1	65.5	10.8	1
R122	C			SFR	1	Gowdy Ave, LF	65.2	65.7	71.8	0.5	6.6	B (67)	A/E	68.7	3.1	0	68.1	3.7	0	67.6	4.2	0	66.6	5.2	1	66.1	5.7	1	65.7	6.1	1	65.3	6.5	1	64.9	6.9	1	64.6	7.2	1
R123	C			SFR	1	Gowdy Ave, LF	65.3	65.8	73.6	0.5	8.3	B (67)	A/E	70.6	3	0	68.6	5	1	68.1	5.5	1	66.8	6.8	1	66	7.6	1	65.5	8.1	1	65.1	8.5	1	64.7	8.9	1	64.4	9.2	1
R124	C			SFR	1	Gowdy Ave, LF	64.3	64.8	71.3	0.5	7.0	B (67)	A/E	69.3	2	0	67.7	3.6	0	67	4.3	0	66	5.3	1	65.1	6.2	1	64.7	6.6	1	64.3	7	1	63.9	7.4	1	63.6	7.7	1
R125	C			SFR	1	Gowdy Ave, LF	64.3	64.9	72.1	0.6	7.8	B (67)	A/E	67.8	4.3	0	67.5	4.6	0	66.8	5.3	1	65.5	6.6	1	65.1	7	1	64.7	7.4	1	64.3	8.1	1	63.7	8.4	1			
R126	C			SFR	1	Gowdy Ave, LF	65.4	65.9	72.5	0.5	7.1	B (67)	A/E	68.6	3.9	0	68.1	4.4	0	67.5	5	1	66.5	6	1	66.1	6.4	1	65.8	6.7	1	65.5	7	1	65.3	7.2	1	65	7.5	1
R127	C			SFR	1	Gowdy Ave, LF	65	65.5	70.6																															

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall in Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	Future Build L _{eq(h)} , dBA	Future No-Build minus Existing Condition L _{eq(h)} , dBA	Future Build minus Existing Condition L _{eq(h)} , dBA	Impact Type (A/E - Approach or Exceed the NAC)	NBR	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}										Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																	
													6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	L _{eq(h)}	I.L.	NBR	L _{eq(h)}	I.L.	NBR							
R133	C	S250	16.0	SFR	1	Gowdy Ave, LF	64.1	64.6	72.5	0.5	8.4	B (67)	A/E	66.8	<u>5.7</u>	1	65.8	<u>6.7</u>	1	65.5	<u>7</u>	1	65.1	7.4	1	64.6	7.9	1	64.5	<u>8</u>	1	63.8	8.7	1	63.1	9.4	1	62.4	10.1	1
R134	C			SFR	1	Gowdy Ave, LF	65.4	65.8	72.6	0.4	7.2	B (67)	A/E	67.2	<u>5.4</u>	1	66.8	<u>5.8</u>	1	66.3	<u>6.3</u>	1	66.1	<u>6.5</u>	1	65.8	<u>6.8</u>	1	65.7	<u>6.9</u>	1	65	7.6	1	64.4	8.2	1	63.9	8.7	1
R135	C			SFR	1	Gowdy Ave, LF	64.4	64.8	71.4	0.4	7.0	B (67)	A/E	66.3	<u>5.1</u>	1	65.7	<u>5.7</u>	1	65.3	<u>6.1</u>	1	65.1	<u>6.3</u>	1	64.9	<u>6.5</u>	1	64.7	<u>6.7</u>	1	64	7.4	1	63.3	8.1	1	62.7	8.7	1
R136	C			SFR	1	Gowdy Ave, LF	64	64.4	70.7	0.4	6.7	B (67)	A/E	65.8	4.9	0	65.5	<u>5.2</u>	1	64.9	<u>5.8</u>	1	64.7	<u>6</u>	1	64.4	<u>6.3</u>	1	64.3	<u>6.4</u>	1	63.7	<u>7</u>	1	63.1	7.6	1	62.4	8.3	1
R137	C			SFR	1	Gowdy Ave, LF	67.2	67.7	73.6	0.5	6.4	B (67)	A/E	68.3	<u>5.3</u>	1	67.9	<u>5.7</u>	1	67.7	<u>5.9</u>	1	67.4	<u>6.2</u>	1	67.2	<u>6.4</u>	1	67.1	<u>6.5</u>	1	66.4	7.2	1	65.6	<u>8</u>	1	64.8	8.8	1
R138	C			SFR	1	Red Robin Ln, LF	65.2	65.9	69.4	0.7	4.2	B (67)	A/E	65.8	3.6	0	65.7	3.7	0	65.6	3.8	0	65.5	3.9	0	65.5	3.9	0	65.3	4.1	0	65.6	3.8	0	64.7	4.7	0			
R139	C			SFR	1	Red Robin Ln, LF	64.3	65.1	70	0.8	5.7	B (67)	A/E	65.1	4.9	0	65	<u>5</u>	1	64.9	<u>5.1</u>	1	64.8	<u>5.2</u>	1	64.8	<u>5.2</u>	1	64.5	<u>5.5</u>	1	66	4	0	65.3	4.7	0			
NR139/ ST7	C			SFR	1	Red Robin Ln, LF	63.8	64.7	69.6	0.9	5.8	B (67)	A/E	64.7	4.9	0	64.6	<u>5</u>	1	64.5	<u>5.1</u>	1	64.5	<u>5.1</u>	1	64.4	<u>5.2</u>	1	63.7	<u>5.9</u>	1	64.3	<u>5.3</u>	1	65	4.6	0			
R140	C			SFR	1	Red Robin Ln, LF	63.4	64.5	68.2	1.1	4.8	B (67)	A/E	64.7	3.5	0	64.6	3.6	0	64.4	3.8	0	64.4	3.8	0	64.3	3.9	0	64.2	4	0	64.1	4.1	0	63.4	4.8	0	62.7	5.5	1
R141	C			SFR	1	Red Robin Ln, LF	64.7	65.3	67.6	0.6	2.9	B (67)	A/E	65.8	1.8	0	65.7	1.9	0	65.6	2	0	65.7	1.9	0	65.8	1.8	0	65.7	1.9	0	65	2.6	0	64.1	3.5	0	63.3	4.3	0
R142	C			SFR	1	Red Robin Ln, LF	65.8	66.5	70.8	0.7	5.0	B (67)	A/E	66.7	4.1	0	66.6	4.2	0	66.6	4.2	0	66.5	4.3	0	66.4	4.4	0	66.4	4.4	0	65.4	<u>5.4</u>	1	64.4	<u>6.4</u>	1	64.1	<u>6.7</u>	1
R143	C			SFR	1	Red Robin Ln, LF	65.4	65.9	69.5	0.5	4.1	B (67)	A/E	66.4	3.1	0	66.2	3.3	0	66.1	3.4	0	65.9	3.6	0	65.8	3.7	0	65.7	3.8	0	65.9	3.6	0	64.8	4.7	0	64.1	<u>5.4</u>	1
R144	C			SFR	1	Red Robin Ln, LF	65.6	66	68.9	0.4	3.3	B (67)	A/E	66.8	2.1	0	66.6	2.3	0	66.4	2.5	0	66.3	2.6	0	66.1	2.8	0	66	2.9	0	64.9	4	0	64.1	4.8	0	63.3	<u>5.6</u>	1
R145	C			SFR	1	Red Robin Ln, LF	64.7	65.1	68.4	0.4	3.7	B (67)	A/E	66.2	2.2	0	66	2.4	0	65.7	2.7	0	65.5	2.9	0	65.4	3	0	65.3	3.1	0	64.3	4.1	0	63.6	4.8	0	62.9	5.5	1
R146	D	S227		RES	1	A DL Carlota, LH	76.1	74.8	73.4	-1.3	-2.7	E (72)	A/E	70	3.4	0	70	3.4	0	69.2	4.2	0	68.6	4.8	0	68.2	<u>5.2</u>	1	67.9	<u>5.5</u>	1	67.5	<u>5.9</u>	1	67.2	<u>6.2</u>	1	66.9	<u>6.5</u>	1
R147	D			RES	1	A DL Carlota, LH	72.3	71.4	72.6	-0.9	0.3	E (72)	A/E	68.6	4	0	68.6	4	0	68.1	4.5	0	67.6	<u>5</u>	1	67.1	<u>5.5</u>	1	66.7	<u>5.9</u>	1	66.5	<u>6.1</u>	1	66.2	<u>6.4</u>	1	66	<u>6.6</u>	1
R148	D			RES	1	El Toro Rd, LH	66.5	66.9	66.8	0.4	0.3	E (72)	NO	66	0.8																									

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall in Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level L _{eq(h)} , dBA	I-5 Future Noisiest Hour Noise Levels - L _{eq(h)}																																
								Noise Level Prediction with Barrier [L _{eq(h)}], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)																																
								6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 Feet								
R155	D	S245	8.5	MFR	1	R Granada, LW	52	51.8	53.5	-0.2	1.5	B (67)	NO	53.3	0.2	0	52.9	0.6	0	52.6	0.9	0	52.3	1.2	0	52.1	1.4	0	52.2	1.3	0	52	1.5	0	51.8	1.7	0	51.6	1.9	0
R156	D			MFR	1	R Granada, LW	51.9	51.9	52.8	0	0.9	B (67)	NO	52.7	0.1	0	52.5	0.3	0	52.4	0.4	0	52.4	0.4	0	52.4	0.4	0	52.2	0.6	0	52.1	0.7	0	52	0.8	0	52	0.8	0
R157	D			MFR	2	R Granada, LW	52.3	52.6	55.9	0.3	3.6	B (67)	NO	55.1	0.8	0	54.5	1.4	0	53.7	2.2	0	53.1	2.8	0	52.2	3.7	0	51.6	4.3	0	50.9	5	2	50.6	5.3	2	50.5	5.4	2
R158	D			MFR	2	R Granada, LW	54	54.2	57.8	0.2	3.8	B (67)	NO	56.6	1.2	0	55.7	2.1	0	54.8	3	0	53.9	3.9	0	53.4	4.4	0	52.5	5.3	2	52	5.8	2	51.3	6.5	2	50.8	7	2
R159	D			MFR	2	R Granada, LW	52	52.2	54.1	0.2	2.1	B (67)	NO	54	0.1	0	53.6	0.5	0	53.3	0.8	0	52.8	1.3	0	52.4	1.7	0	51.6	2.5	0	51.3	2.8	0	51.1	3	0	50.9	3.2	0
R160.1	D		12.0	MFR	2	R Granada, LW	63	63.4	65.1	0.4	2.1	B (67)	NO	63.2	1.9	0	61.7	3.4	0	60.1	5	0	59.2	5.9	2	58.7	6.4	2	60.1	5	2	59.9	5.2	2	60	5.1	2	60.6	4.5	2
R160.2	D			MFR	2	R Granada, LW	68.9	69.2	72.8	0.3	3.9	B (67)	A/E	71.1	1.7	0	69.6	3.2	0	67.9	4.9	0	66.9	5.9	2	66.3	6.5	2	65.3	7.5	2	64.5	8.3	2	63.6	9.2	2	62.9	9.9	2
R161	D		8.5	MFR	2	R Granada, LW	53.7	54	58.2	0.3	4.5	B (67)	NO	56.9	1.3	0	56.1	2.1	0	55.4	2.8	0	54.7	3.5	0	53.9	4.3	0	53.3	4.9	0	52.9	5.3	2	52.5	5.7	2	52.2	6	2
R162	D			MFR	1	R Granada, LW	53.8	54.2	57.4	0.4	3.6	B (67)	NO	56	1.4	0	55.8	1.6	0	55.1	2.3	0	54.4	3	0	53.7	3.7	0	53.2	4.2	0	52.7	4.7	0	52.3	5.1	1	52	5.4	1
R163/ ST10	D			NMS		R Granada, LW	54.8	55.2	58.9	0.4	4.1	B (67)	NO	57.3	1.6		57	1.9		56	2.9		55.2	3.7		54.4	4.5		53.7	5.2		53.2	5.7		52.7	6.2		52.3	6.6	
R164	D		8.0	MFR	4	R Granada, LW	55.8	56.3	60	0.5	4.2	B (67)	NO	58.3	1.7	0	57.8	2.2	0	56.8	3.2	0	56	4	0	55.2	4.8	0	54.6	5.4	4	54.1	5.9	4	53.6	6.4	4	53.2	6.8	4
R165	D			MFR	4	R Granada, LW	57.6	58.2	61.7	0.6	4.1	B (67)	NO	59.7	2	0	58.5	3.2	0	57.6	4.1	0	56.6	5.1	4	55.9	5.8	4	55.4	6.3	4	55	6.7	4	54.7	7	4	54.5	7.2	4
R166	D			MFR		NOT USED																																		
R167.1	D		12.0	MFR	4	R Granada, LW	64.7	65.1	65.6	0.4	0.9	B (67)	NO	63.8	1.8	0	62.2	3.4	0	60.6	5	4	59.2	6.4	4	58.3	7.3	4	57.5	8.1	4	56.8	8.8	4	56.2	9.4	4	55.7	9.9	4
R167.2	D			MFR	4	R Granada, LW	78	78.4	78.7	0.4	0.7	B (67)	A/E	77.3	1.4	0	75.5	3.2	0	72.8	5.9	4	70.7	8	4	69.2	9.5	4	68.2	10.5	4	67	11.7	4	66.2	12.5	4	65.1	13.6	4
R168	D		12.0	MFR		NOT USED																																		
R169.1	D			MFR	2	R Granada, LW	65.5	65.9	66.2	0.4	0.7	B (67)	A/E	64.3	1.9	0	62.9	3.3	0	61	5.2	2	59.8	6.4	2	58.9	7.3	2	58	8.2	2	57.4	8.8	2	56.8	9.4	2	56.4	9.8	2
R169.2	D			MFR	2	R Granada, LW	77.5	77.8	78	0.3	0.5	B (67)	A/E	76.9	1.1	0	75.4	2.6	0	72.5	5.5	2	70.7	7.3	2	69.2	8.8	2	68.2	9.8	2	66.9	11.1	2	66.2	11.8	2	65.1	12.9	2
NR169/ ST9	D		8.0	NMS		R Granada, LW	64.8	65.2	65.6	0.4	0.8	B (67)	NO	63.6	2		62.2	3.4		60.5	5.1		59.2	6.4		58.3	7.3		57.4	8.2		56.8	8.8		56.2	9.4		55.7	9.9	
R170.1	D			MFR	4	R Granada, LW	67.1	67.6	67.6	0.5	0.5	B (67)	A/E	65.8	1.8	0	64	3.6	0	62.4	5.2	4	61.3	6.3	4	60.5	7.1	4	59.6	8	4	59.1	8.5	4	58.7	8.9	4	59.4	8.2	4
R170.2	D																																							

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall in Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq(h)}$, dBA	Future Build $L_{eq(h)}$, dBA	Future No Build minus Existing Condition $L_{eq(h)}$, dBA	Future Build minus Existing Condition $L_{eq(h)}$, dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - $L_{eq(h)}$												Noise Level Prediction with Barrier [$L_{eq(h)}$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)															
													6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	$L_{eq(h)}$	I.L.	NBR	$L_{eq(h)}$	I.L.	NBR							
R173	D	S245	12.0	MFR	2	R Granada, LW	62.7	63	63.2	0.3	0.5	B (67)	NO	62.1	1.1	0	61.4	1.8	0	60.5	2.7	0	58.8	4.4	0	59.5	3.7	0	58.6	4.6	0	58	5.2	2	57.6	5.6	2	57.1	6.1	2
R174	D			MFR	4	R Granada, LW	62.7	63	63.3	0.3	0.6	B (67)	NO	62.3	1	0	61.6	1.7	0	61.1	2.2	0	59.9	3.4	0	59.4	3.9	0	59	4.3	0	58.3	5	4	57.6	5.7	4	57.1	6.2	4
R175.2	D			MFR	2	R Granada, LW	71.1	71.3	71.6	0.2	0.5	B (67)	A/E	71.2	0.4	0	69.8	1.8	0	68.3	3.3	0	67.4	4.2	0	66.3	5.3	2	65.4	6.2	2	64.5	7.1	2	65	6.6	2	64	7.6	2
R175.3	D			MFR	2	R Granada, LW	76.2	76.6	76.7	0.4	0.5	B (67)	A/E	75.7	1	0	75.2	1.5	0	74.7	2	0	73.7	3	0	72.1	4.6	0	70.6	6.1	2	69.1	7.6	2	67.8	8.9	2	66.7	10	2
R176.1	D			MFR	2	R Granada, LW	67	67.6	67.6	0.6	0.6	B (67)	A/E	62.9	4.7	0	62.1	5.5	2	61.1	6.5	2	60.3	7.3	2	59.6	8	2	59.4	8.2	2	59	8.6	2	58.5	9.1	2	58.1	9.5	2
R176.2	D			MFR	2	R Granada, LW	69.9	70.3	70.4	0.4	0.5	B (67)	A/E	67.7	2.7	0	66.8	3.6	0	65.8	4.6	0	65	5.4	2	64.4	6	2	63.2	7.2	2	62.1	8.3	2	61.1	9.3	2	60.4	10	2
R177.2	D			MFR	4	R Granada, LW	60	60.3	60.5	0.3	0.5	B (67)	NO	60	0.5	0	59.8	0.7	0	59.4	1.1	0	58.7	1.8	0	57.5	3	0	56.6	3.9	0	55.8	4.7	0	55.4	5.1	4	55.9	4.6	0
R177.3	D			MFR	4	R Granada, LW	67.2	67.5	67.6	0.3	0.4	B (67)	A/E	67.1	0.5	0	66.9	0.7	0	66.5	1.1	0	65.9	1.7	0	64.7	2.9	0	63.7	3.9	0	62.9	4.7	0	62.2	5.4	4	61.4	6.2	4
R178.1	D			MFR	2	R Granada, LW	62.7	63.7	63.3	1	0.6	B (67)	NO	59.2	4.1	0	58.7	4.6	0	57.7	5.6	2	57	6.3	2	56.6	6.7	2	56.5	6.8	2	56.1	7.2	2	55.7	7.6	2			
R178.2	D			MFR	2	R Granada, LW	66	66.4	66.4	0.4	0.4	B (67)	A/E	63.4	3	0	62	4.4	0	61.1	5.3	2	60.4	6	2	59.7	6.7	2	59.3	7.1	2	58.5	7.9	2	57.9	8.5	2	57.3	9.1	2
R179	D	15.0	15.0	MFR	4	Via Puerta, LW	71.3	72.4	72.5	1.1	1.2	B (67)	A/E	71.8	0.7	0	71.2	1.3	0	70.3	2.2	0	69.4	3.1	0	68.4	4.1	0	67.6	4.9	0	68.2	4.3	0	68.1	4.4	0	67.4	5.1	4
R180/ST8	D			NMS		Via Puerta, LW	68.6	68.1	68.2	-0.5	-0.4	B (67)	NO	67.5	0.7		66.8	1.4		65.6	2.6		64.4	3.8		62.6	5.6		60.9	7.3		59.9	8.3		59	9.2		58.3	9.9	
R181.1	D			MFR	4	Via Puerta, LW	70.3	71.2	71.3	0.9	1.0	B (67)	A/E	70.8	0.5	0	70	1.3	0	68.7	2.6	0	67.9	3.4	0	66.2	5.1	4	64.4	6.9	4	64.6	6.7	4	64.1	7.2	4	63.9	7.4	4
R181.2	D			MFR	4	Via Puerta, LW	81.7	83.3	83.3	1.6	1.6	B (67)	A/E	83	0.3	0	82.4	0.9	0	81.5	1.8	0	80.1	3.2	0	78.7	4.6	0	76	7.3	4	73.4	9.9	4	71.7	11.6	4	70.1	13.2	4
R182.1	D			MFR	2	Via Puerta, LW	65.8	66.4	66.5	0.6	0.7	B (67)	A/E	65.9	0.6	0	65.2	1.3	0	64.6	1.9	0	64.2	2.3	0	62.4	4.1	0	60.9	5.6	2	60.9	5.6	2	60.6	5.9	2			
R182.2	D			MFR	2	Via Puerta, LW	76.1	76.7	76.7	0.6	0.6	B (67)	A/E	76	0.7	0	74.7	2	0	73.6	3.1	0	72.4	4.3	0	71	5.7	2	69.7	7	2	68.2	8.5	2	67.2	9.5	2	66.3	10.4	2
R183	D			MFR	2	Via Puerta, LW	70	70.6	70.6	0.6	0.6	B (67)	A/E	65.9	4.7	0	65.1	5.5	2	64	6.6	2	63.1	7.5	2	63	7.6	2	62.6	8	2	61.9	8.7	2	61.4	9.2	2			
R184.2	D			MFR	4	Via Puerta, LW	72.7	73	73.1	0.3	0.4	B (67)	A/E	72.9	0.2	0	72.7	0.4																						

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall in Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq(h)}$, dBA	Future Build $L_{eq(h)}$, dBA	Future No Build $L_{eq(h)}$, dBA	Future No-Build minus Existing Condition $L_{eq(h)}$, dBA	Future Build minus Existing Condition $L_{eq(h)}$, dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - $L_{eq(h)}$												Noise Level Prediction with Barrier [$L_{eq(h)}$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
														6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	$L_{eq(h)}$	I.L.	NBR	$L_{eq(h)}$	I.L.	NBR						
R188.2	D	S245	5.0	MFR	4	Via Puerta, LW	66	67.8	67.8	1.8	1.8	B (67)	A/E	67.4	0.4	0	67.1	0.7	0	66.8	1	0	66.1	1.7	0	65.2	2.6	0	64.3	3.5	0	63.2	4.6	0	62.3	5.5	4	61.8	6	4
R188.3	D			MFR	4	Via Puerta, LW	73.2	74.3	74.3	1.1	1.1	B (67)	A/E	73.9	0.4	0	73.4	0.9	0	72.6	1.7	0	72	2.3	0	71.4	2.9	0	69.7	4.6	0	67.9	6.4	4	66.9	7.4	4			
R189.1	D			MFR	2	Via Puerta, LW	65.3	65.8	65.8	0.5	0.5	B (67)	NO	64	1.8	0	63.2	2.6	0	62	3.8	0	61.5	4.3	0	60.2	5.6	2	59.2	6.6	2	58.7	7.1	2	58.2	7.6	2	57.5	8.3	2
R189.2	D			MFR	2	Via Puerta, LW	68.8	69.4	69.4	0.6	0.6	B (67)	A/E	68.3	1.1	0	67.1	2.3	0	66.4	3	0	65	4.4	0	64.1	5.3	2	63.3	6.1	2	62.6	6.8	2	62.5	6.9	2	61.9	7.5	2
R190						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R191						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R192						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R193						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R194						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R195						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R196						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R197						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R198						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R199						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R200						NOT USED										~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R201	B	S191		MFR	1	A DL Carlota, LH	61.7	62.7	63.8	1	2.1	B (67)	NO	59.9	3.9	0	59.5	4.3	0	59	4.8	0	58.5	5.3	1	58	5.8	1	57.7	6.1	1	57.4	6.4	1	57.1	6.7	1	56.9	6.9	1
R202	B			MFR	1	A DL Carlota, LH	62.1	63.4	64.5	1.3	2.4	B (67)	NO	60.5	4	0	59.8	4.7	0	59.4	5.1	1	58.7	5.8	1	58.1	6.4	1	57.8	6.7	1	57.4	7.1	1	57.1	7.4	1	56.9	7.6	1
R203.2	B			MFR	1	A DL Carlota, LH	71.5	73.1	73.6	1.6	2.1	B (67)	A/E	70.4	3.2	0	68.9	4.7	0	67.1	6.5	1	66.4	7.2	1	65	8.6	1	64.2	9.4	1	63.7	9.9	1	63.2	10.4	1	62.9	10.7	1
R203.3	B			MFR	1	A DL Carlota, LH	72.6	73.9	74.3	1.3	1.7	B (67)	A/E	72.6	1.7	0	71.3	3	0	70.7	3.6	0	68.8	5.5	1	67.3	7	1	66	8.3	1	64.9	9.4	1	64.1	10.2	1	63.6	10.7	1
R203.4	B			MFR	1	A DL Carlota, LH	73.3	74.4	74.8	1.1	1.5	B (67)	A/E	74	0.8	0	73.3	1.5	0	72.3	2.5	0	71.5	3.3	0	70.9	3.9	0	68.8	6	1	67.4	7.4	1	66	8.8	1	65	9.8	1
R203.5	B			MFR	1	A DL Carlota, LH	73.8	74.7	75	0.9	1.2	B (67)</td																												

Table 2.12.7: Summary of Predicted Future Noise Level and Feasible Noise Barrier Analysis for Build Alternative 4

Receptor No.	Area	Noise Barrier No.	Existing Wall in Front of Receptor (Height, FT)	Land Use ²	Number of Dwelling Units	Address or General Location ³	Existing Noise Level $L_{eq}(h)$, dBA	Future Build $L_{eq}(h)$, dBA	Future No Build $L_{eq}(h)$, dBA	Future No-Build minus Existing Condition $L_{eq}(h)$, dBA	Future Build minus Existing Condition $L_{eq}(h)$, dBA	Noise Activity Category (NAC) ⁴	Impact Type (A/E - Approach or Exceed the NAC)	I-5 Future Noisiest Hour Noise Levels - $L_{eq}(h)$												Noise Level Prediction with Barrier [$L_{eq}(h)$], Insertion Loss (I.L.), and Number of Benefited Receptors (NBR)														
														6 Feet			8 Feet			10 Feet			12 Feet			14 Feet			16 Feet			18 Feet			20 Feet			22 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	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR						
R206	D	S245	14.0	SPT	2	ADL Carlota, LH	67.8	68.2	79.2	0.4	11.4	C (67)	A/E	78.7	0.5	0	75.5	3.7	0	73.5	<u>5.7</u>	2	71.9	7.3	2	70.8	8.4	2	69.9	9.3	2	69.1	10.1	2	68.4	10.8	2	67.9	11.3	2
R207				MFR		NOT USED									~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~	~				
R208.2	B	S191		MFR	2	ADL Carlota, LH	74.1	75.4	75.9	1.3	1.8	B (67)	A/E	73.1	2.8	0	71.8	4.1	0	70.2	<u>5.7</u>	2	68.4	7.5	2	66.6	9.3	2	65.4	10.5	2	64.4	11.5	2	63.5	12.4	2	62.7	13.2	2
R208.3	B			MFR	2	ADL Carlota, LH	75	76.2	76.6	1.2	1.6	B (67)	A/E	75.7	0.9	0	74.8	1.8	0	73.6	3	0	72.8	3.8	0	71.3	<u>5.3</u>	2	69.1	7.5	2	67.2	9.4	2	65.6	11	2	64.6	12	2
R208.4	B			MFR	2	ADL Carlota, LH	75.6	76.5	76.9	0.9	1.3	B (67)	A/E	76.5	0.4	0	76.2	0.7	0	75.5	1.4	0	74.8	2.1	0	73.9	3	0	73.2	3.7	0	72.3	4.6	0	70	6.9	2	68.1	8.8	2
R208.5	B			MFR	2	ADL Carlota, LH	75.8	76.6	77	0.8	1.2	B (67)	A/E	76.6	0.4	0	76.5	0.5	0	76.1	0.9	0	75.8	1.2	0	75.2	1.8	0	74.5	2.5	0	73.7	3.3	0	73.2	3.8	0	72.6	4.4	0
R209.2	B			MFR	1	ADL Carlota, LH	72.8	74.2	74.7	1.4	1.9	B (67)	A/E	71.5	3.2	0	70.3	4.4	0	68.3	<u>6.4</u>	1	67.1	7.6	1	65.4	9.3	1	64.4	10.3	1	63.6	11.1	1	62.8	11.9	1	62.2	12.5	1
R209.3	B			MFR	1	ADL Carlota, LH	73.8	75	75.4	1.2	1.6	B (67)	A/E	74.3	1.1	0	73.1	2.3	0	72	3.4	0	71.1	4.3	0	69	<u>6.4</u>	1	67.1	8.3	1	65.7	9.7	1	64.5	10.9	1	63.4	12	1
R209.4	B			MFR	1	ADL Carlota, LH	74.4	75.4	75.8	1	1.4	B (67)	A/E	75.1	0.7	0	74.6	1.2	0	73.8	2	0	73	2.8	0	72.2	3.6	0	71.4	4.4	0	69.4	<u>6.4</u>	1	67.5	8.3	1	66.2	9.6	1
R209.5	B			MFR	1	ADL Carlota, LH	74.7	75.6	76	0.9	1.3	B (67)	A/E	75.6	0.4	0	75.3	0.7	0	74.8	1.2	0	74.4	1.6	0	73.7	2.3	0	72.8	3.2	0	72.3	3.7	0	71.6	4.4	0	70.2	5.8	1
R210.2	B			MFR	1	ADL Carlota, LH	72.1	73.5	74.1	1.4	2.0	B (67)	A/E	70.9	3.2	0	69.4	4.7	0	67.5	<u>6.6</u>	1	66.7	7.4	1	65.1	<u>9</u>	1	64.2	9.9	1	63.6	10.5	1	63	11.1	1	62.5	11.6	1
R210.3	B			MFR	1	ADL Carlota, LH	73.2	74.4	74.8	1.2	1.6	B (67)	A/E	73.3	1.5	0	72	2.8	0	71.1	3.7	0	69.6	<u>5.2</u>	1	68	<u>6.8</u>	1	66.4	8.4	1	65.1	9.7	1	64.2	10.6	1	63.6	11.2	1
R210.4	B			MFR	1	ADL Carlota, LH	73.8	74.8	75.2	1	1.4	B (67)	A/E	74.5	0.7	0	73.8	1.4	0	73	2.2	0	72.1	3.1	0	71.6	3.6	0	70.2	<u>5</u>	1	68.1	7.1	1	66.6	8.6	1	65.4	9.8	1
R211.2	B			MFR	2	ADL Carlota, LH	67.9	70.1	70.7	2.2	2.8	B (67)	A/E	67.8	2.9	0	65.9	4.8	0	65.4	<u>5.3</u>	2	65	<u>5.7</u>	2	64.1	<u>6.6</u>	2	63.8	<u>6.9</u>	2	63.5	7.2	2	63.1	7.6	2			
R211.3	B			MFR	2	ADL Carlota, LH	69.1	70.6	71.1	1.5	2.0	B (67)	A/E	68.5	2.6	0	67.8	3.3	0	66.9	4.2	0	65.8	<u>5.3</u>	2	65.2	<u>5.9</u>	2	64.6	<u>6.5</u>	2	64.3	<u>6.8</u>	2	64	7.1	2	63.8	7.3	2
R211.4	B			MFR	2	ADL Carlota, LH	70	71.4	71.8	1.4	1.8	B (67)	A/E	70.2	1.6	0	69.2	2.6	0	68.7	3.1	0	67.3	4.5	0	66.4	<u>5.4</u>	2	65.5	<u>6.3</u>	2	65.1	<u>6.7</u>	2	64.6	7.2	2	64.4</		

Build Alternatives (Alternatives 2 and 4 [including Design Option B])

Predicted future traffic noise levels for all 230 receptor locations were determined with existing walls using the worst-case traffic operation (prior to speed degradation) or the future (2050) peak-hour traffic volumes and speeds obtain from the *Final Traffic Operation Report* (2018). Tables 2.12.6 and 2.12.7 show the existing, future No Build, future Build Alternatives (including Design Option B) traffic noise level results. The modeled future noise levels with the Build Alternatives (including Design Option B) were compared to the modeled existing noise levels (after calibration) from Federal Highway Administration TNM 2.5 to determine whether a substantial noise increase would occur. The modeled future noise levels were also compared to the noise abatement criteria (NAC) under Activity Categories B, C, D, and E to determine whether a traffic noise impact would occur.

Traffic noise impacts occur when either of the following takes place: (1) if the traffic noise level at a sensitive receptor location is predicted to “approach (within 1 dBA) or exceed” the NAC, or (2) if the predicted traffic noise level is substantially higher than its corresponding modeled existing noise level at the sensitive receptor locations analyzed. When traffic noise impacts occur, noise abatement measures must be considered.

Area A

As shown in Tables 2.12.6 and 2.12.7, traffic noise level at receptors in Area A are predicted to be in the range of 62.5 to 74.2 dBA 1-hour equivalent sound level ($L_{eq}[h]$) in the future build condition. The results also indicate that the increase in noise between existing condition and the future build condition is predicted to be in the range of 0 to 1.6 dBA. Although the traffic noise levels in the future build condition would not substantially exceed the No Build/existing noise levels by 12 dBA or more, several receptors (single-family residences and restaurants) are predicted to approach and/or exceed the NAC (67 dBA $L_{eq}[h]$). Therefore, noise abatement must be evaluated and considered in this area. The following receptor locations would be exposed to noise levels that approach or exceed the NAC:

- **Receptors R2, R5, R10, R11, R14 through R16, R18 through R21, R23, R24, R26 through R29, R31 through R33, R35, R37, R40 through R57, and R59.**

These receptors, except Receptor R59, represent existing single-family residences in Area A along several local roads in Lake Forest (Bridger Road, Lakewood Lane, Ankerton Drive, Highpine Road, and Silverbay Drive) on the northbound side of I-5 between Los Alisos Boulevard and El Toro Road. Currently, a soundwall (5 ft to 16 ft high but averages at 14 ft high as shown in Figure 2.12-2) located on the existing State right of way that shields I-5 traffic noise. This wall would not be affected by the Build Alternatives (including Design Option B) and would remain-in-place. A soundwall (NB No. S198) was modeled at the existing location and length at additional proposed heights ranging from 14 ft to 22 ft at 2 ft intervals to shield these residences from future predicted traffic noise levels.

Receptor R59 represents an existing outdoor eating area of the Royal Rasoi Restaurant in Area A, at the end of Swartz Drive on the northbound side of I-5, just south of El Toro Road. Currently no soundwall exists that shields this receptor from freeway traffic noise. As shown in Figure 2.12-3, a noise barrier (NB No. S216) ranging from 6 ft to 22 ft high at 2 ft intervals with an approximate length of 316 ft was modeled at the existing State to shield this area from future predicted traffic noise levels.

Area B

As shown in Tables 2.12.6 and 2.12.7, traffic noise levels at receptors in Area B are predicted to be in the range of 63.7 to 78.6 dBA $L_{eq}(h)$ in the future build condition. The results also indicate that the increase in noise between existing condition and the future build condition is predicted to be in the range of 0.7 to 8.2 dBA. Although the traffic noise levels in the future build condition would not substantially exceed the No Build/existing noise levels by 12 dBA or more, several receptors (multifamily residences, an office, and restaurants) are predicted to approach and/or exceed the NAC (67 dBA $L_{eq}[h]$). Therefore, noise abatement must be evaluated and considered in this area. The following receptor locations would be exposed to noise levels that approach or exceed the NAC:

- **Receptors R61, R62.2 through R62.5, R203.2 through R203.5, R204.2 through R204.5, R205.2 through R205.5, R208.2 through R208.5, R209.2 through R209.5, R210.2 through R210.4, and R211.2 through R211.5.**

These receptors represent a majority of the second, third, fourth, and fifth floor balconies of the Reata Apartments, which is in Area B along Avenida De La Carlota on the southbound side of I-5 between Los Alisos Boulevard and El Toro Road. Receptor R61 represents an outside sitting area of an office building also adjacent to the same local road. Currently there is no existing soundwall that shields these receptors from freeway traffic noise. As shown in Figure 2.12-3, a noise barrier (NB No. S191) ranging from 6 ft to 22 ft high at 2 ft intervals with a length of 1,763 ft was modeled at the new State's ROW/freeway edge of shoulder to shield these impacted receptors.

Area C

As shown in Tables 2.12.6 and 2.12.7, traffic noise levels at receptors in Area C are predicted to range from 64.2 to 83.2 dBA $L_{eq}(h)$ in the future build condition. The results also indicate that the increase in noise between existing condition and the future build conditions is predicted to range from 0.9 to 14.6 dB. The traffic noise levels in the future build condition at several receptors (single-family residences, park, and restaurants) are predicted to approach and/or exceed the noise abatement criterion (67 dBA $L_{eq}[h]$) and substantially exceed the No Build/existing noise levels by 12 dBA at one receptor R105 (Cavanaugh Mini Park in Lake Forest). Therefore, noise abatement must be evaluated and considered in this area. The following receptor locations would be exposed to noise levels that approach or exceed the NAC.

- **Receptors R72, R73, and R75 through R145**

These receptors, except R72 and R73, represent most of single-family residences and Cavanaugh Mini Park in Area C along several local roads (Cavanaugh Road, Gowdy Avenue, Dune Mear Road, and Red Robin Lane) in Lake Forest on the northbound side of I-5 between El Toro Road and Ridge Route Drive. Currently there is an existing soundwall (14 ft to 16 ft high, with a majority of the wall's length at 16 ft high) located on the existing State ROW that shields these residences from I-5 traffic noise (as shown in Figure 2.12-2). A little more than half of the existing length of the soundwall would need to be demolished to accommodate the improvements for the Build Alternatives (including Design Option B) in this area. As shown in Figure 2.12-3, a noise barrier (NB No. S236) ranging from 6 ft to 22 ft high at 2 ft intervals with a length of 1,766 ft was modeled at the new State ROW/freeway edge of shoulder and joins to the existing soundwall. Another noise barrier (NB No. S250) ranging from 16 ft to 22 ft high at 2 ft intervals with a length of 1,180 feet was modeled for receptors R130-R145. Both barriers were evaluated to shield this area from future predicted traffic noise.

Receptors R72 and R73 represents existing outdoor eating areas of The Pub and HoneyBaked Ham Co. restaurants in Area C, along Bridger Rd on the northbound side of I-5 just north of El Toro Road. Currently, no existing soundwall shields these receptors from freeway traffic noise. As shown in Figure 2.12-3, a noise barrier (NB No. S226) ranging from 6 feet to 22 ft high at 2 ft intervals with a length of 804 ft was modeled at the edge of shoulder of northbound I-5 just north of the El Toro Road Undercrossing to shield this area from future predicted traffic noise levels.

Area D

As shown in Tables 2.12.6 and 2.12.7, traffic noise levels at receptors in Area D are predicted to range from 51.5 to 83.4 dBA L_{eq}(h) in the future build condition. The results also indicate that the increase in noise between the existing condition and the future build condition is predicted to be in the range of -2.7 to 11.6 dB. Although the traffic noise levels in the future build condition do not substantially exceed the No Build/existing noise levels by 12 dBA or more, several receptors (multifamily residences, a park, and restaurants) are predicted to approach and/or exceed the NAC (67 dBA L_{eq}[h]). Therefore, noise abatement must be evaluated and considered in this area. The following receptor locations would be exposed to noise levels that approach or exceed the NAC.

- **Receptors R71, R146, R147, R160.2, R167.2, R169.1, R169.2, R170.1 through R171.2, R175.2 through R176.2, R177.3, R178.2 through R186, R187.3 through R188.3, R189.2, and R206.**

A majority of the receptors, except R146, R147, and R206, represent multifamily residences of Laguna Woods Village in Area D along Avenida De La Carlota in Laguna Woods on the southbound side of I-5 between Ridge Route Drive and El Toro Road. Receptor 71 represents a day care outdoor area at St. George's Episcopal Church and Pathway School, and Receptors R146 and R147 are outdoor

eating areas of two local restaurants, Rodrigo's Mexican Grill and Farmer Boys. Currently there is an existing property wall along the boundary of the village with heights ranging from 8 feet to 15 feet that helps shield existing freeway and local traffic noise adjacent to the multifamily residence receptors. In addition, as shown in Figure 2.12-2, an existing soundwall with a height of 14 feet runs between the church/school ground area and the freeway, which helps shield the freeway traffic noise. As shown in Figure 2.12-3, noise barriers (NB Nos. S225, S229, S235, and S245) ranging from 6 to 22 ft high at 2 ft intervals, with lengths of 637 ft, 782 ft, 260 ft, and 1,982 or 2,927 ft, respectively, in both Build Alternatives (including Design Option B) were modeled at the existing and new State ROW or edge of shoulder of southbound I-5 to shield this area from future predicted traffic noise levels.

Noise Abatement Consideration

Noise abatement measures, such as noise barriers, were considered to shield receptors within the Study Area adjacent to the project limits that would become or would continue to be exposed to traffic noise levels approaching or exceeding the NAC. As discussed earlier, the predicted traffic noise levels under design-year or future build condition were found to approach or exceed the NAC of 67 dBA hourly equivalent sound level ($L_{eq}[h]$) for Activity Category B (67 dBA L_{eq} NAC) within Areas A through D; Activity Category C (67 dBA L_{eq} NAC) within Areas C and D; and Activity Category E (72 dBA L_{eq} NAC) within Areas A through D. Therefore, noise abatement measures are considered and evaluated due to the predicted traffic noise impacts.

A total of eight noise barriers (S191, S216, S226, S229, S235, S236, S245, and S250)¹ were analyzed to shield receptor locations that would be exposed to predicted traffic noise levels approaching or exceeding the NAC for Build Alternatives 2 and 4 (including Design Option B)². All eight barriers were evaluated at wall heights ranging from 6 ft to 22 ft. Figure 2.12-3 shows noise barrier locations. Table 2.12.8 presents a summary of barrier evaluations, including locations, heights, and the calculated reasonable allowances of the modeled barriers based on Build Alternatives 2 and 4 (including Design Option B).

¹ S198 was evaluated at additional heights of 14 ft to 22 ft at the same location and did not meet the 5-dB requirement for feasibility; S225 met the feasibility requirement, but did not meet the 7-dB noise reduction design goal. Therefore, these two soundwalls were not evaluated as part of the NADR.

² Analysis of Noise Barriers Nos. 226, 236 and 245 under Build Alternative 4 also apply to Design Option B.

Table 2.12.8 Summary of Noise Barrier Evaluation and Abatement Key Information

Barrier No.	Approximate Location	Build Alternative 2								Build Alternative 4 ²									
		Approximate Length (ft)	Height (ft)	Acoustically Feasible? (Yes or No)	Number of Benefited Receptors	Design Goal Achieved (Yes or No)	Reasonable Allowance Per Receptor	Total Reasonable Allowances	Estimated Construction Cost	Cost Less Than Allowance? (Yes or No)	Approximate Length (ft)	Height (ft)	Acoustically Feasible? (Yes or No)	Number of Benefited Receptors	Design Goal Achieved (Yes or No)	Reasonable Allowance Per Receptor	Total Reasonable Allowances	Estimated Construction Cost	Cost Less Than Allowance? (Yes or No)
S191	EOS	1763	6	Yes	1	Yes	\$95,000	\$95,000	\$7,181,100	No	1763	6	No	0	---	---	---	---	---
			8	Yes	2	Yes	\$95,000	\$190,000	\$7,262,600	No		8	No	0	---	---	---	---	---
			10	Yes	12	Yes	\$95,000	\$1,140,000	\$7,341,800	No		10	Yes	14	No	---	---	---	---
			12	Yes	23	Yes	\$95,000	\$2,185,000	\$7,422,800	No		12	Yes	22	Yes	\$95,000	\$2,090,000	\$6,604,700	No
			14	Yes	32	Yes	\$95,000	\$3,040,000	\$7,502,500	No		14	Yes	31	Yes	\$95,000	\$2,945,000	\$6,684,400	No
			16	Yes	38	Yes	\$95,000	\$3,610,000	\$7,587,700	No		16	Yes	35	Yes	\$95,000	\$3,325,000	\$6,769,600	No
			18	Yes	45	Yes	\$95,000	\$4,275,000	\$8,464,000	No		18	Yes	41	Yes	\$95,000	\$3,895,000	\$7,722,500	No
			20	Yes	47	Yes	\$95,000	\$4,465,000	\$8,850,400	No		20	Yes	45	Yes	\$95,000	\$4,465,000	\$8,108,900	No
			22	Yes	47	Yes	\$95,000	\$4,465,000	\$9,249,600	No		22	Yes	46	Yes	\$95,000	\$4,370,000	\$8,508,100	No
			6	No	0	---	---	---	---	---		6	No	0	---	---	---	---	---
S216	ROW	317	8	Yes	1	No	---	---	---	---	317	8	Yes	1	No	---	---	---	---
			10	Yes	1	Yes	\$95,000	\$95,000	\$119,800	No		10	Yes	1	Yes	\$95,000	\$95,000	\$119,800	No
			12	Yes	1	Yes	\$95,000	\$95,000	\$139,800	No		12	Yes	1	Yes	\$95,000	\$95,000	\$139,800	No
			14	Yes	1	Yes	\$95,000	\$95,000	\$157,500	No		14	Yes	1	Yes	\$95,000	\$95,000	\$157,500	No
			16	Yes	1	Yes	\$95,000	\$95,000	\$175,500	No		16	Yes	1	Yes	\$95,000	\$95,000	\$175,500	No
			18	Yes	1	Yes	\$95,000	\$95,000	\$248,900	No		18	Yes	1	Yes	\$95,000	\$95,000	\$248,900	No
			20	Yes	1	Yes	\$95,000	\$95,000	\$284,600	No		20	Yes	1	Yes	\$95,000	\$95,000	\$284,600	No
			22	Yes	1	Yes	\$95,000	\$95,000	\$307,300	No		22	Yes	1	Yes	\$95,000	\$95,000	\$307,300	No
			6	Yes	1	No	---	---	---	---		6	Yes	1	No	---	---	---	---
			8	Yes	1	No	---	---	---	---		8	Yes	1	No	---	---	---	---
S226 ¹	EOS	804	N/A								804	6	Yes	1	No	---	---	---	---
			8	Yes	1	No	---	---	---	---		8	Yes	1	No	---	---	---	---
			10	Yes	1	No	---	---	---	---		10	Yes	1	No	---	---	---	---
			12	Yes	1	No	---	---	---	---		12	Yes	1	No	---	---	---	---
			14	Yes	1	No	---	---	---	---		14	Yes	1	No	---	---	---	---
			16	Yes	1	No	---	---	---	---		16	Yes	1	No	---	---	---	---
			18	Yes	1	No	---	---	---	---		18	Yes	1	No	---	---	---	---
			20	Yes	1	No	---	---	---	---		20	Yes	1	No	---	---	---	---
			22	Yes	1	No	---	---	---	---		22	Yes	1	No	---	---	---	---
			6	Yes	24	Yes	\$95,000	\$2,280,000	\$3,045,200	No		6	Yes	5	Yes	\$95,000	\$475,000	\$3,045,200	No
S236	EOS/ROW	1766	8	Yes	26	Yes	\$95,000	\$2,470,000	\$3,122,900	No	1766	8	Yes	11	Yes	\$95,000	\$1,045,000	\$3,122,900	No
			10	Yes	29	Yes	\$95,000	\$2,755,000	\$3,200,600	No		10	Yes	24	Yes	\$95,000	\$2,280,000	\$3,200,600	No
			12	Yes	34	Yes	\$95,000	\$3,230,000	\$3,278,300	No		12	Yes	32	Yes	\$95,000	\$3,040,000	\$3,278,300	No
			14	Yes	35	Yes	\$95,000	\$3,325,000	\$3,356,000	No		14	Yes	35	Yes	\$95,000	\$3,325,000	\$3,356,000	No
			16	Yes	42	Yes	\$95,000	\$3,990,000	\$3,433,700	Yes		16	Yes	39	Yes	\$95,000	\$3,705,000	\$3,433,700	Yes
			18	Yes	46	Yes	\$95,000	\$4,370,000	\$4,520,600	No		18	Yes	48	Yes	\$95,000	\$4,560,000	\$4,520,600	No
			20	Yes	49	Yes	\$95,000	\$4,655,000	\$4,802,500	No		20	Yes	48	Yes	\$95,000	\$4,560,000	\$4,802,500	No
			22	Yes	49	Yes	\$95,000	\$4,655,000	\$5,092,100	No		22	Yes	48	Yes	\$95,000	\$4,560,000	\$5,092,100	No
			6	No	0	---	---	---	---	---		6	Yes	2	No	---	---	---	---
			8	Yes	2	No	---	---	---	---		8	Yes	21	No	---	---	---	---
S229/ S235/ S245	EOS/ROW	3024	10	Yes	21	No	---	---	---	---	N/A	10	Yes	37	No	---	---	---	---
			12	Yes	37	No	---	---	---	---		12	Yes	49	No	---	---	---	---
			14	Yes	49	No	---	---	---	---		14	Yes	63	Yes	\$95,000	\$5,985,000	\$8,194	

Table 2.12.8 Summary of Noise Barrier Evaluation and Abatement Key Information

Barrier No.	Approximate Location	Build Alternative 2								Build Alternative 4 ²									
		Approximate Length (ft)	Height (ft)	Acoustically Feasible? (Yes or No)	Number of Benefited Receptors	Design Goal Achieved (Yes or No)	Reasonable Allowance Per Receptor	Total Reasonable Allowances	Estimated Construction Cost	Cost Less Than Allowance? (Yes or No)	Approximate Length (ft)	Height (ft)	Acoustically Feasible? (Yes or No)	Number of Benefited Receptors	Design Goal Achieved (Yes or No)	Reasonable Allowance Per Receptor	Total Reasonable Allowances	Estimated Construction Cost	Cost Less Than Allowance? (Yes or No)
S245	EOS/ROW	N/A	N/A								2927	6	No	---	---	---	---	---	---
												8	Yes	4	No	---	---	---	---
												10	Yes	32	No	---	---	---	---
												12	Yes	46	No	---	---	---	---
												14	Yes	58	No	---	---	---	---
												16	Yes	76	Yes	\$95,000	\$7,220,000	\$9,250,300	No
												18	Yes	94	Yes	\$95,000	\$8,930,000	\$10,820,100	No
												20	Yes	111	Yes	\$95,000	\$10,545,000	\$11,773,600	No
												22	Yes	111	Yes	\$95,000	\$10,545,000	\$12,777,400	No
S250	EOS/ROW	1129	16	Yes	13	Yes	\$95,000	\$1,235,000	----	----	1129	16	Yes	15	Yes	\$95,000	\$1,425,000	----	----
			18	Yes	16	Yes	\$95,000	\$1,520,000	\$3,996,000	No		18	Yes	16	Yes	\$95,000	\$1,520,000	\$3,996,000	No
			20	Yes	15	Yes	\$95,000	\$1,425,000	\$4,207,300	No		20	Yes	15	Yes	\$95,000	\$1,425,000	\$4,207,300	No
			22	Yes	18	Yes	\$95,000	\$1,710,000	\$4,423,600	No		22	Yes	18	Yes	\$95,000	\$1,710,000	\$4,423,600	No

Source: Noise Study Report (December 2018) and Noise Abatement Decision Report (February 2019)

¹ Noise Barrier do not apply to Alternative 2 because the receptors behind the barrier will be eliminated.

² Analysis of Noise Barriers Nos. 226, 236 and 245 also apply to Design Option B.

EOS = Edge of Shoulder

ft = feet

ROW = Caltrans Right of Way

N/A = Not Applicable

Noise Barrier Feasibility

The non-acoustical factors considered as part of feasibility are geometric standards (e.g., sight distances), safety, maintenance, security, geotechnical issues, utility relocations, and aesthetics. Some of these non-acoustical factors will have to be investigated during the design phase.

Based on preliminary designs for the Build Alternatives and associated abatement, no non-acoustical factors related to feasibility have been identified that would be considered out of the ordinary for noise barrier construction. As shown in Table 2.12.8, eight noise barriers were determined to be feasible, reducing noise levels by 5 dBA or more at one or more receptor locations. The same table also lists the height, approximate length, number of benefited receptors, cost of construction compared to the reasonable allowance cost for each noise barrier height, and reasonable allowance for each noise barrier that was considered feasible and reasonable. However, cost associated with the mitigation of secondary effects from abatement were not available at the time; therefore, the information is not included in this section. Should secondary effects be identified, the cost to construct would be updated during design phase.

Noise Barrier Reasonableness

The preliminary reasonableness of a noise barrier was determined by comparing the estimated construction cost of the noise barrier against the total reasonable allowance. The total reasonable allowance is based on the number of benefited receptors or, in this case, residential equivalents multiplied by the reasonable allowance per benefited receptor for the year 2018. If the estimated noise barrier total construction cost exceeds the total reasonable allowance, the noise barrier is determined to be not reasonable. As discussed earlier, the reasonableness information for each barrier is also shown in Table 2.12.8.

The preliminary feasible and reasonable determinations for each noise barrier are discussed below (refer to Table 2.12.8 for detailed information and Figures 2.12-2 and 2.12-3 for locations of the noise barriers):

- **NB No. S191.** This barrier was identified to be acoustically feasible and would meet Caltrans' noise reduction design goal at wall heights ranging from 6 to 22 ft for Alternative 2. For Alternative 4, the noise barrier was only found to meet both criteria (acoustically feasible and design goal achieved) at wall heights ranging from 12 to 22 ft. The barrier is proposed along southbound I-5 between El Toro Road and Los Alisos Boulevard at the freeway's right edge of shoulder. The total length would be 1,763 ft for both Build Alternatives (including Design Option B). The noise barrier is expected to be supported by a retaining wall with varying heights.

Based on the costs shown in Table 2.12.8, the cost to construct NB No. S191 would exceed the reasonableness allowances at all feasible barrier heights ranging from 6 to 22 ft for both Build Alternatives (including Design Option B). Because the construction costs exceed the reasonableness allowances for all

feasible wall heights, NB No. S191 becomes unreasonable for construction as part of the Build Alternatives (including Design Option B) and is not recommended.

- **NB No. S216.** This barrier was identified to be acoustically feasible and would meet Caltrans' noise reduction design goal at wall heights ranging from 10 to 22 ft for both Build Alternatives and Design Option B. The barrier is proposed along northbound I-5 between Los Alisos Blvd and El Toro Rd and adjacent to the northbound I-5 off-ramp to El Toro Road/Bridger Road at the Caltrans ROW. The total length of the barrier would be 317 ft. The barrier is expected to be supported by concrete pile cap on cast-in-drilled hole (CIDH) concrete piles.

Based on the costs shown in Table 2.12.8, the cost to construct NB No. S216 would exceed the reasonableness allowances at all feasible barrier heights ranging from 10 to 22 ft for the Build Alternatives and Design Option B. Because the construction costs exceed the reasonableness allowances for all feasible wall heights, NB No. S216 becomes unreasonable for construction as part of the Build Alternatives (including Design Option B) and is not recommended.

- **NB No. S226.** This barrier was identified to be acoustically feasible and would meet Caltrans' noise reduction design goal at wall heights ranging from 12 to 22 ft for Build Alternative 4 and Design Option B. Improvements under Alternative 2 would eliminate the receptors behind this barrier; thus, the barrier would not be needed. The barrier is proposed along northbound I-5 between El Toro Road and Ridge Route Drive at the freeway's edge-of-shoulder just north of the El Toro Bridge Undercrossing. The barrier would be 804 ft long. The sound barrier is expected to be supported by a concrete barrier on CIDH piles for most of its length.

Based on the costs in Table 2.12.8, the cost to construct NB No. S226 would exceed the reasonableness allowances at all feasible barrier heights ranging from 12 to 22 ft for the Build Alternatives (including Design Option B). Because the construction costs exceed the reasonableness allowances for all feasible wall heights, NB No. S226 becomes unreasonable for construction as part of the Build Alternatives (including Design Option B) and is not recommended.

- **NB No. S236.** This barrier was identified to be acoustically feasible and would meet Caltrans' noise reduction design goal at wall heights ranging from 6 to 22 ft for the Build Alternatives and Design Option B. The barrier is proposed along northbound I-5 between El Toro Road and Ridge Route Drive adjacent to the northbound I-5 on-ramp from El Toro Road at the ramp's edge-of-shoulder, which will also be at Caltrans' ROW. The total length of the wall would be 1,766 ft. The wall is expected to be supported by a retaining wall with varying heights.

Based on the costs shown in Table 2.12.8, the cost to construct NB No. S236 at a feasible height of 16 ft would be less than the reasonableness allowances for

the Build Alternatives and Design Option B; however, at feasible barrier heights of 18, 20, and 22 ft, the cost to construct the barrier becomes unreasonable.

There is an existing barrier (a 16 ft noise barrier on top of a retaining wall) located near the modeled location of sound barrier S236. It is on existing Caltrans ROW and would need to be demolished due to the Build Alternatives (including Design Option B). NB No. S236, with a height of 16 ft, is a replacement-in-kind noise barrier and would be constructed as part of the Build Alternatives (including Design Option B).

- **NB Nos. S229/S235/S245.** Noise barriers S229/S235/S245 are a combination of proposed noise barriers that were identified to be acoustically feasible and meet Caltrans' noise reduction design goal at wall heights ranging from 16 and 22 ft for Build Alternative 2. The barrier is along southbound I-5 between Ridge Route Road and El Toro Road and is proposed mostly along Caltrans ROW, where the bottom of the wall's elevation follows the roadway profile of Avenida De La Carlota, and at the edge-of-shoulder of the I-5 southbound off-ramp to Avenida De La Carlota/Paseo De Valencia. The total length of the barriers together would be 3,024 ft. The barriers are expected to be supported by a retaining wall with varying heights, and/or by a concrete barrier on CIDH piles.

Based on the costs shown in Table 2.12.8, the cost to construct NB No. S229/S235/S245 as a combination of noise barriers would exceed the reasonableness allowances at all feasible barrier heights ranging from 16 to 22 ft for Build Alternative 2. Specifically, for NB No. S245, where the barrier is feasible and provides 5 dBA noise reduction to about 97 receptors at a height of 20 ft and even more receptors with a noise reduction between 1 to 5 dBA, the barrier is still not reasonable with the construction cost that was used. However, because this barrier provides for such a high number of benefited receptors or residences and, furthermore, requires special design, Caltrans will pursue more accurate construction cost estimates during final design. If the accurate cost estimate causes the wall to become reasonable, this noise barrier may be considered for construction.

The existing 16 ft noise barrier between the southbound I-5 mainline and St. George's Episcopal Church and Pathway School was modeled and is shown as NB Nos. S229/S235. All or portions of these existing noise barriers may need to be demolished and reconstructed at the same top-of-wall elevation of the existing wall as part of the Build Alternatives (including Design Option B) to maintain the existing noise abatement for the receptors behind the wall. NB Nos. S229/S235 would be replacement-in-kind walls at 16 ft high and will be reconstructed if removed as a result of the Build Alternatives (including Design Option B).

- **NB No. S245.** This barrier was identified to be acoustically feasible and would meet Caltrans' noise reduction design goal at wall heights ranging from 16 to 22 ft for Alternative 4 and Design Option B. The barrier is along SB I-5 between Ridge Route Road and El Toro Road and is proposed mostly along the edge-of-

shoulder of the freeway's off-ramp, or within Caltrans ROW. The total length of the barrier would be 2,927 ft. The barrier is expected to be supported by a retaining wall with varying heights and/or by a concrete barrier on CIDH piles.

Based on the costs shown in Table 2.12.8, the cost to construct NB No. S245 would exceed the reasonableness allowances at all feasible barrier heights ranging from 16 to 22 ft for the Build Alternatives (including Design Option B).

As discussed earlier, the wall is still not reasonable with the construction cost that was used for the portion of NB No. S245 (from I-5 Station 236+00 to 256+00) where the barrier is feasible and provides 5 dBA noise reduction to about 97 receptors at a height of 20 ft and even more receptors with a noise reduction between 1 to 5 dBA. However, because this barrier provides for such a high number of benefited receptors or residences, and furthermore, requires special design, Caltrans will pursue more accurate construction cost estimate from HQ Structures. If the accurate cost estimate causes the wall to become reasonable, this noise barrier may be considered for construction.

The existing 16-ft noise barrier located between the southbound I-5 mainline and St. George's Episcopal Church and Pathway School was modeled and is shown as a portion of NB No. S245. All or portions of this existing noise barrier may need to be demolished and reconstructed at the same top-of-wall elevation (but not lower) of the existing wall as part of the Build Alternatives (including Design Option B) to maintain the existing noise abatement for the receptors behind the wall. This portion of NB No. S245 would be a replacement-in-kind noise barrier at 16 ft high and must be constructed if removed due to the Build Alternatives.

- **NB No. S250.** This barrier was identified to be acoustically feasible and meet Caltrans' noise reduction design goal at wall heights ranging from 16 to 22 ft for the Build Alternatives and Design Option B. The barrier is along northbound I-5 just south of Ridge Route Drive and is proposed along the right side of northbound I-5 on-ramp from El Toro Road at the edge-of-shoulder, which will also be at Caltrans ROW. The total length of the wall would be 1,129 ft.

Based on the costs shown in Table 2.12.8, the cost to construct NB No. S250 would exceed the reasonableness allowances at all feasible barrier heights ranging from 16 to 22 ft for the Build Alternatives and Design Option B.

There is an existing barrier (16 ft noise barrier on top of a retaining wall) along the same location of where S250 was modeled. It is on existing Caltrans ROW and this existing noise barrier will remain in place as existing noise abatement for the receptors behind the wall.

The preliminary noise abatement decision presented in this environmental document is based on preliminary alignments and profiles, which may be subject to change. As such, the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during the final design, the preliminary noise abatement decision may be changed or eliminated from

the final design. A final decision to construct noise abatement will be made upon completion of the final design. In addition, based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of barriers. The feasible and reasonable noise barriers for both Build Alternatives (including Design Option B) are shown in Table 2.12.8, respectively. These measures may change based on input received from the public. During final design, if conditions have substantially changed, noise abatement may not be necessary. The final decision on noise abatement will be made upon completion of the final design.

No Build Alternative

The No Build Alternative would not result in the construction of improvements within the Study Area adjacent to the project limits and, therefore, would not result in any additional permanent noise effects.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

The Build Alternatives (including Design Option B) incorporate the Project Feature outlined above to help address potential noise effects. No avoidance, minimization, and/or mitigation measures other than the Project Feature are required.

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