Sycamore Hills Distribution Center Project

Draft Environmental Impact Report (DEIR)

Appendix K – Noise Analysis

Noise Analysis for the Sycamore Hills Distribution Center Riverside, California

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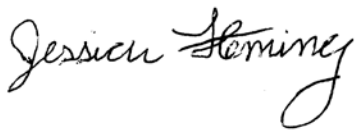

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Acronyms

Caltrans	California Department of Transportation
City	City of Riverside
CNEL	community noise equivalent level
County	County of Riverside
dB	decibel
dB(A)	A-weighted decibel
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HCP	Habitat Conservation Plan
HVAC	heating, ventilating, and air conditioning
I-215	Interstate 215
L_{eq}	one-hour equivalent noise level
LOS	level of service
L_{pw}	sound power level
PPV	peak particle velocity
in/sec	inches per second
MSHCP	Western Riverside County Multiple Species Habitat Conservation Plan

Executive Summary

The Sycamore Hills Distribution Center project (project) is located north of Alessandro Boulevard and east of Barton Street in the City of Riverside, California. The project site consists of three parcels that have never been developed. The project would construct 603,100 square feet of warehouse uses in two buildings on a 48.6-acre site. Building A would include 390,000 square feet of warehouse space and 10,000 square feet of associated office space for a total of 400,000 square feet. Building B would include 193,100 square feet of warehouse space and 10,000 square feet of associated office space for a total of 203,100 square feet.

This report discusses potential noise impacts from the construction and operation of the project. A summary of the findings is provided below.

Construction Noise

Project construction noise would be generated by diesel engine-driven construction equipment used for site preparation and grading, building construction, loading, unloading, and placing materials and paving. No blasting is proposed with the project.

Construction noise is exempt from the noise level limits established in Title 7. However, construction noise is calculated in this analysis in an abundance of caution. Neither the City of Riverside General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. For the purposes of this analysis, the Federal Transit Administration (FTA) recommended construction noise threshold of 80 dB(A) L_{eq} (A-weighted decibels one-hour equivalent noise level) at noise sensitive residential land uses was used. Further, the Western Riverside County Regional Conservation Authority applies a construction noise level limit of 65 dB(A) L_{eq}. This limit was analyzed at the boundary between the project site and the Sycamore Canyon Wilderness Park and at the edge of the on-site conservation areas. Construction noise levels were modeled at the residential uses, Sycamore Canyon Wilderness Park, and on-site conservation area for comparison to these limits.

Adjacent Residential Uses

As calculated in this analysis, construction noise levels would range from 54 to 58 A-weighted decibels one-hour equivalent noise level [dB(A) L_{eq}] at the adjacent residential land uses. Thus, construction noise levels would not exceed the FTA recommended threshold of 80 dB(A) L_{eq} at the residential uses, and would not be considered a substantial increase in noise.

The City's noise ordinance (Title 7) limits construction activities to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, and to 8:00 a.m. to 5:00 p.m. on Saturdays. No construction is permitted on Sundays or federal holidays. Some adjacent residential uses are also located within the County of Riverside. Similar to the City, the County exempts construction noise

from noise level limits, but restricts construction activity to the hours of 6:00 a.m. to 6:00 p.m. in June through September, and 7:00 a.m. to 6:00 p.m. in October through May. In order to comply with City and County requirements, project construction activities would only occur between 7:00 a.m. and 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays, and would not occur on Sundays or federal holidays. As construction activities would comply with Title 7 and would not be considered a substantial increase in ambient noise, temporary increases in noise levels from construction activities would be less than significant.

Adjacent Sycamore Canyon Wilderness Park and Conservation Areas

Sensitive least Bell's vireo (*Vireo bellii pusillus*) habitat is located within the Sycamore Canyon Wilderness Park and on-site conservation areas. Previous focused surveys have identified least Bell's vireo on-site within Parcels A and B and to the north within the Sycamore Canyon Wilderness Park. For construction noise, the Western Riverside County Regional Conservation Authority applies a noise level limit of 65 dB(A) L_{eq}. This limit was analyzed at the boundary between the project site and the Sycamore Canyon Wilderness Park and at the edge of the on-site conservation areas. As calculated in this analysis, construction noise levels at the adjacent Sycamore Canyon Wilderness Park and on-site conservation areas would range from 68 to 74 dB(A) L_{eq}. Based on the construction noise contours developed in this analysis for the project, construction noise levels would exceed 65 dB(A) L_{eq} within a majority of the Parcel A conservation area, the portion of Parcel B conservation area that is approximately 100 feet or closer to the development footprint, and within the portion of the Sycamore Canyon Wilderness Park that is within up to 300 feet of the project boundary. Should sensitive species be present within these portions of the Sycamore Canyon Wilderness Park and on-site conservation areas, construction noise impacts to sensitive species would be potentially significant. The following measure would be required to reduce construction noise impacts to a level less than significant:

Noise-1: Should least Bell's vireo be present in the Sycamore Canyon Wilderness Park within 300 feet of the project site, in Parcel A on-site conservation area, or within Parcel B on-site conservation area within 100 feet of the development footprint, construction noise impacts shall be minimized through implementation of the following measures:

1. Install a 12-foot temporary noise barrier at the perimeter of the limits of disturbance between the construction activities and the adjacent Sycamore Canyon Wilderness Park to the north and east and the on-site conservation areas as shown in Figure 7. The barrier shall be continuous without openings, holes or cracks, and shall reach the ground. The barrier may be constructed with 1-inch plywood and provide a reduction of at least 10 dB(A) to ensure noise levels do not exceed 65 dB(A) L_{eq} at the Sycamore Canyon Wilderness Park and on-site conservation areas. Other materials providing the same reduction shall also be permitted.

2. Heavy grade rubber mats/pad will be used within the bed of the trucks. These mats will help attenuate initial impact noise generated when an excavator drops rock and debris into the bed of the truck. These mats must be maintained and/or replaced as necessary.
3. During all project site excavation and grading on-site, construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.
4. The contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.
5. Equipment shall be shut off and not left to idle when not in use.
6. The contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.
7. The project proponent shall mandate that the construction contractor prohibit the use of music or sound amplification on the project site during construction.
8. The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (7:00 a.m. to 6:00 p.m. on weekdays, and 8:00 a.m. to 5:00 p.m. on Saturdays).
9. Limit the use of heavy equipment or vibratory rollers and soil compressors along the project boundaries to the greatest degree possible. It is acknowledged that some soil compression may be necessary along the project boundaries.
10. Any jackhammers, pneumatic equipment and all other portable stationary noise sources shall be shielded and noise shall be directed away from sensitive receptors.
11. For the duration of construction activities, the construction manager shall serve as the contact person should noise levels become disruptive to local residents. A sign shall be posted at the project site with the contact phone number. This sign shall be posted at the Alessandro Boulevard frontage as well as the Barton Street frontage.

Implementation of mitigation measure Noise-1 would reduce construction noise levels to 65 dB(A) L_{eq} or less. Construction noise impacts at the Sycamore Canyon Wilderness Park and on-site conservation areas would be reduced to less than significant.

Traffic Noise

On-site Noise/Land Use Compatibility

The main source of operational noise at the project site is vehicle traffic on Alessandro Boulevard. The project would include industrial warehouse uses which are normally acceptable up to the 70 community noise equivalent level (CNEL), conditionally acceptable up to 80 CNEL, and normally unacceptable above 80 CNEL according to Figure N-10 of the City's General Plan Noise Element. As calculated in this analysis, exterior noise levels at the proposed buildings are projected to be less than the City's normally acceptable compatibility standard of 70 CNEL.

Off-site Traffic Noise

The project would generate 847 daily trips, which includes 573 daily passenger vehicle trips and 274 daily truck trips. These trips would be added to traffic on Alessandro Boulevard. A significant impact would occur if the ambient noise levels:

- Are less than 60 CNEL and the project results in an increase of 5 dB(A) or greater;
- Range from 60 to 65 CNEL and the project results in an increase of 3 dB(A) or greater; or
- Exceed 65 CNEL and the project results in an increase of 1.5 dB(A) or greater.

As calculated in this analysis, direct off-site noise level increases due to the project would be well less than 1 dB in existing, year 2023, and year 2040 conditions. The project-related increases in ambient noise would not be audible and would not exceed the thresholds outlined above. Impacts would be less than significant.

On-site Generated Noise

The primary noise sources on-site would be truck activity (idling trucks, truck trailer hitching and unhitching), parking lot activities, trash compactors, and roof-mounted heating, ventilation, and air conditioning units. Noise levels were modeled at a series of 45 receivers located at the adjacent residential, commercial, and public facility properties and the adjacent business and manufacturing zone, Sycamore Canyon Wilderness Park, and on-site conservation areas.

On-site generated noise levels in the City are regulated by Chapter 7.25 of Title 7 of the City's Municipal Code. Additionally, according to the Western Riverside County Multiple Species Habitat Conservation Plan, the residential noise level limits are also applicable to the Sycamore Canyon Wilderness Park and on-site conservation areas. As calculated in this analysis, at the residential, commercial, public facilities, and business and manufacturing land uses, daytime noise levels at the property lines due to future project on-site noise sources would range from 32 to 48 dB(A) L_{eq} and nighttime noise levels would range from 25 to 42 dB(A) L_{eq}. These noise levels do not exceed the applicable daytime and nighttime Title 7 Noise Ordinance limits. Within the Sycamore Canyon Wilderness Park and on-site

conservation areas, daytime noise levels at the property lines due to future project on-site noise sources would range from 32 to 51 dB(A) L_{eq} and nighttime noise levels would range from 30 to 45 dB(A) L_{eq}. These noise levels do not exceed the applicable daytime and nighttime Title 7 Noise Ordinance limits.

Future operational noise levels generated by the on-site noise sources would not exceed the applicable Title 7 residential noise level limits of 55 dB(A) L_{eq} during the daytime hours and 45 dB(A) L_{eq} during the nighttime hours at the property line of the adjacent Sycamore Canyon Wilderness Park and on-site conservation areas. Additionally, noise levels associated with on-site backup warning beepers would be less than the applicable limits. Therefore, noise impacts due to on-site generated noise would be less than significant.

Vibration

Vibration levels in the project area may be influenced by construction and operation. A vibration impact would generally be considered significant if it involves any construction-related or operations-related impacts in excess of 0.2 peak particle velocity (PPV). As calculated in this analysis, vibration levels due to construction equipment and trucks are not anticipated to exceed 0.2 PPV at the nearest structure or at the nearest residential use. Thus, groundborne vibration impacts generated during construction and operation would be less than significant.

1.0 Introduction

1.1 Project Description

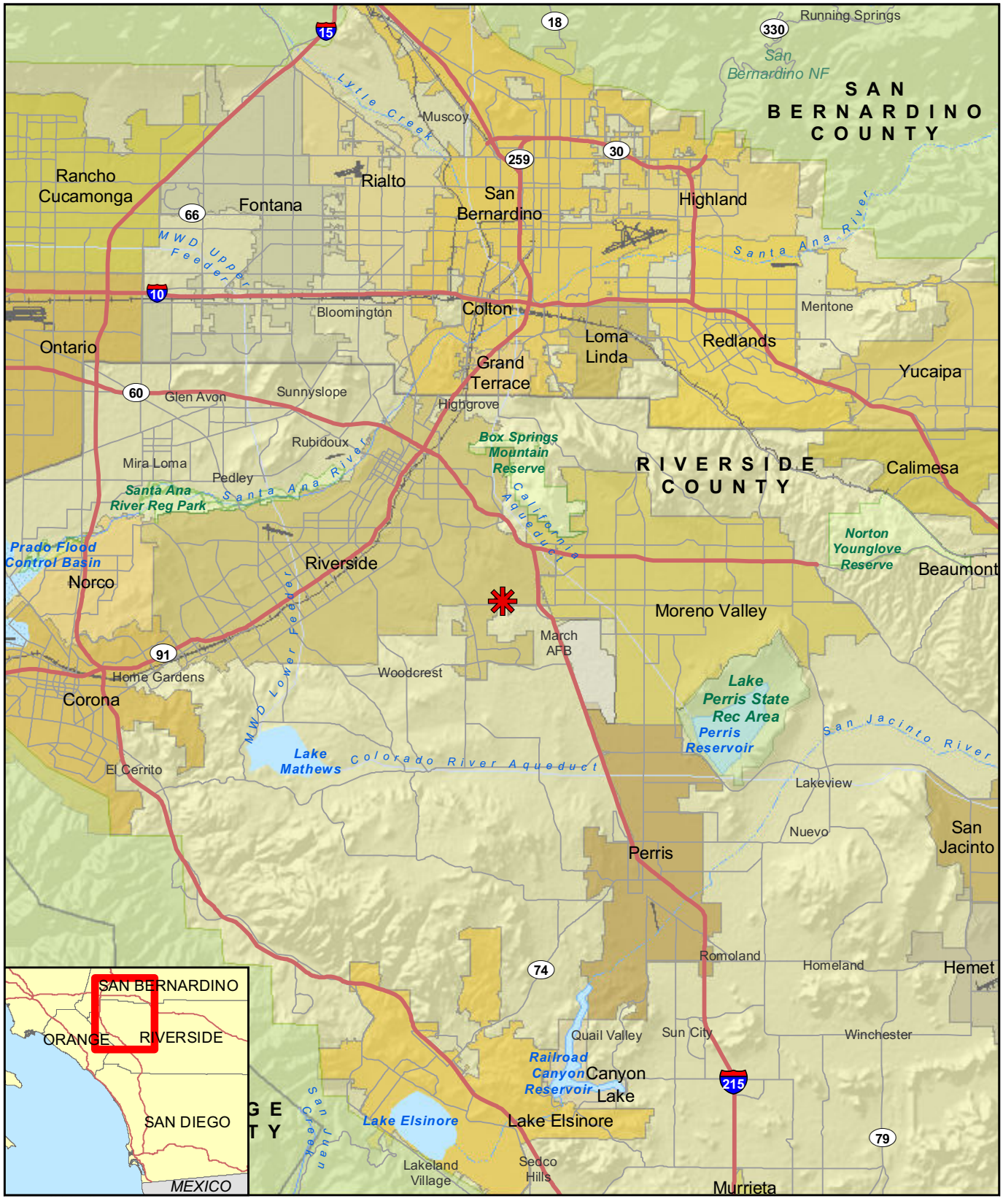
The Sycamore Hills Distribution Center project (Project) is located north of Alessandro Boulevard and east of Barton Street in the City of Riverside, California. The project site is currently undeveloped. Figure 1 shows the regional location of the project site and Figure 2 shows an aerial photograph of the project site and vicinity. The project would construct two buildings totaling 603,100 square feet in area on a 48.6-acre site. Building A would include 390,000 square feet of warehouse space and 10,000 square feet of associated office space for a total of 400,000 square feet. Building B would include 193,100 square feet of warehouse space and 10,000 square feet of associated office space for a total of 203,100 square feet. The project would be accessed from two proposed driveways. Building A would be accessed from a driveway from Alessandro Boulevard and Building B would be accessed from a driveway from Barton Street. The two buildings will not have internal access to each other due to the configuration of the restricted conservation parcels. Figure 3 shows the site plan.

1.2 Fundamentals of Noise

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease. However, human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 A-weighted dB [dB(A)] barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation [Caltrans] 2013a).

In technical terms, sound levels are described as either a "sound power level" or a "sound pressure level," which while commonly confused, are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power, expressed as L_{pw}, is the energy converted into sound by the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an ear drum or microphone, the sound pressure level. Sound measurement instruments only measure sound pressure, and limits used in standards are generally sound pressure levels.

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



Project Location

FIGURE 1
Regional Location

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Image Source: Nearmap (flown September 2018)

FIGURE 2

Project Location on Aerial Photograph

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Map Source: HPA Architecture

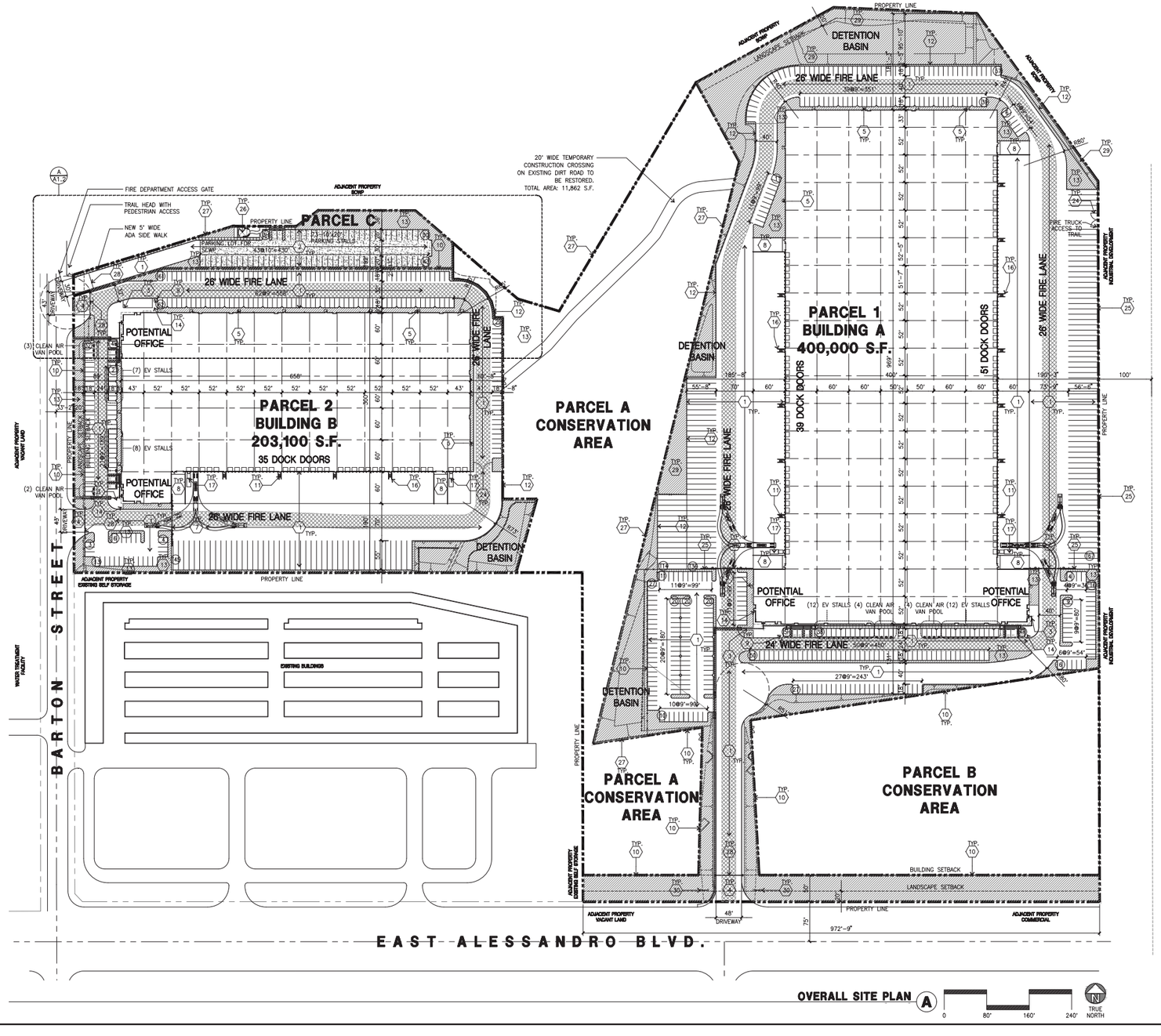

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FIGURE 3
Site Plan

1.2.1 Descriptors

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors has been developed. The noise descriptors used for this study are the equivalent noise level (L_{eq}) and the community noise equivalent level (CNEL).

The L_{eq} is the equivalent steady-state noise level in a stated period of time that is calculated by averaging the acoustic energy over a time period; when no period is specified, a 1-hour period is assumed.

The CNEL is a 24-hour equivalent sound level. The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, between 7:00 p.m. and 10:00 p.m., and a 10 dB(A) penalty is added to noise occurring during the night, between 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night.

1.2.2 Propagation

Sound from a localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

Traffic noise is not a single, stationary point source of sound. The movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The drop-off rate for a line source is 3 dB(A) for each doubling of distance.

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

2.0 Applicable Noise Standards

2.1 Federal Regulations

The federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that noise-sensitive uses are prohibited from being sited adjacent to a highway or, alternately, that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Federal noise policies and programs are developed by federal agencies of the U.S. Department of Transportation through its various operating agencies, i.e., the Federal Aviation Administration, the Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA).

2.2 State Regulations

Part 11 of Title 24 (California Green Building Standards Code) provides mandatory measures for residential and non-residential buildings. Section 5.507, Environmental Comfort, addresses interior noise control in non-residential buildings. This section provides the minimum Sound Transmission Class and Outdoor–Indoor Sound Transmission Class for wall, roof–ceiling assemblies, and windows for buildings located within the 65 CNEL contour of an airport, freeway, expressway, railroad, industrial source, or fixed guideway source as determined by the Noise Element of the General Plan. Buildings shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly average equivalent level of 50 dB(A) L_{eq}. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition, or alteration project to mitigate sound migration to the interior. An acoustical analysis documenting complying interior sound levels is required to be prepared by personnel approved by the architect or engineer of record (California Code of Regulations 2016).

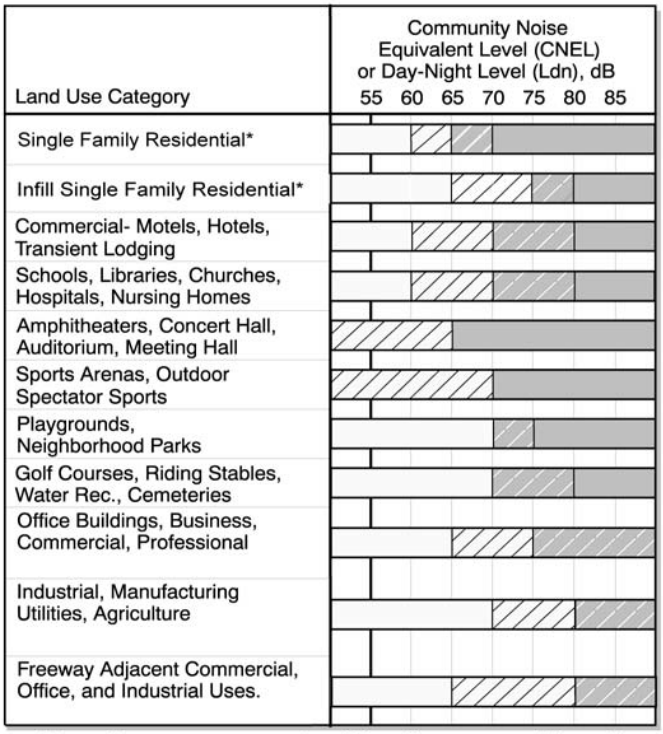
2.3 Local Regulations

2.3.1 City of Riverside

2.3.1.1 General Plan

The City noise/land use compatibility guidelines are outlined in Figure N-10 of the City's General Plan Noise Element and are summarized in Table 1. These guidelines establish noise standards for various land use categories. As shown, industrial uses are normally acceptable up to 70 CNEL, conditionally acceptable up to 80 CNEL, and normally unacceptable above 80 CNEL (City of Riverside 2007).

Table 1
Noise/Land Use Noise Compatibility Criteria



Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB
Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB
Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB
Very noisy urban areas near arterials, freeways or airports.

75+ dB
Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

Normally Acceptable
Specific land use is satifactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable
New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air condition-ing, will normally suffice.

Normally Unacceptable
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.

Conditionally Unacceptable
New construction or develop-ment should generally not be undertaken, unless it can be demonstrated that noise reduction requirements can be employed to reduce noise impacts to an acceptable level. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

* For properties located within airport influence areas, acceptable noise limits for single family residential uses are established by the Riverside County Airport Land Use Compatibility Plan.

SOURCE: Figure N-10 of the City's General Plan Noise Element, City of Riverside 2007.

Goals, Policies, and Implementation Measures

The City utilizes the following General Plan Noise Element objectives and policies to assess evaluate the project's suitability in light of noise impacts.

Objective N-1 Minimize noise levels from point sources throughout the community and, wherever possible, mitigate the effects of noise to provide a safe and healthful environment.

Policies:

N-1.3 Enforce the City of Riverside Noise Control Code to ensure that stationary noise and noise emanating from construction activities, private developments/residences and special events are minimized.

N-1.4 Incorporate noise considerations into the site plan review process, particularly with regard to parking and loading areas, ingress/egress points and refuse collection areas.

Objective N-2 Minimize the adverse effects of airport related noise through proper land use planning.

Policies:

N-2.1 Ensure that new development can be made compatible with the noise environment by using noise/land use compatibility standards (Table 4, Noise/Land Use Noise Compatibility Criteria) and the airport noise contour maps (found in the Riverside County Airport Land Use Compatibility Plans) as guides to future planning and development decisions.

N-2.5 Utilize the Airport Protection Overlay Zone, as appropriate, to advise landowners of special noise considerations associated with their development.

Objective N-4 Minimize ground transportation-related noise impacts.

Policies:

N-4.1 Ensure that noise impacts generated by vehicular sources are minimized through the use of noise reduction features (e.g., earthen berms, landscaped walls, lowered streets, improved technology).

2.3.1.2 Municipal Code

Title 7 – Noise Control of the City of Riverside's Municipal Code regulates stationary noise sources in the City. Chapters 7.25, 7.30, and 7.35 outline noise level limits and general noise requirements (City of Riverside 2018).

Chapter 7.25 - NUISANCE EXTERIOR SOUND LEVEL LIMITS

7.25.010 - Exterior sound level limits.

A. Unless a variance has been granted as provided in this chapter, it shall be unlawful for any person to cause or allow the creation of any noise which exceeds the following:

1. The exterior noise standard of the applicable land use category, up to five decibels, for a cumulative period of more than 30 minutes in any hour; or
2. The exterior noise standard of the applicable land use category, plus five decibels, for a cumulative period of more than 15 minutes in any hour; or
3. The exterior noise standard of the applicable land use category, plus ten decibels, for a cumulative period of more than five minutes in any hour; or
4. The exterior noise standard of the applicable land use category, plus 15 decibels, for the cumulative period of more than one minute in any hour; or
5. The exterior noise standard for the applicable land use category, plus 20 decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured ambient noise level exceeds that permissible within any of the first four noise limit categories, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to encompass the ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

C. If possible, the ambient noise level shall be measured at the same location along the property line with the alleged offending noise source inoperative. If for any reason the alleged offending noise source cannot be shut down, then the ambient noise must be estimated by performing a measurement in the same general area of the source but at a sufficient distance that the offending noise is inaudible. If the measurement location is on the boundary between two different districts, the noise shall be the arithmetic mean of the two districts.

D. Where the intruding noise source is an air-conditioning unit or refrigeration system which was installed prior to the effective date of this chapter, the exterior noise level when measured at the property line shall not exceed 60 dBA for units installed before 1-1-80 and 55 dBA for units installed after 1-1-80.

Chapter 7.30 - NUISANCE INTERIOR SOUND LEVEL LIMITS

7.30.015 - Interior sound level limits.

A. No person shall operate or cause to be operated, any source of sound indoors which causes the noise level, when measured inside another dwelling unit, school or hospital, to exceed:

1. The interior noise standard for the applicable land category area, up to five decibels, for a cumulative period of more than five minutes in any hour;
2. The interior noise standard for the applicable land use category, plus five decibels, for a cumulative period of more than one minute in any hour;
3. The interior noise standard for the applicable land use category, plus ten decibels or the maximum measured ambient noise level, for any period of time.

B. If the measured interior ambient noise level exceeds that permissible within the first two noise limit categories in this section, the allowable noise exposure standard shall be increased in five decibel increments in each category as appropriate to reflect the interior ambient noise level. In the event the interior ambient noise level exceeds the third noise limit category, the maximum allowable interior noise level under said category shall be increased to reflect the maximum interior ambient noise level.

C. The interior noise standard for various land use districts shall apply, unless otherwise specifically indicated, within structures located in designated zones with windows opened or closed as is typical of the season.

Table 2 summarizes the exterior and interior noise standards contained in the City's Municipal Code.

Table 2
Riverside Municipal Code- Title 7
Interior and Exterior Noise Standards

Land Use	Noise Standards	
	Interior	Exterior
Residential	35 dB(A) (night 10 p.m. – 7 a.m.)	45 dB(A) (night 10 p.m. - 7 a.m.)
	45 dB(A) (day 7a.m – 10 P.M.)	55 dB(A) (day 7 a.m. - 10 p.m.)
Schools	45 dB(A) (7 a.m. -10 p.m.) while school is in session	---
Hospitals	45 dB(A)	---
Office/Commercial	---	65 dB(A)
Industrial	---	70 dB(A)
Community Support	---	60 dB(A)
Public Recreation Facility	---	65 dB(A)
Non-urban	---	70 dB(A)

Chapter 7.35 - GENERAL NOISE REGULATIONS

7.35.010 - General noise regulations.

The general noise regulations from Chapter 7.35 that are applicable to the project are those associated with loading and unloading activities and construction.

Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects, or permitting these activities between the hours of 10:00 p.m. and 7:00 a.m. in such a manner as to cause a noise disturbance across a residential property line or at any time exceeds the maximum permitted noise level for the underlying land use category is prohibited.

The City's noise ordinance limits construction activities to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, and to 8:00 a.m. to 5:00 p.m. on Saturdays. Construction is not allowed on Sundays and Federal holidays. Provisions of the noise ordinance do not apply to construction, maintenance and repair operations, which are deemed necessary to serve the best interest of the public and which are conducted by public agencies and/or utilities or their contractors.

Construction noise is exempt from the limits shown in Table 2, and the City has no established noise standards or thresholds for construction. In addition, neither the City of Riverside General Plan or Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers for CEQA analysis purposes. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dB(A) L_{eq} as a reasonable threshold for noise sensitive residential land use.

2.3.2 County of Riverside

The project site is located adjacent to the boundary between the City of Riverside and the County of Riverside, and noise sensitive land uses (medium density residential) near the project site are located within the County of Riverside.

The County regulates noise in accordance with Chapter 9.52, Noise Regulations of the Riverside County Municipal Code. Section 9.52.030 of the Municipal Code defines a sensitive receptor as a land use that is sensitive to noise including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries, or public libraries. Section 9.52.040 of the Municipal Code states that the maximum noise levels from stationary noise sources at the property line of a sensitive receptor are to remain below 45 dB(A) L_{eq} during the nighttime hours (10:00 p.m. to 7:00 a.m.) and are not to exceed 55 dB(A) L_{eq} during the daytime hours (7:00 a.m. to 10:00 p.m.). Section 9.52.020[I] states that sound emanating from private construction projects located within a quarter mile from an inhabited dwelling is exempt from the provisions of Chapter 9.52, if construction occurs between the hours of 6:00 a.m. and 6:00 p.m. during the months of June through September, and between the hours of 7:00 a.m. and 6:00 p.m. during the months of October through May.

2.3.3 Western Riverside County Multiple Species Habitat Conservation Plan

The project site is surrounded by the Sycamore Canyon Wilderness Park. The U.S. Fish and Wildlife Service and other resource agencies, such as the U.S. Army Corps of Engineers and California Department of Fish and Wildlife, require limitation of noise levels to the habitats of threatened and endangered birds, such as the least Bell's vireo (*Vireo bellii pusillus*). The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on conservation of species and their associated habitats in Western Riverside County. The MSHCP area encompasses approximately 1.26 million acres; it includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, as well as the jurisdictional areas of the cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto. Section 6.1.4 of the MSHCP provides guidelines to address indirect effects associated with locating development in proximity to the MSHCP conservation area. The section states:

> Proposed noise generating land uses affecting the MSHCP Conservation Area shall incorporate setbacks, berms or walls to minimize the effects of noise on

> MSHCP Conservation Area resources pursuant to applicable rules, regulations and guidelines related to land use noise standards. For planning purposes, wildlife within the MSHCP Conservation Area should not be subject to noise that would exceed residential noise standards.

For operation of the project, the Municipal Code residential noise level standards discussed above were also applied to the Sycamore Canyon Wilderness Park. These noise level limits are 55 dB(A) L_{eq} for noise occurring between 7 a.m. and 10 p.m., and 45 dB(A) L_{eq} for noise occurring between 10 p.m. and 7 a.m. For construction noise, the Western Riverside County Regional Conservation Authority applies a noise level limit of 65 dB(A) L_{eq} (Western Riverside County Regional Conservation Authority, personal communication 2019). These construction and operational limits were applied at the boundary between the project site and the Sycamore Canyon Wilderness Park and at the edge of the on-site conservation areas.

3.0 Existing Conditions

3.1 Adjacent Uses

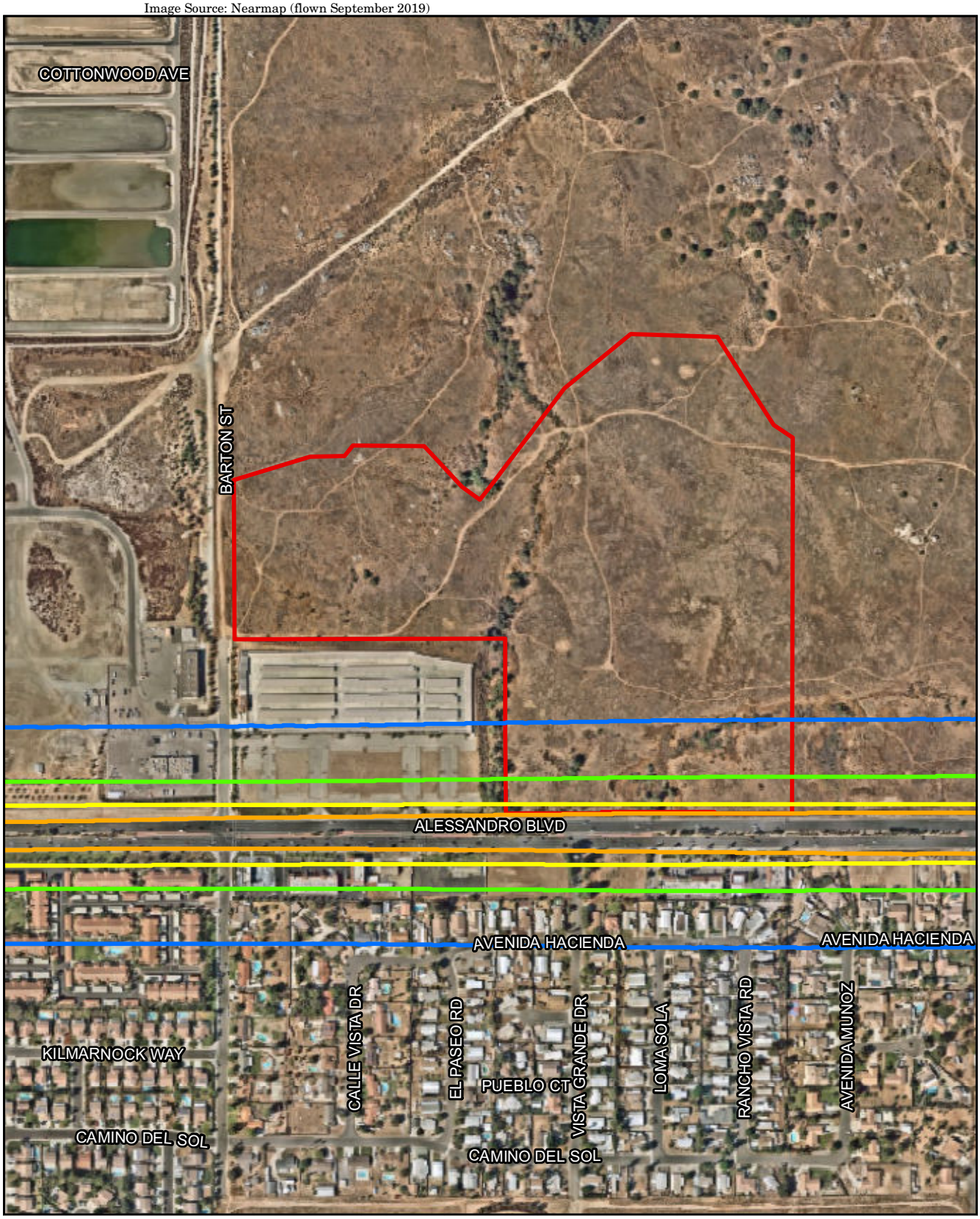
The project site is currently undeveloped and is surrounded by the Sycamore Canyon Wilderness Park to the north; a storage facility to the southwest; a water treatment plant to the west, across Barton Street; vacant land and Alessandro Business Center to the east; and retail/commercial uses to the south, across Alessandro Boulevard. Other uses across Alessandro Boulevard include multi-family residences to the southwest of the project site. Single-family residences, located in County of Riverside jurisdiction, are located behind the retail/commercial uses, across Alessandro Boulevard.

3.2 Existing Noise Environment

3.2.1 Noise Contours

Existing noise levels in the vicinity of the project site are dominated by vehicle traffic noise on Alessandro Boulevard. Alessandro Boulevard is a six-lane arterial roadway with a posted speed limit of 55 miles per hour adjacent to the project site. The existing (2019) traffic volume ranges from 29,467 to 40,796 between Barton Street and Interstate 215 (I-215; Urban Crossroads 2019). The existing noise level contours are shown in Figure 4, and the existing noise level contour distances are summarized in Table 3. Noise level calculations are provided in Attachment 1.

Image Source: Nearmap (flown September 2019)



Project Boundary **Existing Vehicle Traffic Noise Contours**

60 CNEL
65 CNEL
70 CNEL
75 CNEL

0 Feet 450

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FIGURE 4
Existing Vehicle
Traffic Noise Contours

Table 3 Existing Alessandro Boulevard Noise Contours (CNEL)					
Roadway Segment	Noise Level at 50 feet from Centerline	Distance to (feet)			
		75	70	65	60
Barton Street to Private Driveway	77	55	106	190	387
Private Driveway to Vista Grande Drive	77	62	106	196	394
Vista Grande Drive to San Gorgonio Drive	77	73	106	202	404
San Gorgonio Drive to Sycamore Canyon Boulevard	78	60	112	200	397
Sycamore Canyon Boulevard to I-215 Southbound Ramps	79	51	106	180	357
I-215 Southbound Ramps to I-215 Northbound Ramps	78	52	102	172	331

3.2.2 Ambient Noise Measurements

Existing noise levels at the project site were measured on July 11, 2019, and December 18 and 19, 2019, using two Larson-Davis LxT Sound Expert Sound Level Meters, serial number 3827 and 3828. The following parameters were used:

Filter:	A-weighted
Response:	Slow
Time History Period (Short-Term):	5 seconds
Time History Period (Long-Term):	15 minutes

The meters were calibrated before the measurements. The meters were set 5 feet above the ground level for each measurement.

Noise measurements were taken to obtain typical ambient noise levels at the project site and in the vicinity. The weather was warm and sunny. Three short-term (15-minute) measurements and one long-term (24-hour) measurement were taken, as described below. The primary sources of on-site noise were from traffic on Alessandro Boulevard. The measurement locations are shown on Figure 5, and detailed data is contained in Attachment 2.

Measurement 1 was located near the northern project boundary on a trail within the open space. The measurement location was selected to provide a sample of the noise environment within the Sycamore Canyon Wilderness Park and on-site conservation areas. The sources of noise at this location included wind, occasional aircraft, and vehicle traffic in the distance. Noise levels were measured for 15 minutes. The average measured noise level was 50.9 dB(A) L_{eq}. The measurement was located more than 1,000 feet from Alessandro Boulevard, and vehicle traffic was not the observed dominant noise source. Thus, existing ambient noise levels at other locations in the Sycamore Canyon Wilderness Park and along the northern property line would be acoustically equivalent to noise levels at Measurement 1.

Image Source: Nearmap (flown September 2019)

Project Boundary
Sycamore Canyon Wilderness Park
On-site Conservation Area
Site Plan
Measurement Locations

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FIGURE 5
Noise Measurement Locations

Measurement 2 was located south of the project site, approximately 60 feet from the centerline of Alessandro Boulevard. The measurement location was selected to provide a sample of the noise environment at the southern project boundary closest to the dominant noise source in the project area (i.e., traffic on Alessandro Boulevard). Noise levels at measurement location 2 are acoustically equivalent to noise levels at the residences located just south of Alessandro Boulevard. The main source of noise at this location was vehicle traffic on Alessandro Boulevard. During the 15-minute measurement period, vehicle traffic on Alessandro Boulevard was counted. The average measured noise level was 70.3 dB(A) L_{eq}.

Measurement 3 was located at the residential property line south of the project site, approximately 220 feet from the centerline of Alessandro Boulevard. The measurement location was selected to provide a sample of the noise environment at the residences located directly across from the future site access driveway. The main source of noise at this location was vehicle traffic on Alessandro Boulevard. During the 15-minute measurement period, vehicle traffic on Alessandro Boulevard was counted. The average measured noise level was 59.7 dB(A) L_{eq}.

Measurement 4 was located at the western project boundary at the entrance to the Sycamore Canyon Wilderness Park. The sources of noise at this location included wind, occasional aircraft, pedestrians accessing the Wilderness Park, and vehicle traffic Noise levels were measured for 24-hours. The average measured noise level during the 24-hour period was 50.2 dB(A) L_{eq}. The quietest measured hourly noise level was 45.9 dB(A) L_{eq} and occurred between 3 and 4 P.M., and the loudest hourly noise level was 54.1 dB(A) L_{eq} and occurred between 5 and 6 A.M. Nighttime average hourly noise levels (10 P.M. to 7 A.M.) ranged from 46.5 to 54.1 dB(A) L_{eq}.

Noise measurements are summarized in Table 4 and vehicle traffic counts are summarized in Table 5.

Table 4
Noise Measurements

Measurement	Location	Time	Noise Sources	L_{eq}
1	Northern project boundary, within open space	10:56 a.m. – 11:11 a.m.	Wind, aircraft, distant vehicle traffic	50.9
2	South of project site, 60 feet from Alessandro Boulevard centerline	11:24 a.m. – 11:39 a.m.	Vehicle traffic on Alessandro Boulevard	70.3
3	Residential property line south of project site, 220 feet from Alessandro Boulevard centerline	10:07 a.m. – 10:22 a.m.	Vehicle traffic on Alessandro Boulevard	59.7
4	Western project boundary, at entrance to Sycamore Canyon Wilderness Park	December 18, 10:00 a.m. – December 19 10:00 a.m.	Wind, aircraft, pedestrians, vehicle traffic	50.2
NOTE: Noise measurement data is contained in Attachment 2.				

Table 5 15-minute Traffic Count							
Measurement	Roadway	Direction	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles
2	Alessandro Boulevard	Westbound	333	6	2	1	1
		Eastbound	279	1	2	1	1
3	Alessandro Boulevard	Westbound	357	7	3	1	0
		Eastbound	230	2	1	0	1

4.0 Analysis Methodology

4.1 Construction Noise Analysis

Construction noise is exempt from the noise level limits established in Title 7. However, construction noise is calculated in this analysis in an abundance of caution. Project construction noise is considered a short-term impact and would be considered significant if construction activities are undertaken outside the allowable times as described by the City Municipal Code (Section 7.35.010). In order to comply with City and County requirements, project construction activities would only occur between 7:00 a.m. and 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays, and would not occur on Sundays or federal holidays. Additionally, for the purposes of this analysis, the FTA recommended threshold of 80 dB(A) L_{eq} at noise sensitive residential land uses was used. Further, as discussed in Section 2.3.3, the Western Riverside County Regional Conservation Authority applies a noise level limit of 65 dB(A) L_{eq}. This limit was analyzed at the boundary between the project site and the Sycamore Canyon Wilderness Park and at the edge of the on-site conservation areas.

Project generated construction noise will vary depending on the construction process. Generally, construction noise would be generated by diesel engine-driven construction equipment used for site preparation and grading, building construction, loading, unloading, and placing materials and paving. Diesel engine-driven trucks also would bring materials to the site and remove the soils from excavation. No blasting would be required for the project.

Construction equipment with a diesel engine typically generates maximum noise levels from 80 to 90 dB(A) L_{eq} at a distance of 50 feet (FTA 2006). Table 6 summarizes typical construction equipment noise levels.

Table 6 Typical Construction Equipment Noise Levels		
Equipment	Noise Level at 50 Feet [dB(A) L_{eq}]	Typical Duty Cycle
Auger Drill Rig	85	20%
Backhoe	80	40%
Blasting	94	1%
Chain Saw	85	20%
Clam Shovel	93	20%
Compactor (ground)	80	20%
Compressor (air)	80	40%
Concrete Mixer Truck	85	40%
Concrete Pump	82	20%
Concrete Saw	90	20%
Crane (mobile or stationary)	85	20%
Dozer	85	40%
Dump Truck	84	40%
Excavator	85	40%
Front End Loader	80	40%
Generator (25 kilovolt ampts or less)	70	50%
Generator (more than 25 kilovolt amps)	82	50%
Grader	85	40%
Hydra Break Ram	90	10%
Impact Pile Driver (diesel or drop)	95	20%
Insitu Soil Sampling Rig	84	20%
Jackhammer	85	20%
Mounted Impact Hammer (hoe ram)	90	20%
Paver	85	50%
Pneumatic Tools	85	50%
Pumps	77	50%
Rock Drill	85	20%
Roller	74	40%
Scraper	85	40%
Tractor	84	40%
Vacuum Excavator (vac-truck)	85	40%
Vibratory Concrete Mixer	80	20%
Vibratory Pile Driver	95	20%
SOURCE: Federal Highway Administration 2006; Federal Transit Administration 2006.		

During excavation, grading, and paving operations, equipment moves to different locations and goes through varying load cycles, and there are breaks for the operators and for non-equipment tasks, such as measurement. Although maximum noise levels may vary from 80 to 90 dB(A) at a distance of 50 feet during most construction activities, hourly average noise levels from the grading phase of construction would be 88 dB(A) L_{eq} at 50 feet from the center of construction activity when assessing five pieces of the loudest pieces of equipment working simultaneously. This noise level was modeled as an area source over each of the building footprints. In addition, to account for noise levels due to soil being transported between the two building sites, noise levels from one piece of equipment continuously traveling between the two building footprints were modeled on the proposed temporary access road. Noise levels were modeled at the property lines of the adjacent residential uses and at the edge of the Sycamore Canyon Wilderness Park and conservation areas.

4.2 Traffic Noise Analysis

The following sections provide a discussion of the methodology used to model (1) on-site noise levels due to vehicle traffic on Alessandro Boulevard for the purposes of analyzing noise and land use compatibility for the proposed warehouse uses, and (2) off-site ambient noise increases due to the addition of project-related traffic on the area roadway network. The methodology used to analyze property line noise level impacts due to on-site noise sources, including on-site truck and vehicle activity, loading docks, heating, ventilating, and air conditioning (HVAC) equipment, etc., is discussed in Section 4.3, Operational On-Site Generated Noise Analysis.

4.2.1 On-site Noise/Land Use Compatibility

For an analysis of on-site land use compatibility, noise generated by future traffic was modeled using SoundPLAN Essential, version 3.0. The SoundPLAN program (Navcon Engineering 2015) uses the FHWA Traffic Noise Model algorithms and reference levels to calculate noise levels at selected receiver locations. Noise levels are calculated from the roadway centerline. The model uses various input parameters, such as projected hourly average traffic rates; vehicle mix, distribution, and speed; roadway lengths and gradients; distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. Receivers, roadways, and barriers were input into the model using three-dimensional coordinates. The locations of future buildings were obtained from project drawings.

The main source of noise at the project site is vehicle traffic on Alessandro Boulevard. Future vehicle traffic noise levels on Alessandro Boulevard are summarized in Table 7. Traffic noise levels were calculated based on the peak traffic hour volumes which were modeled as 10 percent of the total daily traffic. The vehicle classification mix for Alessandro Boulevard was developed from Caltrans truck counts taken on the portion of I-215 just east of the project site. Based on these truck counts, I-215 carries 90.4 percent automobiles, 4.8 percent medium trucks, and 4.8 percent heavy trucks (Caltrans 2018). These traffic parameters were used to analyze on-site noise/land use compatibility impacts as well as off-site ambient noise level increases (see Section 4.2.2).

Table 7 Alessandro Boulevard Traffic Parameters							
	Average Daily Traffic (ADT)						
Roadway Segment	Existing 2019	Existing (2019) + Project	Opening Year Cumulative (2023)	Opening Year Cumulative (2023) + Project	Horizon Year (2040)	Horizon Year (2040) + Project	Speed (mph)
Barton Street to Private Driveway	37,331	37,795	45,205	45,699	75,352	75,816	55
Private Driveway to Vista Grande Drive	38,724	39,188	46,713	47,177	76,860	77,324	55
Vista Grande Drive to San Gorgonio Drive	40,640	41,792	49,558	50,710	84,666	85,818	55
San Gorgonio Drive to Sycamore Canyon Boulevard	40,796	41,948	49,529	50,681	85,687	86,839	55
Sycamore Canyon Boulevard to I-215 Southbound Ramps	32,950	34,073	41,035	42,158	72,308	73,431	55
I-215 Southbound Ramps to I-215 Northbound Ramps	29,467	30,072	37,546	38,151	65,293	65,898	55
SOURCE: Urban Crossroads 2019. mph = miles per hour							

4.2.2 Off-site Traffic Noise

The project would generate 847 daily trips, which includes 573 passenger vehicle trips and 274 truck trips. To determine the change in ambient traffic noise in the vicinity of the project site, off-site traffic noise was modeled using the SoundPLAN program. Traffic noise levels were calculated at 50 feet from the centerline of the affected segments of Alessandro Boulevard to determine the noise level increase associated with the project.

Traffic noise levels were calculated based on the total average daily traffic volumes on each analyzed roadway segment of Alessandro Boulevard. For modeling purposes, "hard" ground conditions were used for the analysis of future conditions, since a majority of the project area is paved and the hard site provides the most conservative impact assessment. A vehicle traffic mix of 90.4 percent automobiles, 4.8 percent medium trucks, and 4.8 percent heavy trucks was modeled, and is based on Caltrans truck counts taken on I-215 near the project site (Caltrans 2018).

Existing (2019), opening year (2023), and horizon year (2040) traffic volumes with and without the project were obtained from the project traffic impact analysis (Urban Crossroads 2019). Table 7 summarizes the future traffic volumes for the area roadway segments. Off-site modeled noise levels do not account for shielding provided by intervening barriers and structures.

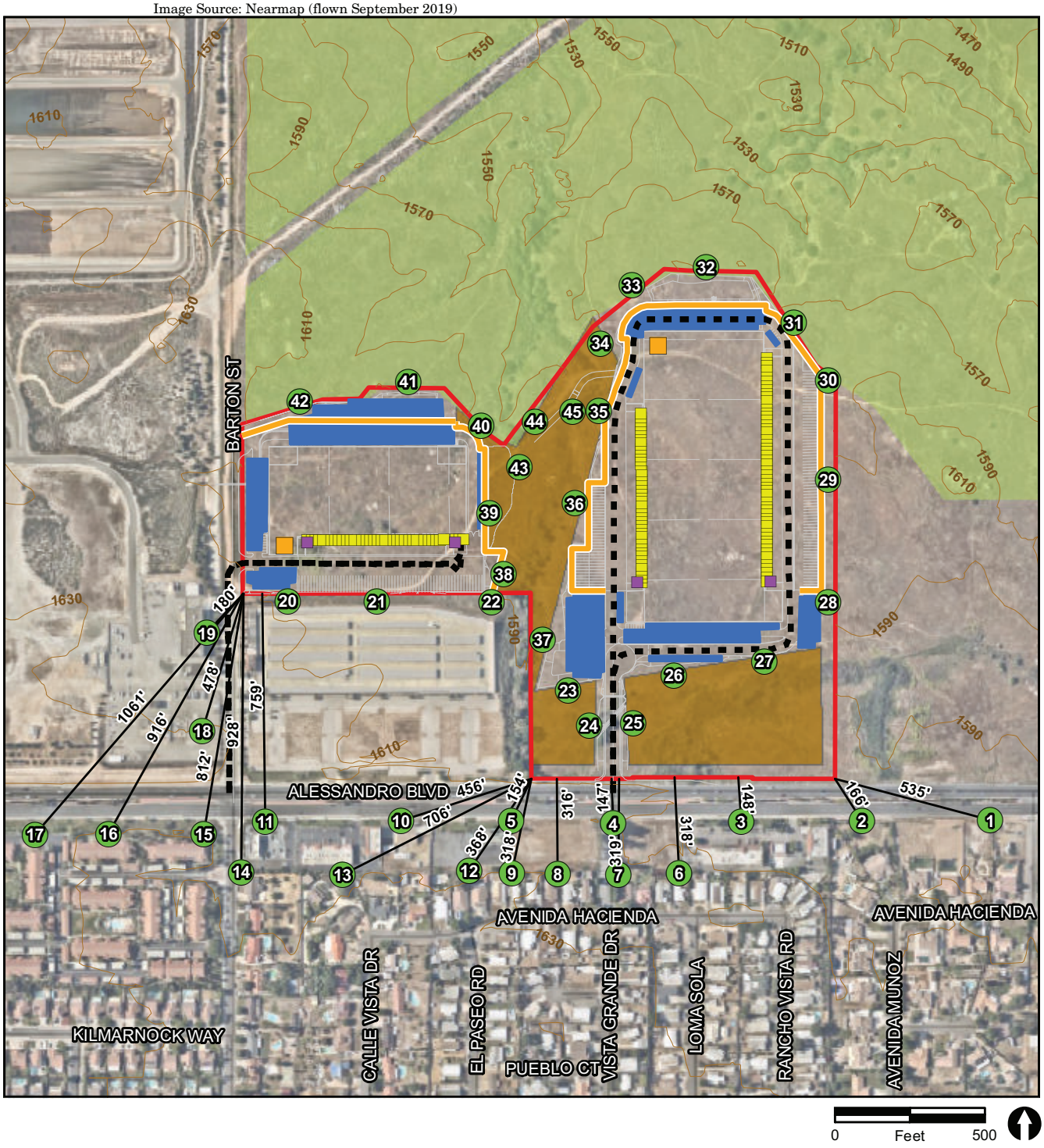
4.3 Operational On-Site Generated Noise Analysis

The primary noise sources on-site would be truck activity (idling trucks, truck trailer hitching and unhitching), parking lot activities, trash compactors, and HVAC units. Noise levels due to on-site noise sources were modeled using SoundPLAN (Navcon Engineering, Inc. 2015). The SoundPLAN program models noise propagation following the International Organization for Standardization method *ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors*. The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source, distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures. The project would include a number of perimeter walls and screening walls throughout the project site. For the purposes of this noise analysis, only the perimeter walls that would reduce noise levels at Sycamore Canyon Wilderness Park receivers were modeled. These include the walls around the western, northern, and eastern boundaries of Building A and the northern and eastern boundaries of Building B (as detailed in Figures 10b and 11b provided in Section 5.3 of this report). These would be combination walls consisting of 4-foot-high concrete walls with a 4-foot-high wrought iron fence on top. Noise levels were modeled without and with incorporation of the 4-foot-high concrete walls. Noise levels associated with all on-site noise sources were modeled at all adjacent uses including the residential, commercial, and public facility land uses, the Sycamore Canyon Wilderness Park, and the on-site conservation areas. The modeled noise sources and the modeled receivers are shown in Figure 6. The following is a discussion of the methodology used to model each on-site noise source.

4.3.1 Trucks and Loading Docks

Operational noise from the project would consist primarily of semi-trucks (tractor trailers), entering and exiting the facility, positioning at loading docks, and removal and hook-up of trailers. The site plan identifies 51 loading docks on the east side of Building A, 39 loading docks on the west side of Building A, and 35 loading docks on the south side of Building B. In order to evaluate the truck delivery noise impacts, the analysis utilized reference noise level measurements for a truck terminal located in San Bernardino. This is appropriate for this analysis since the trucks analyzed in the San Bernardino study would be similar to those used for the proposed project, and both uses include similar warehouse uses with similar types and numbers of loading docks. Based on the noise study prepared for the truck terminal, diesel trucks generate a sound power level of 96 dB(A) (LSA 2013), which is equivalent to a sound pressure level of 64.4 dB(A) L_{eq} at 50 feet per truck.

Image Source: Nearmap (flown September 2019)



- Project Boundary
- Sycamore Canyon Wilderness Park
- On-site Conservation Area
- 20-foot Contours
- Site Plan
- 4-foot Barrier
- On-Site Truck Maneuvering
- Loading Docks
- HVAC
- Trash Compactor
- Modeled Receivers
- Employee Parking

FIGURE 6

Operational Noise Sources and Receiver Locations

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The on-site maneuvering associated with the delivery trucks consists of the truck entering the site and backing into the loading dock, idling, loading and unloading, and leaving the site. Based on the Traffic Impact Analysis prepared for the project, during the peak hour for truck trips, 17 trucks would access the site (Urban Crossroads 2019). These trucks were modeled as line sources (i.e., noise radiating from a linear source such as driving vehicles), accessing each building and driving to and from the loading dock areas. It was assumed that it would take 5 minutes for a truck to enter the site and position itself at a loading dock, and an additional minute to pull away from the loading dock and leave the project site. During the loading/unloading of the truck, the engine can only idle for a maximum of 5 minutes in compliance with state regulations for air quality. Enforcement of these idling restrictions would limit idling at the loading docks. During the nighttime hours, loading dock activity would be approximately 25 percent of the daytime activity.

Once the trucks are on-site, noise would be generated during loading activities and removal and hook-up of trailers. Based on the noise impact analysis prepared for the nearby Sycamore Canyon Business Park Warehouse (Kunzman Associates, Inc. 2016), these activities generate sound power levels ranging from 68 to 70 dB(A). As a worst-case analysis, a sound power level of 70 dB(A) was modeled as a point source (i.e., noise radiating from a single point) at the exact location of each loading dock for the daytime hours and at 25 percent of the loading docks during the nighttime hours. Building A includes 90 loading docks, thus 25 percent of this would be approximately 23 loading docks. Building B includes 35 loading docks, thus 25 percent of this would be approximately 9 loading docks. Therefore, during the nighttime hours, 23 trucks per hour were modeled at Building A and 9 trucks per hour were modeled at Building B.

The final noise source associated with truck activity would be backup beeping. Backup warning beeping can generate a maximum sound power level of 103 dB(A) (Kunzman Associates, Inc. 2016). Backup beepers were modeled at the western and eastern sides of Building A and at the southern side of Building B using SoundPLAN.

4.3.2 Parking Lots

Noise would also be generated by employee vehicles. Parking lot activities that generate noise include vehicles traveling to and from parking spaces, and brief noise instances associated with parking such as opening and closing car doors, engines starting, and alarm activation noises. The parking areas for each building were modeled based on a typical vehicle movement generating a sound power level of 62.7 dB(A) per parking movement in a one-hour period (Bayerisches Landesamt für Umwelt 2007). The parking areas were modeled assuming 10 percent of the parking space would generate one parking movement (arrival, travel through parking area, and departure) per hour for both the daytime and nighttime hours. Based on the passenger vehicle peak hour activity calculated in the Traffic Impact Analysis prepared for the project, 10 percent is conservative.

4.3.3 Trash Compactors

The project would include two trash compactors at each proposed building. The trash compactors would be located at the southwest and southeast corners of the building for both Building A and Building B. Based on the noise impact analysis prepared for the nearby Sycamore Canyon Business Park Warehouse (Kunzman Associates, Inc. 2016), trash compactors generate a sound power level of 89.6 dB(A) and would operate for up to five minutes in a one-hour period. This noise level was modeled at each trash compactor location during the daytime and nighttime hours.

4.3.4 HVAC Units

The project would include roof-mounted HVAC units for office portions of Buildings A and B. It is not known at this time which manufacturer, brand, or model of unit or units will be selected for use in the project. Typically, a capacity of 1-ton per 340 square feet would be required for large office buildings. Based on this ratio, the 10,000 square feet of office space in each building would require three 10-ton HVAC units. Based on review of manufacturer specifications for a sample unit (Trane Mode T/YSCE120ED), a representative noise level for a 10-ton unit would be a sound power level of 79 dB, which is equivalent to a sound pressure level of 47.4 dB(A) L_{eq} at 50 feet. Noise specifications are contained in Attachment 3. All units were modeled at full capacity during the daytime and nighttime hours.

4.4 Vibration

Vibration consists of energy waves transmitted through solid material (FTA 2006). Groundborne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration energy spreads out as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. Instantaneous groundborne vibration is measured by its peak particle velocity (PPV). The PPV is normally described in inches per second (in/sec). Excessive groundborne vibration has potential to result in structural damage.

Although groundborne vibration is sometimes noticeable in outdoor environments, groundborne vibration is almost never annoying to people who are outdoors (FTA 2006). Ground vibration can be annoying to people within structures. Ground vibration generated by construction activity has the potential to damage structures. Ground vibration also has the potential to disrupt the operation of vibration-sensitive research and advanced technology equipment. Thus, the primary concern from construction- and transportation-related vibration is the ability to be intrusive and annoying to local residents and other indoor, vibration-sensitive land uses (Caltrans 2013b).

Vibration impacts from normal equipment to structures may be estimated at any distance from the following equation:

$$PPV_{equipment} = PPV_{reference} \times (\frac{25}{Distance})^{1.5}$$

where: $PPV_{equipment}$ is the peak particle velocity in inches per second of the equipment adjusted for distance; and $PPV_{reference}$ is the reference vibration level in inches per second at 25 feet as shown in Table 8.

Table 8
Typical Construction Equipment Vibration Levels

Equipment	PPV at 25 feet (in/sec)[1]
Large Bulldozer	0.089
Trucks	0.076
Mounted Impact Hammer	0.089

[1]Where PPV is the peak particle velocity.
SOURCE: FTA 2006; Caltrans 2013b.

5.0 Future Acoustical Environment and Impacts

5.1 Construction Noise

Noise associated with the grading, building, and paving for the project would potentially result in short-term impacts to surrounding properties. There are residential uses located south of the project site. Additionally, the project site is located adjacent to the Sycamore Canyon Wilderness Park. The project would also include on-site conservation areas. As discussed in Sections 2.3 and 4.3, for the purposes of this conservative analysis, the applicable construction noise level limits are 80 dB(A) L_{eq} at the adjacent residential uses, and 65 dB(A) L_{eq} at the Sycamore Canyon Wilderness Park and on-site conservation areas . Construction noise levels were modeled at the residential uses, Sycamore Canyon Wilderness Park, and on-site conservation area for comparison to these limits. Construction noise levels were also modeled at the adjacent commercial and public facility uses for informational purposes only. No construction noise limits applies at these uses since they are not considered sensitive receivers.

A variety of noise-generating equipment would be used during the construction phase of the project, such as excavators, backhoes, front-end loaders, and concrete saws, along with others. The loudest phase of construction would be the grading/excavation phase and would include graders, scrapers, dozers, loaders, and excavators. Construction noise levels were calculated based on the parameters discussed in Section 4.1.

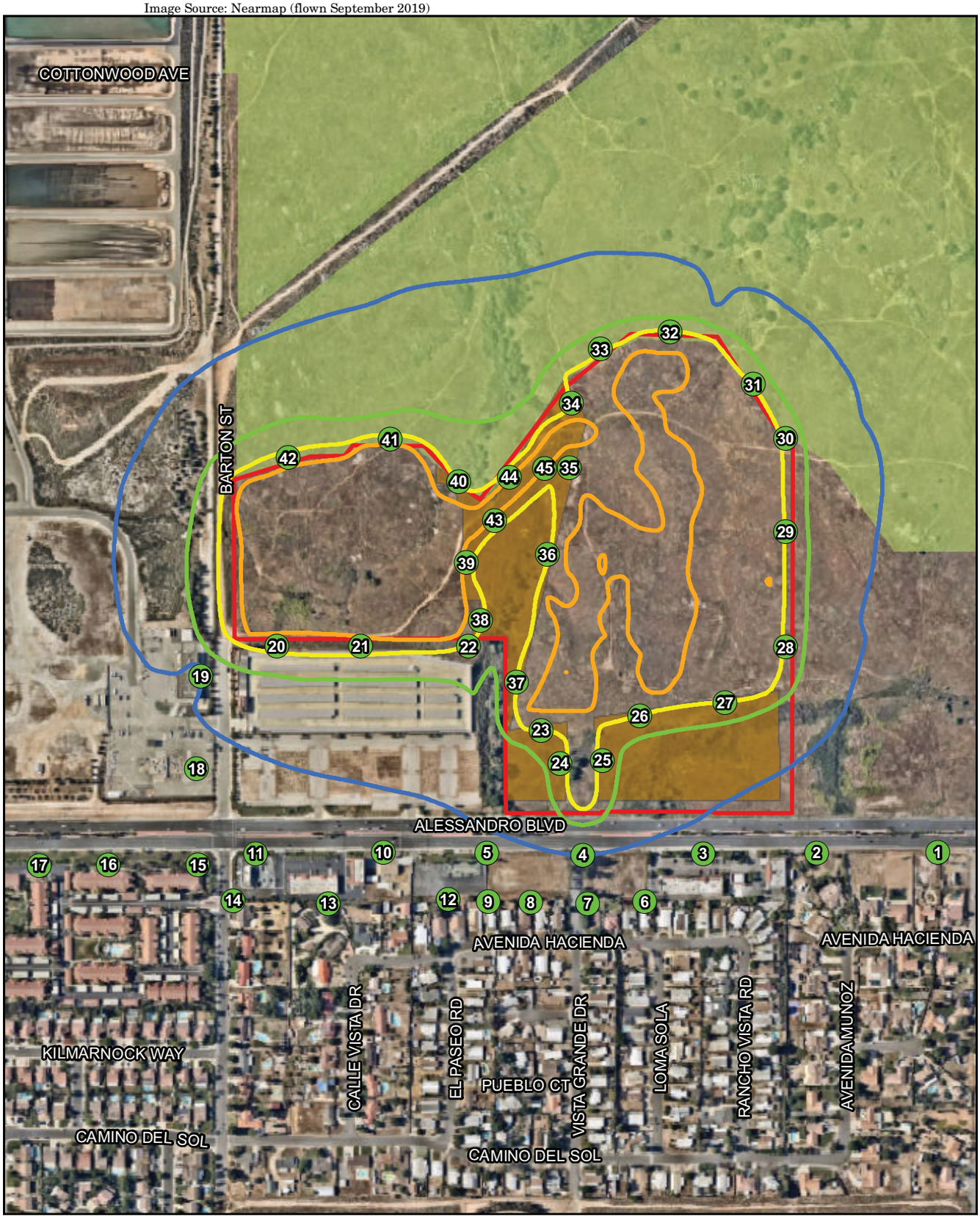
Construction noise is considered a point source and would attenuate at approximately 6 dB(A) for every doubling of distance. To reflect the nature of grading and construction activities, equipment was modeled as an area source distributed over each building footprint and the temporary access road between the two building sites. The total sound energy of the area source was modeled with all pieces of equipment operating simultaneously, which would be a worst-case scenario. Noise levels were modeled at a

series of 22 receivers located at the adjacent uses. The results are summarized in Table 9. Modeled receiver locations and construction noise contours are shown in Figure 7. SoundPLAN data is contained in Attachment 4.

Table 9
Construction Noise Levels

Receiver	Land Use	Noise Level Limit [dB(A) L_{eq}]	Construction Noise Level [dB(A) L_{eq}]
1	Residential	80	55
2	Residential	80	57
3	Commercial	--	59
4	Vacant (Residential Land Use Designation)	--	60
5	Vacant (Residential Land Use Designation)	--	59
6	Residential (County)	80	58
7	Residential (County)	80	58
8	Residential (County)	80	58
9	Residential (County)	80	58
10	Commercial	--	58
11	Commercial	--	57
12	Residential (County)	80	57
13	Residential (County)	80	57
14	Residential (County)	80	56
15	Residential	80	56
16	Residential	80	55
17	Residential	80	54
18	Public Facilities	--	59
19	Public Facilities	--	59
20	Commercial	--	72
21	Commercial	--	72
22	Commercial	--	69
23	On-Site Conservation Area	65	69
24	On-Site Conservation Area	65	68
25	On-Site Conservation Area	65	69
26	On-Site Conservation Area	65	69
27	On-Site Conservation Area	65	69
28	Business and Manufacturing Zone	--	69
29	Business and Manufacturing Zone	--	70
30	Sycamore Canyon Wilderness Park	65	68
31	Sycamore Canyon Wilderness Park	65	69
32	Sycamore Canyon Wilderness Park	65	68
33	Sycamore Canyon Wilderness Park	65	68
34	Sycamore Canyon Wilderness Park	65	70
35	Sycamore Canyon Wilderness Park	65	71
36	Sycamore Canyon Wilderness Park	65	69
37	Sycamore Canyon Wilderness Park	65	69
38	Sycamore Canyon Wilderness Park	65	71
39	On-Site Conservation Area	65	71
40	On-Site Conservation Area	65	69
41	On-Site Conservation Area	65	71
42	On-Site Conservation Area	65	72
43	On-Site Conservation Area	65	72
44	On-Site Conservation Area	65	72
45	On-Site Conservation Area	65	74

Image Source: Nearmap (flown September 2019)



Project Boundary

Sycamore Canyon Wilderness Park

On-site Conservation Area

Modeled Receivers

Construction Noise Contours

60 CNEL

65 CNEL

70 CNEL

75 CNEL

0 Feet 450

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FIGURE 7

Construction Noise Contours

5.1.1 Adjacent Residential Uses

As shown, construction noise levels would range from 54 to 58 dB(A) L_{eq} at the adjacent residential land uses. Construction noise levels would not exceed 80 dB(A) L_{eq} at any adjacent residential property lines. Thus, construction noise levels would not exceed the FTA recommended threshold of 80 dB(A) L_{eq} at the residential uses, and would not be considered a substantial increase in noise.

The City's noise ordinance (Title 7) limits construction activities to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, and to 8:00 a.m. to 5:00 p.m. on Saturdays. No construction is permitted on Sundays or on federal holidays. Some adjacent residential uses are also located within the County of Riverside. Similar to the City, the County exempts construction noise from noise level limits, but restricts construction activity to the hours of 6:00 a.m. to 6:00 p.m. in June through September, and 7:00 a.m. to 6:00 p.m. in October through May. In order to comply with City and County requirements, project construction activities would only occur between 7:00 a.m. and 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays, and would not occur on Sundays or federal holidays. As construction activities would comply with Title 7 and would not be considered a substantial increase in ambient noise, temporary increases in noise levels from construction activities would be less than significant at the adjacent residential use areas.

5.1.2 Adjacent Sycamore Canyon Wilderness Park and Conservation Areas

Sensitive least Bell's vireo habitat is located within the Sycamore Canyon Wilderness Park and on-site conservation areas. For construction noise, the Western Riverside County Regional Conservation Authority applies a noise level limit of 65 dB(A) L_{eq} (Western Riverside County Regional Conservation Authority, personal communication 2019). This limit was analyzed at the boundary between the project site and the Sycamore Canyon Wilderness Park and at the edge of the on-site conservation areas. As shown in Table 9, construction noise levels at the adjacent Sycamore Canyon Wilderness Park and on-site conservation areas would range from 68 to 74 dB(A) L_{eq}. Based on the construction noise contours shown in Figure 7, construction noise levels would exceed 65 dB(A) L_{eq} within a majority of the Parcel A conservation area, the portion of Parcel B conservation area that is approximately 100 feet or closer to the development footprint, and within the portion of the Sycamore Canyon Wilderness Park that is within up to 300 feet of the project boundary. Should sensitive species be present within the Sycamore Canyon Wilderness Park and on-site conservation areas, construction noise impacts to sensitive species would be potentially significant. The following measure would be required:

Noise-1: Should least Bell's vireo be present in the Sycamore Canyon Wilderness Park within 300 feet of the project site, in Parcel A on-site conservation area, or within Parcel B on-site conservation area within 100 feet of the development footprint, construction noise impacts shall be minimized through implementation of the following measures:

1. Install a 12-foot temporary noise barrier at the perimeter of the limits of disturbance between the construction activities and the adjacent Sycamore Canyon Wilderness Park to the north and east and the on-site conservation areas as shown in Figure 8. The barrier shall be continuous without openings, holes or cracks, and shall reach the ground. The barrier may be constructed with 1-inch plywood and provide a reduction of at least 10 dB(A) to ensure noise levels do not exceed 65 dB(A) L_{eq} at the Sycamore Canyon Wilderness Park and on-site conservation areas. Other materials providing the same reduction shall also be permitted.

2. Heavy grade rubber mats/pad will be used within the bed of the trucks. These mats will help attenuate initial impact noise generated when an excavator drops rock and debris into the bed of the truck. These mats must be maintained and/or replaced as necessary.

3. During all project site excavation and grading on-site, construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

4. The contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

5. Equipment shall be shut off and not left to idle when not in use.

6. The contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

7. The project proponent shall mandate that the construction contractor prohibit the use of music or sound amplification on the project site during construction.

8. The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (7:00 a.m. to 6:00 p.m. on weekdays, and 8:00 a.m. to 5:00 p.m. on Saturdays).

9. Limit the use of heavy equipment or vibratory rollers and soil compressors along the project boundaries to the greatest degree possible. It is acknowledged that some soil compression may be necessary along the project boundaries.

10. Any jackhammers, pneumatic equipment and all other portable stationary noise sources shall be shielded and noise shall be directed away from sensitive receptors.

11. For the duration of construction activities, the construction manager shall serve as the contact person should noise levels become disruptive to local residents. A sign shall be posted at the project site with the contact phone number. This sign shall be posted at the Alessandro Boulevard frontage as well as the Barton Street frontage.

Noise levels with incorporation of the 12-foot construction noise barrier were modeled using SoundPLAN. It was calculated that this barrier would be sufficient to reduce construction noise levels to 65 dB(A) L_{eq} or less. SoundPLAN data is provided in Attachment 4. Implementation of mitigation measure Noise-1 would reduce construction noise levels to 65 dB(A) L_{eq} or less. Construction noise impacts at the Sycamore Canyon Wilderness Park and on-site conservation areas would be reduced to less than significant.

5.2 Traffic Noise

5.2.1 On-site Noise/Land Use Compatibility

On-site traffic noise contours were developed using the SoundPLAN program. Noise level contours were modeled at the first-floor level. These contours take into account shielding provided by proposed and adjacent buildings, topography, and proposed grading. Future vehicle traffic noise-level contours are shown in Figure 9. SoundPLAN data are contained in Attachment 1. As shown in Figure 9, first-floor exterior noise levels at the proposed buildings are projected to be less than the City's normally acceptable compatibility standard of 70 CNEL.

5.2.2 Off-site Traffic Noise

The project would generate 847 daily trips, which includes 573 passenger vehicle trips and 274 truck trips. The project would increase traffic volumes on Alessandro Boulevard. However, the project would not substantially alter the vehicle classifications mix on local or regional roadways, nor would the project alter the speed on an existing roadway or create a new roadway. Thus, the primary factor affecting off-site noise levels would be increased traffic volumes. While changes in noise levels would occur along any roadway where project-related traffic occurs, for noise assessment purposes, noise level increases are assumed to be greatest nearest the project site, as this location would represent the greatest concentration of project-related traffic.

Image Source: Nearmap (flown September 2019)

0 Feet 450

Project Boundary

Sycamore Canyon Wilderness Park

On-site Conservation Area

12-foot Barrier

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FIGURE 8

Construction Barrier

Image Source: Nearmap (flown September 2019)

Project Boundary

Site Plan

Future Vehicle Traffic Noise Contours

60 CNEL

65 CNEL

70 CNEL

75 CNEL

0 Feet 450

FIGURE 9

Future Vehicle Traffic Noise Contours

RECON

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Impacts related to a noise level increase from traffic are considered significant if project-generated traffic would result in exposure of sensitive receptors to an unacceptable increase in noise levels. Additionally, operational and traffic-generated noise levels would have a significant impact on identified noise-sensitive receptors if the ambient noise levels:

- Are less than 60 CNEL and the project results in an increase of 5 dB(A) or greater;
- Range from 60 to 65 CNEL and the project results in an increase of 3 dB(A) or greater; or
- Exceed 65 CNEL and the project results in an increase of 1.5 dB(A) or greater.

Based on the project traffic impact analysis, the project would generate 847 trips (Urban Crossroads 2019). Table 10 presents a conservative assessment of traffic noise levels based on the existing, year 2023, and year 2040 cumulative traffic volumes with and without the project. Noise level calculations are contained in Attachment 1.

As shown in Table 10, project-related traffic would increase ambient noise levels by 0.2 dB(A) or less in existing, year 2023, and year 2040 conditions. The project-related increases in ambient noise would not be audible and would not exceed the thresholds outlined above. Impacts would be less than significant.

Table 10
Traffic Noise Levels with and without Project and Ambient Noise Increase (CNEL)

Roadway Segment	Existing			Year 2023			Year 2040		
	Without Project	With Project	Project-Related Increase	Without Project	With Project	Project-Related Increase	Without Project	With Project	Project-Related Increase
Alessandro Boulevard									
Barton Street to Private Driveway	76.9	76.9	0.0	77.7	77.7	0.0	79.9	79.9	0.0
Private Driveway to Vista Grande Drive	77.2	77.2	0.0	78.0	78.1	0.1	80.2	80.2	0.0
Vista Grande Drive to San Gorgonio Drive	77.3	77.5	0.2	78.2	78.3	0.1	80.5	80.6	0.1
San Gorgonio Drive to Sycamore Canyon Boulevard	78.1	78.2	0.1	78.9	79.0	0.1	81.3	81.3	0.0
Sycamore Canyon Boulevard to I-215 Southbound Ramps	78.5	78.6	0.1	79.4	79.6	0.2	81.9	82.0	0.1
I-215 Southbound Ramps to I-215 Northbound Ramps	77.7	77.8	0.1	78.8	78.8	0.0	81.2	81.2	0.0

5.3 On-site Generated Noise

The primary noise sources on-site would be truck activity (idling trucks, truck trailer hitching and unhitching), parking lot activities, trash compactors, and roof-mounted HVAC units. Using the on-site noise source parameters discussed in Section 4.3, Operational On-Site Generated Noise Analysis, noise levels were modeled at a series of 45 receivers located at the adjacent residential, commercial, and public facility properties, Sycamore Canyon Wilderness Park, and on-site conservation areas. Modeled noise levels took into account grading and shielding provided by the proposed buildings as well as the existing storage building south of the project site. Additionally, noise levels were modeled without and with incorporation of the 4-foot-high concrete walls..

On-site generated noise levels in the City are regulated by Chapter 7.25 of Title 7 of the City's Municipal Code (see Table 2). As discussed, the project site is located adjacent to the boundary between the City of Riverside and the County of Riverside, and residential uses near the project site are located within County of Riverside. However, the residential noise ordinance limits in the County are the same as those in the City. Additionally, according to the MSHCP, the residential noise level limits are also applicable to the Sycamore Canyon Wilderness Park and on-site conservation areas.

Daytime on-site generated noise contours without and with the 4-foot-high barrier are shown in Figures 10a and 10b, respectively, and nighttime contours without and with the 4-foot-high barrier are shown in Figures 11a and 11b, respectively. Modeled data is included in Attachment 5. Future noise levels are summarized in Table 11.

As shown in Table 11, at the residential, commercial, and public facilities land uses (Receivers 1 through 22) and business and manufacturing zone (Receivers 28 and 29), daytime noise levels due to future project on-site noise sources would range from 32 to 48 dB(A) L_{eq} and nighttime noise levels due to future project on-site noise sources would range from 25 to 42 dB(A) L_{eq}. Noise levels would be less than the applicable daytime and nighttime Title 7 Noise Ordinance limits at the property lines. At the edge of the Sycamore Canyon Wilderness Park and on-site conservation areas (Receivers 23 through 27 and 30 through 45), daytime noise levels due to future project on-site noise sources would range from 32 to 51 dB(A) L_{eq} and nighttime noise levels due to future project on-site noise sources would range from 30 to 45 dB(A) L_{eq}. Future operational noise levels generated by the on-site noise sources would not exceed the applicable Title 7 residential noise level limits of 55 dB(A) L_{eq} during the daytime hours and 45 dB(A) L_{eq} during the nighttime hours at the property line of the adjacent Sycamore Canyon Wilderness Park and on-site conservation areas. Therefore, noise impacts due to on-site generated noise would be less than significant.

Image Source: Nearmap (flown September 2019)

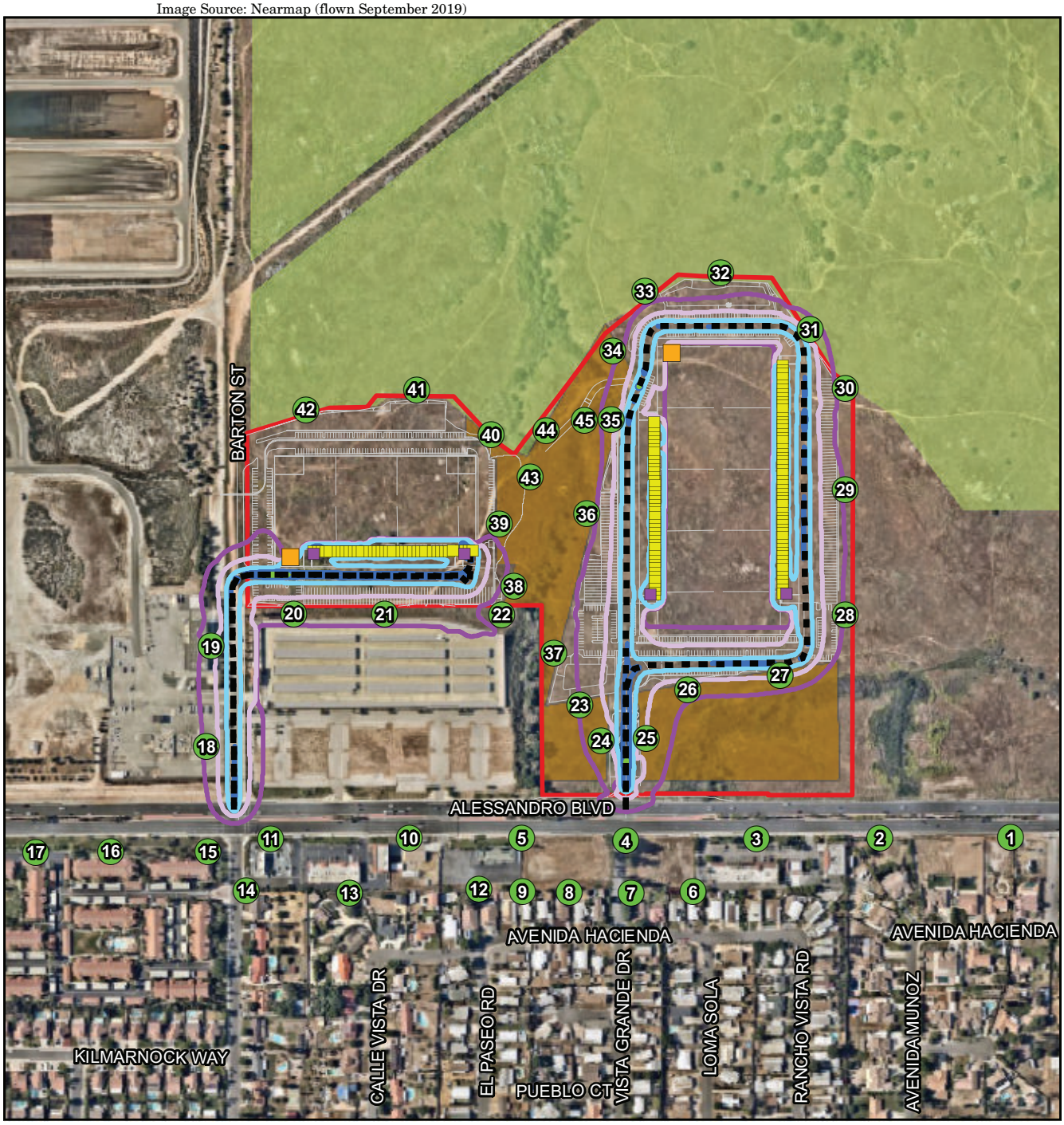

FIGURE 10a

Daytime On-Site Generated
Noise Contours without 4-Foot Barrier

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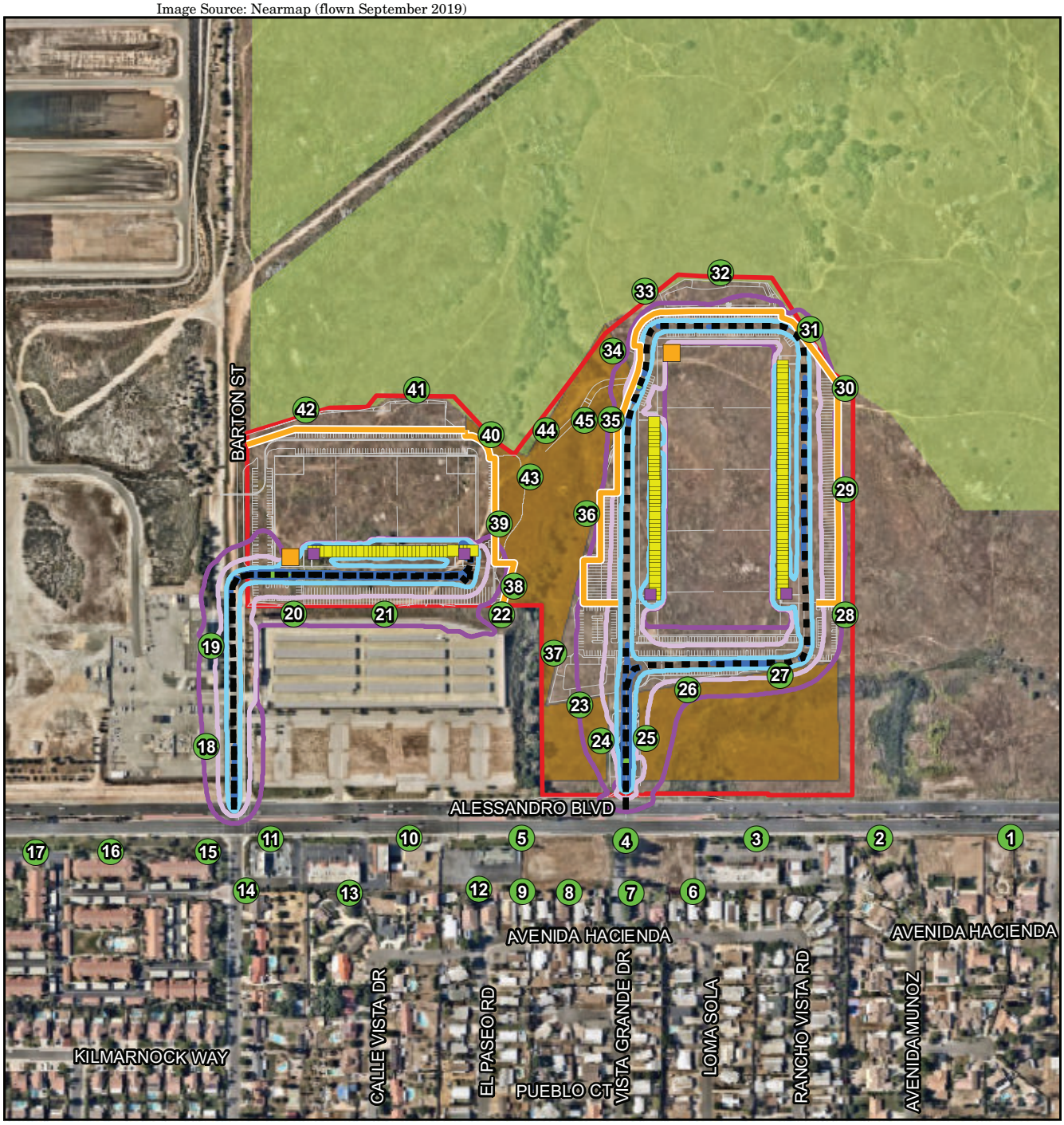
Image Source: Nearmap (flown September 2019)



0 Feet 500

Project Boundary
Sycamore Canyon Wilderness Park
On-site Conservation Area
Site Plan
4-foot Barrier
On-Site Truck Maneuvering
Loading Docks
HVAC
Trash Compactor

Modeled Receivers

Daytime On-Site Generated Noise Contours

45 dB(A) Leq
50 dB(A) Leq
55 dB(A) Leq
60 dB(A) Leq
65 dB(A) Leq

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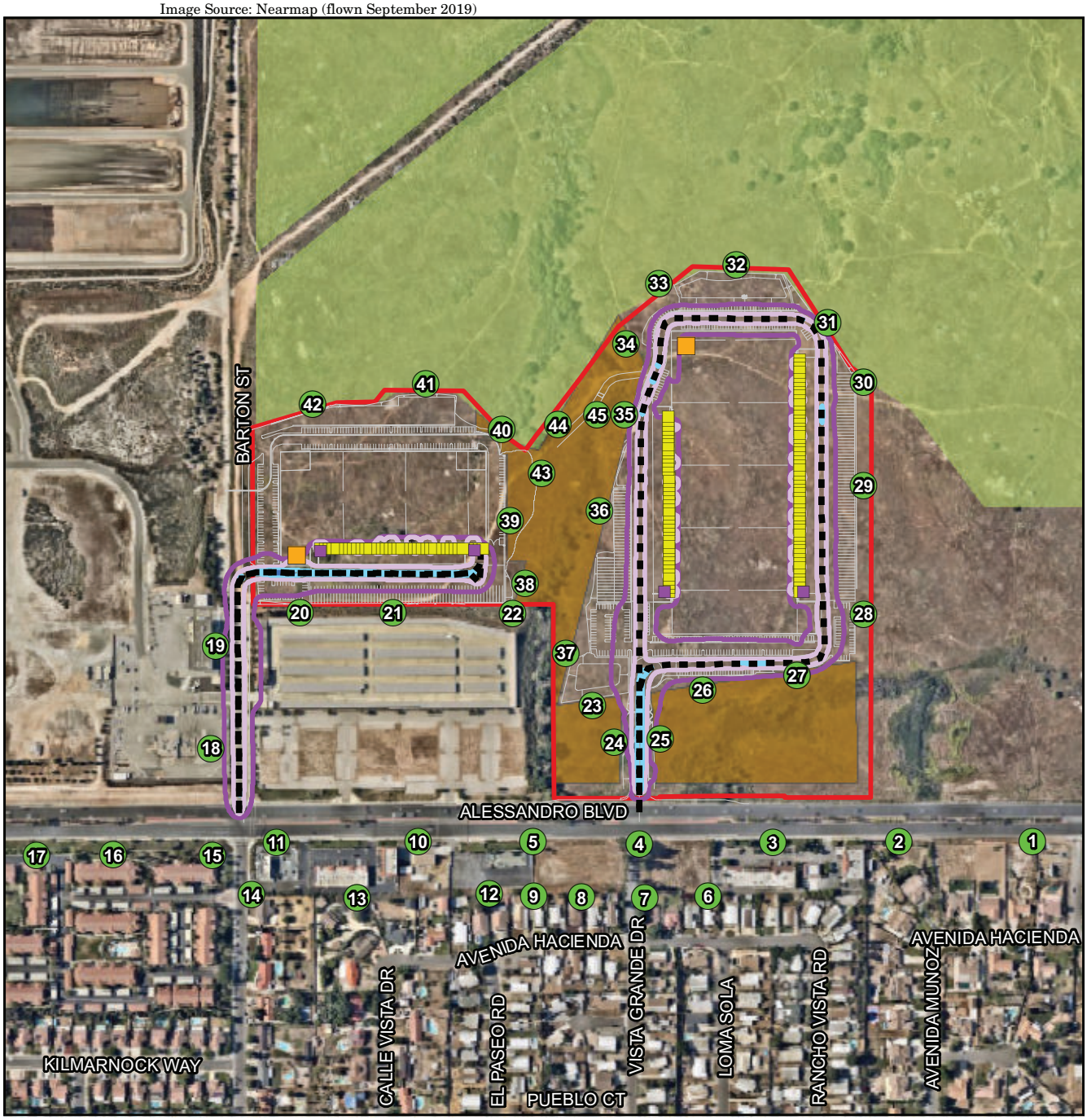
FIGURE 10b

Daytime On-Site Generated Noise Contours with 4-Foot Barrier

Image Source: Nearmap (flown September 2019)



Project Boundary
Sycamore Canyon Wilderness Park
On-site Conservation Area
Site Plan
On-Site Truck Maneuvering
Loading Docks
HVAC
Trash Compactor

Modeled Receivers

Nighttime On-Site Generated Noise Contours

45 dB(A) Leq
50 dB(A) Leq
55 dB(A) Leq
60 dB(A) Leq

0 Feet 500

FIGURE 11a

Nighttime On-Site Generated Noise Contours without 4-Foot Barrier

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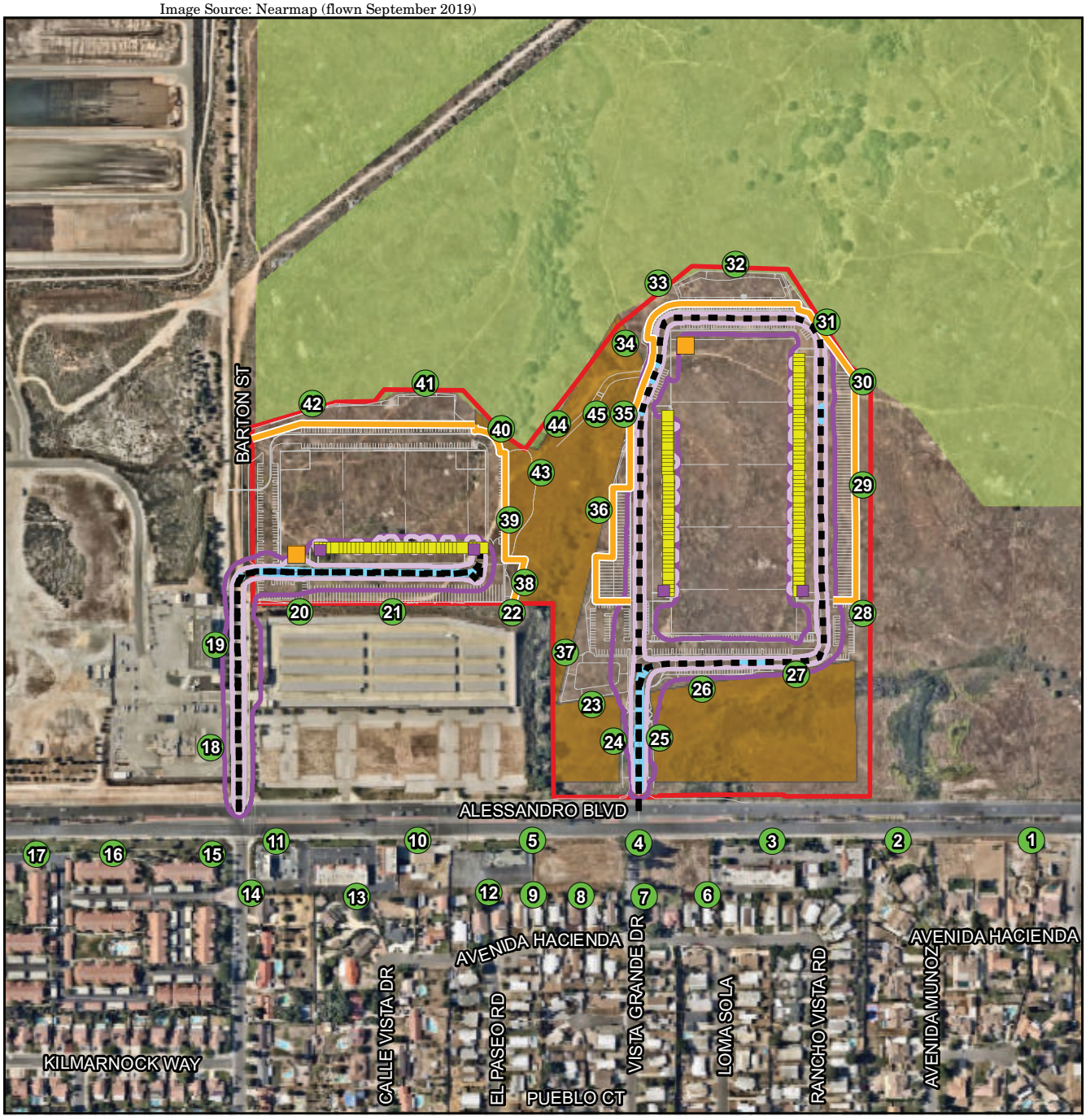
Image Source: Nearmap (flown September 2019)



Project Boundary

Sycamore Canyon Wilderness Park

On-site Conservation Area

Site Plan

4-foot Barrier

On-Site Truck Maneuvering

Loading Docks

HVAC

Trash Compactor

Modeled Receivers

0 Feet 500

Nighttime On-Site Generated Noise Contours

45 dB(A) Leq

50 dB(A) Leq

55 dB(A) Leq

60 dB(A) Leq

FIGURE 11b

Nighttime On-Site Generated Noise Contours with 4-Foot Barrier

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Table 11
Noise Levels Due to Project On-Site Operational Noise Sources

Receiver	Land Use	Daytime Noise Level [dB(A) L_{eq}]	Nighttime Noise Level [dB(A) L_{eq}]	Noise Limit Daytime/Nighttime [dB(A) L_{eq}]
1	Residential	32	26	55/45
2	Residential	34	28	55/45
3	Commercial	36	30	65
4	Vacant (Residential Land Use Designation)	39	33	55/45
5	Vacant (Residential Land Use Designation)	36	30	55/45
6	Residential (County)	35	29	55/45
7	Residential (County)	36	30	55/45
8	Residential (County)	35	29	55/45
9	Residential (County)	34	28	55/45
10	Commercial	34	28	65
11	Commercial	38	32	65
12	Residential (County)	34	28	55/45
13	Residential (County)	33	27	55/45
14	Residential (County)	35	29	55/45
15	Residential	37	31	55/45
16	Residential	34	28	55/45
17	Residential	32	25	55/45
18	Public Facilities	45	39	70
19	Public Facilities	47	41	70
20	Commercial	48	42	65
21	Commercial	47	40	65
22	Commercial	44	37	65
23	On-Site Conservation Area	45	39	55/45
24	On-Site Conservation Area	47	41	55/45
25	On-Site Conservation Area	50	44	55/45
26	On-Site Conservation Area	47	41	55/45
27	On-Site Conservation Area	51	45	55/45
28	Business and Manufacturing Zone	44	39	70
29	Business and Manufacturing Zone	45	38	70
30	Sycamore Canyon Wilderness Park	43	37	55/45
31	Sycamore Canyon Wilderness Park	46	40	55/45
32	Sycamore Canyon Wilderness Park	40	35	55/45
33	Sycamore Canyon Wilderness Park	41	35	55/45
34	Sycamore Canyon Wilderness Park	42	36	55/45
35	Sycamore Canyon Wilderness Park	46	40	55/45
36	Sycamore Canyon Wilderness Park	41	35	55/45
37	Sycamore Canyon Wilderness Park	43	37	55/45
38	Sycamore Canyon Wilderness Park	43	37	55/45
39	On-Site Conservation Area	41	35	55/45
40	On-Site Conservation Area	36	30	55/45
41	On-Site Conservation Area	35	31	55/45
42	On-Site Conservation Area	32	30	55/45
43	On-Site Conservation Area	39	33	55/45
44	On-Site Conservation Area	39	33	55/45
45	On-Site Conservation Area	41	35	55/45

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

Noise levels associated with backup warning beepers were modeled at the same set of 45 receivers. Three simultaneous beepers were modeled at the western and eastern sides of Building A and at the southern side of Building B. Backup beeper noise contours are shown in Figure 12. SoundPLAN noise calculations are provided in Attachment 6. Backup beeper noise levels at the nearby residential uses would range from 19 to 37 dB(A) L_{eq} and would not exceed the Title 7 nighttime Noise Ordinance limit of 45 dB(A) L_{eq}. Backup beeper noise levels at the adjacent Sycamore Canyon Wilderness Park and on-site conservation areas would range from 8 to 38 dB(A) L_{eq} and would also be less than the applicable nighttime limit of 45 dB(A) L_{eq}. Therefore, noise associated with backup warning beepers would be less than significant.

5.4 Vibration

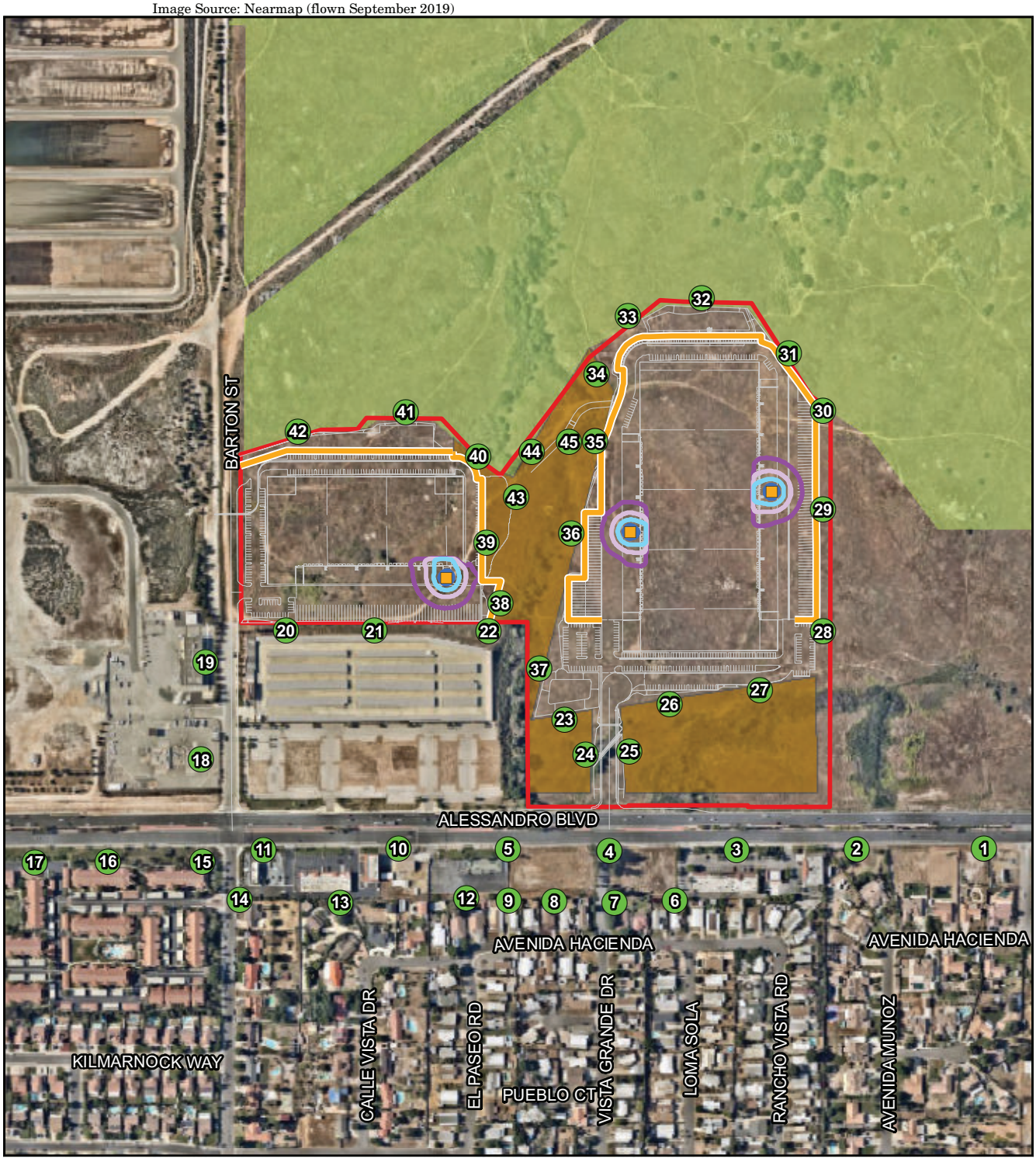
This impact discussion analyzes the potential for the proposed project to cause an exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. Vibration levels in the project area may be influenced by construction and operation. A vibration impact would generally be considered significant if it involves any construction-related or operations-related impacts in excess of 0.2 in/sec PPV.

5.4.1 Construction Vibration

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

On-site construction equipment that would cause the most noise and vibration would be associated with the use of large bulldozers and trucks. According to Caltrans, vibration levels associated with the use of bulldozers range from approximately 0.003 to 0.089 in/sec PPV at 25 feet, as shown in Table 8. The self-storage facility southwest of the project site is the closest structure and is located approximately 50 feet from the project boundary. The closest residential use is located approximately 280 feet from the southeast corner of the project site. Ground-borne vibration level at the self-storage facility due to a large bulldozer would be 0.031 PPV and the ground-borne vibration level at the nearest residential use would be 0.002 PPV. Vibration levels from construction would not exceed 0.2 PPV. Thus, groundborne vibration impacts generated during construction would be less than significant.

Image Source: Nearmap (flown September 2019)



Project Boundary

Sycamore Canyon Wilderness Park

On-site Conservation Area

Site Plan

4-foot Barrier

Modeled Receivers

Backup Beeper

Backup Beeper Noise Contours

45 dB(A) Leq

50 dB(A) Leq

55 dB(A) Leq

60 dB(A) Leq

0 Feet 500

RECON

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FIGURE 12

Backup Beeper Noise Contours

5.4.2 Operational Vibration

The main source of operational groundborne vibration would be from trucks. As shown in Table 8, trucks generate a vibration level of 0.076 PPV at 25 feet. This vibration level would attenuate to 0.027 PPV at the self-storage facility and 0.002 PPV at the nearest residential use. Vibration levels from project operation would not exceed 0.2 PPV. Thus, groundborne vibration impacts generated during operation would be less than significant.

6.0 Conclusions

6.1 Construction Noise

6.1.1 Adjacent Residential Uses

As shown in Table 9, construction noise levels would range from 54 to 58 dB(A) L_{eq} at the adjacent residential land uses. Construction noise levels would not exceed the FTA recommended threshold of 80 dB(A) L_{eq} at any adjacent residential property lines. Thus, construction noise levels would not be considered a substantial increase in noise.

The City's noise ordinance (Title 7) limits construction activities to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, and to 8:00 a.m. to 5:00 p.m. on Saturdays. No construction is permitted on Sundays or federal holidays. Some adjacent residential uses are also located within the County of Riverside. Similar to the City, the County exempts construction noise from noise level limits, but restricts construction activity to the hours of 6:00 a.m. to 6:00 p.m. in June through September, and 7:00 a.m. to 6:00 p.m. in October through May. In order to comply with City and County requirements, project construction activities would only occur between 7:00 a.m. and 6:00 p.m. on weekdays and 8:00 a.m. to 5:00 p.m. on Saturdays, and would not occur on Sundays or federal holidays. As construction activities would comply with Title 7 and would not be considered a substantial increase in ambient noise, temporary increases in noise levels from construction activities would be less than significant at the adjacent residential use areas.

6.1.2 Adjacent Sycamore Canyon Wilderness Park and Conservation Areas

Sensitive least Bell's vireo habitat is located within the Sycamore Canyon Wilderness Park and on-site conservation areas. For construction noise, the Western Riverside County Regional Conservation Authority applies a noise level limit of 65 dB(A) L_{eq} (Western Riverside County Regional Conservation Authority, personal communication 2019).This limit was analyzed at the boundary between the project site and the Sycamore Canyon Wilderness Park and at the edge of the on-site conservation areas. As shown in Table 9, construction noise levels at the adjacent Sycamore Canyon Wilderness Park and on-site conservation areas would range from 68 to 74 dB(A) L_{eq}. Based on the construction noise contours shown in Figure 7, construction noise levels would exceed 65 dB(A) L_{eq} within a majority of the Parcel

A conservation area, the portion of Parcel B conservation area that is approximately 100 feet or closer to the development footprint, and within the portion of the Sycamore Canyon Wilderness Park that is within up to 300 feet of the project boundary. Should sensitive species be present within the Sycamore Canyon Wilderness Park and on-site conservation areas, construction noise impacts to sensitive species would be potentially significant. The following measure would be required to reduce construction noise impacts to a level less than significant:

Noise-1: Should least Bell's vireo be present in the Sycamore Canyon Wilderness Park within 300 feet of the project site, in Parcel A on-site conservation area, or within Parcel B on-site conservation area within 100 feet of the development footprint, construction noise impacts shall be minimized through implementation of the following measure:

1. Install a 12-foot temporary noise barrier at the perimeter of the limits of disturbance between the construction activities and the adjacent Sycamore Canyon Wilderness Park to the north and east and the on-site conservation areas as shown in Figure 8. The barrier shall be continuous without openings, holes or cracks, and shall reach the ground. The barrier may be constructed with 1-inch plywood and provide a reduction of at least 10 dB(A) to ensure noise levels do not exceed 65 dB(A) L_{eq} at the Sycamore Canyon Wilderness Park and on-site conservation areas. Other materials providing the same reduction shall also be permitted.

2. Heavy grade rubber mats/pad will be used within the bed of the trucks. These mats will help attenuate initial impact noise generated when an excavator drops rock and debris into the bed of the truck. These mats must be maintained and/or replaced as necessary.

3. During all project site excavation and grading on-site, construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

4. The contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

5. Equipment shall be shut off and not left to idle when not in use.

6. The contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

7. The project proponent shall mandate that the construction contractor prohibit the use of music or sound amplification on the project site during construction.

8. The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (7:00 a.m. to 6:00 p.m. on weekdays, and 8:00 a.m. to 5:00 p.m. on Saturdays).

9. Limit the use of heavy equipment or vibratory rollers and soil compressors along the project boundaries to the greatest degree possible. It is acknowledged that some soil compression may be necessary along the project boundaries.

10. Any jackhammers, pneumatic equipment and all other portable stationary noise sources shall be shielded and noise shall be directed away from sensitive receptors.

11. For the duration of construction activities, the construction manager shall serve as the contact person should noise levels become disruptive to local residents. A sign shall be posted at the project site with the contact phone number. This sign shall be posted at the Alessandro Boulevard frontage as well as the Barton Street frontage.

Implementation of mitigation measure Noise-1 would reduce construction noise levels to 65 dB(A) L_{eq} or less. Construction noise impacts at the Sycamore Canyon Wilderness Park and on-site conservation areas would be reduced to less than significant.

6.2 Traffic Noise

6.2.1 On-site Noise/Land Use Compatibility

The main source of noise at the project site is vehicle traffic on Alessandro Boulevard. Industrial uses are normally acceptable up to 70 CNEL, conditionally acceptable up to 80 CNEL, and normally unacceptable above 80 CNEL. As calculated in this analysis, exterior noise levels at the proposed buildings are projected to be less than the City's normally acceptable compatibility standard of 70 CNEL.

6.2.2 Off-site Traffic Noise

The project would increase traffic volumes on Alessandro Boulevard. However, the project would not substantially alter the vehicle classifications mix on local or regional roadways, nor would the project alter the speed on an existing roadway or create a new roadway. Thus, the primary factor affecting off-site noise levels would be increased traffic volumes. Based on the traffic report, the project would generate 847 trips (Urban Crossroads 2019). As shown in Table 10, in opening year 2023 and horizon year 2040, direct off-site noise level increases due to the project would be well less than 1 dB in existing, year 2023, and year

2040 conditions. The project-related increases in ambient noise would not be audible and would not exceed the thresholds outlined above. Impacts would be less than significant.

6.3 On-site Generated Noise

The primary noise sources on-site would be truck activity (idling trucks, truck trailer hitching, and unhitching), parking lot activities, trash compactors, and roof-mounted HVAC units. On-site generated noise levels in the City are regulated by Chapter 7.25 of Title 7 of the City's Municipal Code. Additionally, accordingly to the MSHCP, the residential noise level limits are also applicable to the Sycamore Canyon Wilderness Park and on-site conservation areas. As shown in Table 11, at the residential, commercial, public facilities, and business and manufacturing land uses, daytime noise levels at the property lines due to future project on-site noise sources would range from 32 to 48 dB(A) L_{eq} and nighttime noise levels due to future project on-site noise sources would range from 25 to 42 dB(A) L_{eq}. These noise levels would not exceed the applicable daytime and nighttime Title 7 Noise Ordinance limits at the property lines. Within the Sycamore Canyon Wilderness Park and on-site conservation areas, daytime noise levels due to future project on-site noise sources would range from 32 to 51 dB(A) L_{eq} and nighttime noise levels due to future project on-site noise sources would range from 30 to 45 dB(A) L_{eq}. Future operational noise levels generated by the on-site noise sources would not exceed the applicable Title 7 residential noise level limits of 55 dB(A) L_{eq} during the daytime hours and 45 dB(A) L_{eq} during the nighttime hours at the property line of the adjacent Sycamore Canyon Wilderness Park and on-site conservation areas. Additionally, noise levels associated with on-site backup warning beepers would be less than the applicable limits. Therefore, noise impacts due to on-site generated noise would be less than significant.

6.4 Vibration

Vibration levels in the project area may be influenced by construction and operation. A vibration impact would generally be considered significant if it involves any construction-related or operations-related impacts in excess of 0.2 PPV. As calculated in this analysis, vibration levels due to construction equipment and trucks are not anticipated to exceed 0.2 PPV at the nearest structure or at the nearest residential use. Thus, groundborne vibration impacts generated during construction and operation would be less than significant.

7.0 References Cited

California Code of Regulations (CCR)

2016 2016 California Building Code, California Code of Regulations, Title 24, Chapter 12 Interior Environment, Section 1207, Sound Transmission. http://codes.iccsafe.org/app/book/toc/2016/California/Building%20Volume%201/index.html.

Bayerisches Landesamt für Umwelt
2007 (Parkplatzlarmstudie 6) Parking Area Noise, Recommendation for the Calculation of Sound Emissions of Parking Areas, Motorcar Centers and Bus Stations as well as Multi-Storey Car Parks and Underground Car Parks. 6. Revised Edition.

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

2013b Transportation and Construction Vibration Guidance Manual. September.

2018 2018 Annual Average Daily Truck Traffic on the California State Highway System. Compiled by Traffic Data Branch. Accessed at http://www.dot.ca.gov/trafficops/census.

Federal Highway Administration (FHWA)
2006 FHWA Roadway Construction Noise Model User's Guide, Final Report. January.

Federal Transit Administration (FTA)
2006 Transit Noise and Vibration Impact Assessment. Office of Planning and Environment. FTA-VA-90-1003-06. May.

Kunzman Associates, Inc.
2016 Sycamore Canyon Business Park Warehouse Noise Impact Analysis. August 1, 2016.

LSA Associates, Inc.
2013 Noise Impact Analysis, Bloomington Truck Terminal. Prepared for Pacific Industrial. LSA Project No. PAC1301. June.

Navcon Engineering, Inc.
2015 SoundPLAN Essential version 3.0.

Riverside, City of
2007 Riverside General Plan 2025. November.

2018 Municipal Code. Online content updated on November 27, 2018. Accessed at https://library.municode.com/ca/riverside/codes/code_of_ordinances.

Urban Crossroads
2019 Sycamore Hills Distribution Center Traffic Impact Analysis. June 24.

Western Riverside County Regional Conservation Authority
2019 Personal communication between Sonya Hooker, Director of Environmental Services, Ruth Villalobos & Associates, Inc. and Elizabeth Dionne, Ecological Resources Specialist, Western Riverside County Regional Conservation Authority. December.

ATTACHMENTS

ATTACHMENT 1

SoundPLAN – Vehicle Traffic Noise

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h		Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Alessandro Boulevard Eastbound			Traffic direction:	In entry direction							
0+000	44808	Total	-	1867	-		none	-	-	Average (of DGAC and PCC)	0
0+000	44808	Automobiles	-	1688		89	none	-	-	Average (of DGAC and PCC)	0
0+000	44808	Medium trucks	-	90		89	none	-	-	Average (of DGAC and PCC)	0
0+000	44808	Heavy trucks	-	89		89	none	-	-	Average (of DGAC and PCC)	0
0+000	44808	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	44808	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	44808	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	46464	Total	-	1936	-		none	-	-	Average (of DGAC and PCC)	0
1+197	46464	Automobiles	-	1750		89	none	-	-	Average (of DGAC and PCC)	0
1+197	46464	Medium trucks	-	94		89	none	-	-	Average (of DGAC and PCC)	0
1+197	46464	Heavy trucks	-	92		89	none	-	-	Average (of DGAC and PCC)	0
1+197	46464	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	46464	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	46464	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	48768	Total	-	2032	-		none	-	-	Average (of DGAC and PCC)	0
1+379	48768	Automobiles	-	1837		89	none	-	-	Average (of DGAC and PCC)	0
1+379	48768	Medium trucks	-	98		89	none	-	-	Average (of DGAC and PCC)	0
1+379	48768	Heavy trucks	-	97		89	none	-	-	Average (of DGAC and PCC)	0
1+379	48768	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	48768	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	48768	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	48960	Total	-	2040	-		none	-	-	Average (of DGAC and PCC)	0
2+604	48960	Automobiles	-	1844		89	none	-	-	Average (of DGAC and PCC)	0
2+604	48960	Medium trucks	-	99		89	none	-	-	Average (of DGAC and PCC)	0
2+604	48960	Heavy trucks	-	97		89	none	-	-	Average (of DGAC and PCC)	0
2+604	48960	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	48960	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	48960	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	39552	Total	-	1648	-		none	-	-	Average (of DGAC and PCC)	0
3+005	39552	Automobiles	-	1490		89	none	-	-	Average (of DGAC and PCC)	0
3+005	39552	Medium trucks	-	80		89	none	-	-	Average (of DGAC and PCC)	0
3+005	39552	Heavy trucks	-	78		89	none	-	-	Average (of DGAC and PCC)	0
3+005	39552	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	39552	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	39552	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	35352	Total	-	1473	-		none	-	-	Average (of DGAC and PCC)	0
3+244	35352	Automobiles	-	1332		89	none	-	-	Average (of DGAC and PCC)	0
3+244	35352	Medium trucks	-	71		89	none	-	-	Average (of DGAC and PCC)	0
3+244	35352	Heavy trucks	-	70		89	none	-	-	Average (of DGAC and PCC)	0
3+244	35352	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	35352	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	35352	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+488	-						-	-	-	-	-
Alessandro Boulevard Westbound			Traffic direction:	In entry direction							
0+000	35352	Total	-	1473	-		none	-	-	Average (of DGAC and PCC)	0
0+000	35352	Automobiles	-	1332		89	none	-	-	Average (of DGAC and PCC)	0
0+000	35352	Medium trucks	-	71		89	none	-	-	Average (of DGAC and PCC)	0
0+000	35352	Heavy trucks	-	70		89	none	-	-	Average (of DGAC and PCC)	0
0+000	35352	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	35352	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	35352	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	39552	Total	-	1648	-		none	-	-	Average (of DGAC and PCC)	0
0+238	39552	Automobiles	-	1490		89	none	-	-	Average (of DGAC and PCC)	0
0+238	39552	Medium trucks	-	80		89	none	-	-	Average (of DGAC and PCC)	0
0+238	39552	Heavy trucks	-	78		89	none	-	-	Average (of DGAC and PCC)	0
0+238	39552	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	39552	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	39552	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	48960	Total	-	2040	-		none	-	-	Average (of DGAC and PCC)	0
0+470	48960	Automobiles	-	1844		89	none	-	-	Average (of DGAC and PCC)	0
0+470	48960	Medium trucks	-	99		89	none	-	-	Average (of DGAC and PCC)	0
0+470	48960	Heavy trucks	-	97		89	none	-	-	Average (of DGAC and PCC)	0
0+470	48960	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	48960	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	48960	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	48768	Total	-	2032	-		none	-	-	Average (of DGAC and PCC)	0
0+868	48768	Automobiles	-	1837		89	none	-	-	Average (of DGAC and PCC)	0
0+868	48768	Medium trucks	-	98		89	none	-	-	Average (of DGAC and PCC)	0
0+868	48768	Heavy trucks	-	97		89	none	-	-	Average (of DGAC and PCC)	0
0+868	48768	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	48768	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	48768	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	46464	Total	-	1936	-		none	-	-	Average (of DGAC and PCC)	0
2+103	46464	Automobiles	-	1750		89	none	-	-	Average (of DGAC and PCC)	0
2+103	46464	Medium trucks	-	94		89	none	-	-	Average (of DGAC and PCC)	0
2+103	46464	Heavy trucks	-	92		89	none	-	-	Average (of DGAC and PCC)	0
2+103	46464	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	46464	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	46464	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	44808	Total	-	1867	-		none	-	-	Average (of DGAC and PCC)	0
2+288	44808	Automobiles	-	1688		89	none	-	-	Average (of DGAC and PCC)	0
2+288	44808	Medium trucks	-	90		89	none	-	-	Average (of DGAC and PCC)	0
2+288	44808	Heavy trucks	-	89		89	none	-	-	Average (of DGAC and PCC)	0
2+288	44808	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	44808	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	44808	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+479	-						-	-	-	-	-

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h		Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Alessandro Boulevard Eastbound			Traffic direction:	In entry direction							
0+000	45360	Total	-	1890	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45360	Automobiles	-	1709		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45360	Medium trucks	-	91		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45360	Heavy trucks	-	90		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45360	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45360	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45360	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	47016	Total	-	1959	-		none	-	-	Average (of DGAC and PCC)	0
1+197	47016	Automobiles	-	1771		89	none	-	-	Average (of DGAC and PCC)	0
1+197	47016	Medium trucks	-	95		89	none	-	-	Average (of DGAC and PCC)	0
1+197	47016	Heavy trucks	-	93		89	none	-	-	Average (of DGAC and PCC)	0
1+197	47016	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	47016	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	47016	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	50160	Total	-	2090	-		none	-	-	Average (of DGAC and PCC)	0
1+379	50160	Automobiles	-	1890		89	none	-	-	Average (of DGAC and PCC)	0
1+379	50160	Medium trucks	-	101		89	none	-	-	Average (of DGAC and PCC)	0
1+379	50160	Heavy trucks	-	99		89	none	-	-	Average (of DGAC and PCC)	0
1+379	50160	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	50160	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	50160	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	50328	Total	-	2097	-		none	-	-	Average (of DGAC and PCC)	0
2+604	50328	Automobiles	-	1896		89	none	-	-	Average (of DGAC and PCC)	0
2+604	50328	Medium trucks	-	101		89	none	-	-	Average (of DGAC and PCC)	0
2+604	50328	Heavy trucks	-	100		89	none	-	-	Average (of DGAC and PCC)	0
2+604	50328	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	50328	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	50328	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	40896	Total	-	1704	-		none	-	-	Average (of DGAC and PCC)	0
3+005	40896	Automobiles	-	1541		89	none	-	-	Average (of DGAC and PCC)	0
3+005	40896	Medium trucks	-	82		89	none	-	-	Average (of DGAC and PCC)	0
3+005	40896	Heavy trucks	-	81		89	none	-	-	Average (of DGAC and PCC)	0
3+005	40896	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	40896	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	40896	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	36096	Total	-	1504	-		none	-	-	Average (of DGAC and PCC)	0
3+244	36096	Automobiles	-	1360		89	none	-	-	Average (of DGAC and PCC)	0
3+244	36096	Medium trucks	-	73		89	none	-	-	Average (of DGAC and PCC)	0
3+244	36096	Heavy trucks	-	72		89	none	-	-	Average (of DGAC and PCC)	0
3+244	36096	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	36096	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	36096	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+488	-						-	-	-	-	-
Alessandro Boulevard Westbound			Traffic direction:	In entry direction							
0+000	36096	Total	-	1504	-		none	-	-	Average (of DGAC and PCC)	0
0+000	36096	Automobiles	-	1360		89	none	-	-	Average (of DGAC and PCC)	0
0+000	36096	Medium trucks	-	73		89	none	-	-	Average (of DGAC and PCC)	0
0+000	36096	Heavy trucks	-	72		89	none	-	-	Average (of DGAC and PCC)	0
0+000	36096	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	36096	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	36096	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	40896	Total	-	1704	-		none	-	-	Average (of DGAC and PCC)	0
0+238	40896	Automobiles	-	1541		89	none	-	-	Average (of DGAC and PCC)	0
0+238	40896	Medium trucks	-	82		89	none	-	-	Average (of DGAC and PCC)	0
0+238	40896	Heavy trucks	-	81		89	none	-	-	Average (of DGAC and PCC)	0
0+238	40896	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	40896	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	40896	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	50328	Total	-	2097	-		none	-	-	Average (of DGAC and PCC)	0
0+470	50328	Automobiles	-	1896		89	none	-	-	Average (of DGAC and PCC)	0
0+470	50328	Medium trucks	-	101		89	none	-	-	Average (of DGAC and PCC)	0
0+470	50328	Heavy trucks	-	100		89	none	-	-	Average (of DGAC and PCC)	0
0+470	50328	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	50328	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	50328	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	50160	Total	-	2090	-		none	-	-	Average (of DGAC and PCC)	0
0+868	50160	Automobiles	-	1890		89	none	-	-	Average (of DGAC and PCC)	0
0+868	50160	Medium trucks	-	101		89	none	-	-	Average (of DGAC and PCC)	0
0+868	50160	Heavy trucks	-	99		89	none	-	-	Average (of DGAC and PCC)	0
0+868	50160	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	50160	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	50160	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	47016	Total	-	1959	-		none	-	-	Average (of DGAC and PCC)	0
2+103	47016	Automobiles	-	1771		89	none	-	-	Average (of DGAC and PCC)	0
2+103	47016	Medium trucks	-	95		89	none	-	-	Average (of DGAC and PCC)	0
2+103	47016	Heavy trucks	-	93		89	none	-	-	Average (of DGAC and PCC)	0
2+103	47016	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	47016	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	47016	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	45360	Total	-	1890	-		none	-	-	Average (of DGAC and PCC)	0
2+288	45360	Automobiles	-	1709		89	none	-	-	Average (of DGAC and PCC)	0
2+288	45360	Medium trucks	-	91		89	none	-	-	Average (of DGAC and PCC)	0
2+288	45360	Heavy trucks	-	90		89	none	-	-	Average (of DGAC and PCC)	0
2+288	45360	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	45360	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	45360	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+479	-						-	-	-	-	-

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h		Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Alessandro Boulevard Eastbound			Traffic direction:	In entry direction							
0+000	54240	Total	-	2260	-		none	-	-	Average (of DGAC and PCC)	0
0+000	54240	Automobiles	-	2043		89	none	-	-	Average (of DGAC and PCC)	0
0+000	54240	Medium trucks	-	109		89	none	-	-	Average (of DGAC and PCC)	0
0+000	54240	Heavy trucks	-	108		89	none	-	-	Average (of DGAC and PCC)	0
0+000	54240	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	54240	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	54240	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56064	Total	-	2336	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56064	Automobiles	-	2112		89	none	-	-	Average (of DGAC and PCC)	0
1+197	56064	Medium trucks	-	113		89	none	-	-	Average (of DGAC and PCC)	0
1+197	56064	Heavy trucks	-	111		89	none	-	-	Average (of DGAC and PCC)	0
1+197	56064	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56064	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56064	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	59472	Total	-	2478	-		none	-	-	Average (of DGAC and PCC)	0
1+379	59472	Automobiles	-	2240		89	none	-	-	Average (of DGAC and PCC)	0
1+379	59472	Medium trucks	-	120		89	none	-	-	Average (of DGAC and PCC)	0
1+379	59472	Heavy trucks	-	118		89	none	-	-	Average (of DGAC and PCC)	0
1+379	59472	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	59472	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	59472	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	59424	Total	-	2476	-		none	-	-	Average (of DGAC and PCC)	0
2+604	59424	Automobiles	-	2239		89	none	-	-	Average (of DGAC and PCC)	0
2+604	59424	Medium trucks	-	120		89	none	-	-	Average (of DGAC and PCC)	0
2+604	59424	Heavy trucks	-	118		89	none	-	-	Average (of DGAC and PCC)	0
2+604	59424	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	59424	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	59424	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	49248	Total	-	2052	-		none	-	-	Average (of DGAC and PCC)	0
3+005	49248	Automobiles	-	1855		89	none	-	-	Average (of DGAC and PCC)	0
3+005	49248	Medium trucks	-	99		89	none	-	-	Average (of DGAC and PCC)	0
3+005	49248	Heavy trucks	-	98		89	none	-	-	Average (of DGAC and PCC)	0
3+005	49248	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	49248	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	49248	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45048	Total	-	1877	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45048	Automobiles	-	1697		89	none	-	-	Average (of DGAC and PCC)	0
3+244	45048	Medium trucks	-	91		89	none	-	-	Average (of DGAC and PCC)	0
3+244	45048	Heavy trucks	-	89		89	none	-	-	Average (of DGAC and PCC)	0
3+244	45048	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45048	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45048	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+488	-						-	-	-	-	-
Alessandro Boulevard Westbound			Traffic direction:	In entry direction							
0+000	45048	Total	-	1877	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45048	Automobiles	-	1697		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45048	Medium trucks	-	91		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45048	Heavy trucks	-	89		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45048	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45048	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45048	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	49248	Total	-	2052	-		none	-	-	Average (of DGAC and PCC)	0
0+238	49248	Automobiles	-	1855		89	none	-	-	Average (of DGAC and PCC)	0
0+238	49248	Medium trucks	-	99		89	none	-	-	Average (of DGAC and PCC)	0
0+238	49248	Heavy trucks	-	98		89	none	-	-	Average (of DGAC and PCC)	0
0+238	49248	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	49248	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	49248	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	59424	Total	-	2476	-		none	-	-	Average (of DGAC and PCC)	0
0+470	59424	Automobiles	-	2239		89	none	-	-	Average (of DGAC and PCC)	0
0+470	59424	Medium trucks	-	120		89	none	-	-	Average (of DGAC and PCC)	0
0+470	59424	Heavy trucks	-	118		89	none	-	-	Average (of DGAC and PCC)	0
0+470	59424	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	59424	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	59424	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	59472	Total	-	2478	-		none	-	-	Average (of DGAC and PCC)	0
0+868	59472	Automobiles	-	2240		89	none	-	-	Average (of DGAC and PCC)	0
0+868	59472	Medium trucks	-	120		89	none	-	-	Average (of DGAC and PCC)	0
0+868	59472	Heavy trucks	-	118		89	none	-	-	Average (of DGAC and PCC)	0
0+868	59472	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	59472	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	59472	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56064	Total	-	2336	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56064	Automobiles	-	2112		89	none	-	-	Average (of DGAC and PCC)	0
2+103	56064	Medium trucks	-	113		89	none	-	-	Average (of DGAC and PCC)	0
2+103	56064	Heavy trucks	-	111		89	none	-	-	Average (of DGAC and PCC)	0
2+103	56064	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56064	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56064	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54240	Total	-	2260	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54240	Automobiles	-	2043		89	none	-	-	Average (of DGAC and PCC)	0
2+288	54240	Medium trucks	-	109		89	none	-	-	Average (of DGAC and PCC)	0
2+288	54240	Heavy trucks	-	108		89	none	-	-	Average (of DGAC and PCC)	0
2+288	54240	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54240	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54240	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+479	-						-	-	-	-	-

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h		Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Alessandro Boulevard Eastbound			Traffic direction:	In entry direction							
0+000	54840	Total	-	2285	-		none	-	-	Average (of DGAC and PCC)	0
0+000	54840	Automobiles	-	2066		89	none	-	-	Average (of DGAC and PCC)	0
0+000	54840	Medium trucks	-	110		89	none	-	-	Average (of DGAC and PCC)	0
0+000	54840	Heavy trucks	-	109		89	none	-	-	Average (of DGAC and PCC)	0
0+000	54840	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	54840	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	54840	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56616	Total	-	2359	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56616	Automobiles	-	2133		89	none	-	-	Average (of DGAC and PCC)	0
1+197	56616	Medium trucks	-	114		89	none	-	-	Average (of DGAC and PCC)	0
1+197	56616	Heavy trucks	-	112		89	none	-	-	Average (of DGAC and PCC)	0
1+197	56616	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56616	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	56616	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	60864	Total	-	2536	-		none	-	-	Average (of DGAC and PCC)	0
1+379	60864	Automobiles	-	2293		89	none	-	-	Average (of DGAC and PCC)	0
1+379	60864	Medium trucks	-	122		89	none	-	-	Average (of DGAC and PCC)	0
1+379	60864	Heavy trucks	-	121		89	none	-	-	Average (of DGAC and PCC)	0
1+379	60864	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	60864	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	60864	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	60816	Total	-	2534	-		none	-	-	Average (of DGAC and PCC)	0
2+604	60816	Automobiles	-	2291		89	none	-	-	Average (of DGAC and PCC)	0
2+604	60816	Medium trucks	-	122		89	none	-	-	Average (of DGAC and PCC)	0
2+604	60816	Heavy trucks	-	121		89	none	-	-	Average (of DGAC and PCC)	0
2+604	60816	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	60816	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	60816	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	50592	Total	-	2108	-		none	-	-	Average (of DGAC and PCC)	0
3+005	50592	Automobiles	-	1906		89	none	-	-	Average (of DGAC and PCC)	0
3+005	50592	Medium trucks	-	102		89	none	-	-	Average (of DGAC and PCC)	0
3+005	50592	Heavy trucks	-	100		89	none	-	-	Average (of DGAC and PCC)	0
3+005	50592	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	50592	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	50592	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45792	Total	-	1908	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45792	Automobiles	-	1725		89	none	-	-	Average (of DGAC and PCC)	0
3+244	45792	Medium trucks	-	92		89	none	-	-	Average (of DGAC and PCC)	0
3+244	45792	Heavy trucks	-	91		89	none	-	-	Average (of DGAC and PCC)	0
3+244	45792	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45792	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	45792	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+488	-						-	-	-	-	-
Alessandro Boulevard Westbound			Traffic direction:	In entry direction							
0+000	45792	Total	-	1908	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45792	Automobiles	-	1725		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45792	Medium trucks	-	92		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45792	Heavy trucks	-	91		89	none	-	-	Average (of DGAC and PCC)	0
0+000	45792	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45792	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	45792	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	50592	Total	-	2108	-		none	-	-	Average (of DGAC and PCC)	0
0+238	50592	Automobiles	-	1906		89	none	-	-	Average (of DGAC and PCC)	0
0+238	50592	Medium trucks	-	102		89	none	-	-	Average (of DGAC and PCC)	0
0+238	50592	Heavy trucks	-	100		89	none	-	-	Average (of DGAC and PCC)	0
0+238	50592	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	50592	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	50592	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	60816	Total	-	2534	-		none	-	-	Average (of DGAC and PCC)	0
0+470	60816	Automobiles	-	2291		89	none	-	-	Average (of DGAC and PCC)	0
0+470	60816	Medium trucks	-	122		89	none	-	-	Average (of DGAC and PCC)	0
0+470	60816	Heavy trucks	-	121		89	none	-	-	Average (of DGAC and PCC)	0
0+470	60816	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	60816	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	60816	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	60864	Total	-	2536	-		none	-	-	Average (of DGAC and PCC)	0
0+868	60864	Automobiles	-	2293		89	none	-	-	Average (of DGAC and PCC)	0
0+868	60864	Medium trucks	-	122		89	none	-	-	Average (of DGAC and PCC)	0
0+868	60864	Heavy trucks	-	121		89	none	-	-	Average (of DGAC and PCC)	0
0+868	60864	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	60864	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	60864	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56616	Total	-	2359	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56616	Automobiles	-	2133		89	none	-	-	Average (of DGAC and PCC)	0
2+103	56616	Medium trucks	-	114		89	none	-	-	Average (of DGAC and PCC)	0
2+103	56616	Heavy trucks	-	112		89	none	-	-	Average (of DGAC and PCC)	0
2+103	56616	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56616	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	56616	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54840	Total	-	2285	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54840	Automobiles	-	2066		89	none	-	-	Average (of DGAC and PCC)	0
2+288	54840	Medium trucks	-	110		89	none	-	-	Average (of DGAC and PCC)	0
2+288	54840	Heavy trucks	-	109		89	none	-	-	Average (of DGAC and PCC)	0
2+288	54840	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54840	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	54840	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+479	-						-	-	-	-	-

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h		Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Alessandro Boulevard Eastbound			Traffic direction:	In entry direction							
0+000	90432	Total	-	3768	-		none	-	-	Average (of DGAC and PCC)	0
0+000	90432	Automobiles	-	3407		89	none	-	-	Average (of DGAC and PCC)	0
0+000	90432	Medium trucks	-	182		89	none	-	-	Average (of DGAC and PCC)	0
0+000	90432	Heavy trucks	-	179		89	none	-	-	Average (of DGAC and PCC)	0
0+000	90432	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	90432	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	90432	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92232	Total	-	3843	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92232	Automobiles	-	3474		89	none	-	-	Average (of DGAC and PCC)	0
1+197	92232	Medium trucks	-	186		89	none	-	-	Average (of DGAC and PCC)	0
1+197	92232	Heavy trucks	-	183		89	none	-	-	Average (of DGAC and PCC)	0
1+197	92232	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92232	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92232	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	101592	Total	-	4233	-		none	-	-	Average (of DGAC and PCC)	0
1+379	101592	Automobiles	-	3827		89	none	-	-	Average (of DGAC and PCC)	0
1+379	101592	Medium trucks	-	204		89	none	-	-	Average (of DGAC and PCC)	0
1+379	101592	Heavy trucks	-	201		89	none	-	-	Average (of DGAC and PCC)	0
1+379	101592	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	101592	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	101592	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	102816	Total	-	4284	-		none	-	-	Average (of DGAC and PCC)	0
2+604	102816	Automobiles	-	3873		89	none	-	-	Average (of DGAC and PCC)	0
2+604	102816	Medium trucks	-	207		89	none	-	-	Average (of DGAC and PCC)	0
2+604	102816	Heavy trucks	-	204		89	none	-	-	Average (of DGAC and PCC)	0
2+604	102816	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	102816	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	102816	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	86760	Total	-	3615	-		none	-	-	Average (of DGAC and PCC)	0
3+005	86760	Automobiles	-	3268		89	none	-	-	Average (of DGAC and PCC)	0
3+005	86760	Medium trucks	-	175		89	none	-	-	Average (of DGAC and PCC)	0
3+005	86760	Heavy trucks	-	172		89	none	-	-	Average (of DGAC and PCC)	0
3+005	86760	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	86760	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	86760	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	78360	Total	-	3265	-		none	-	-	Average (of DGAC and PCC)	0
3+244	78360	Automobiles	-	2952		89	none	-	-	Average (of DGAC and PCC)	0
3+244	78360	Medium trucks	-	158		89	none	-	-	Average (of DGAC and PCC)	0
3+244	78360	Heavy trucks	-	155		89	none	-	-	Average (of DGAC and PCC)	0
3+244	78360	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	78360	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	78360	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+488	-						-	-	-	-	-
Alessandro Boulevard Westbound			Traffic direction:	In entry direction							
0+000	78360	Total	-	3265	-		none	-	-	Average (of DGAC and PCC)	0
0+000	78360	Automobiles	-	2952		89	none	-	-	Average (of DGAC and PCC)	0
0+000	78360	Medium trucks	-	158		89	none	-	-	Average (of DGAC and PCC)	0
0+000	78360	Heavy trucks	-	155		89	none	-	-	Average (of DGAC and PCC)	0
0+000	78360	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	78360	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	78360	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	86760	Total	-	3615	-		none	-	-	Average (of DGAC and PCC)	0
0+238	86760	Automobiles	-	3268		89	none	-	-	Average (of DGAC and PCC)	0
0+238	86760	Medium trucks	-	175		89	none	-	-	Average (of DGAC and PCC)	0
0+238	86760	Heavy trucks	-	172		89	none	-	-	Average (of DGAC and PCC)	0
0+238	86760	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	86760	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	86760	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	102816	Total	-	4284	-		none	-	-	Average (of DGAC and PCC)	0
0+470	102816	Automobiles	-	3873		89	none	-	-	Average (of DGAC and PCC)	0
0+470	102816	Medium trucks	-	207		89	none	-	-	Average (of DGAC and PCC)	0
0+470	102816	Heavy trucks	-	204		89	none	-	-	Average (of DGAC and PCC)	0
0+470	102816	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	102816	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	102816	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	101592	Total	-	4233	-		none	-	-	Average (of DGAC and PCC)	0
0+868	101592	Automobiles	-	3827		89	none	-	-	Average (of DGAC and PCC)	0
0+868	101592	Medium trucks	-	204		89	none	-	-	Average (of DGAC and PCC)	0
0+868	101592	Heavy trucks	-	201		89	none	-	-	Average (of DGAC and PCC)	0
0+868	101592	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	101592	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	101592	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92232	Total	-	3843	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92232	Automobiles	-	3474		89	none	-	-	Average (of DGAC and PCC)	0
2+103	92232	Medium trucks	-	186		89	none	-	-	Average (of DGAC and PCC)	0
2+103	92232	Heavy trucks	-	183		89	none	-	-	Average (of DGAC and PCC)	0
2+103	92232	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92232	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92232	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90432	Total	-	3768	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90432	Automobiles	-	3407		89	none	-	-	Average (of DGAC and PCC)	0
2+288	90432	Medium trucks	-	182		89	none	-	-	Average (of DGAC and PCC)	0
2+288	90432	Heavy trucks	-	179		89	none	-	-	Average (of DGAC and PCC)	0
2+288	90432	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90432	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90432	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+479	-						-	-	-	-	-

Stationing km	ADT Veh/24h	Traffic values Vehicles type	Vehicle name	day Veh/h	Speed km/h		Control device	Constr. Speed km/h	Affect. veh. %	Road surface	Gradient Min / Max %
Alessandro Boulevard Eastbound			Traffic direction:	In entry direction							
0+000	90984	Total	-	3791	-		none	-	-	Average (of DGAC and PCC)	0
0+000	90984	Automobiles	-	3427		89	none	-	-	Average (of DGAC and PCC)	0
0+000	90984	Medium trucks	-	183		89	none	-	-	Average (of DGAC and PCC)	0
0+000	90984	Heavy trucks	-	180		89	none	-	-	Average (of DGAC and PCC)	0
0+000	90984	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	90984	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	90984	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92784	Total	-	3866	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92784	Automobiles	-	3495		89	none	-	-	Average (of DGAC and PCC)	0
1+197	92784	Medium trucks	-	187		89	none	-	-	Average (of DGAC and PCC)	0
1+197	92784	Heavy trucks	-	184		89	none	-	-	Average (of DGAC and PCC)	0
1+197	92784	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92784	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+197	92784	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	102984	Total	-	4291	-		none	-	-	Average (of DGAC and PCC)	0
1+379	102984	Automobiles	-	3879		89	none	-	-	Average (of DGAC and PCC)	0
1+379	102984	Medium trucks	-	207		89	none	-	-	Average (of DGAC and PCC)	0
1+379	102984	Heavy trucks	-	204		89	none	-	-	Average (of DGAC and PCC)	0
1+379	102984	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	102984	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
1+379	102984	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	104208	Total	-	4342	-		none	-	-	Average (of DGAC and PCC)	0
2+604	104208	Automobiles	-	3926		89	none	-	-	Average (of DGAC and PCC)	0
2+604	104208	Medium trucks	-	210		89	none	-	-	Average (of DGAC and PCC)	0
2+604	104208	Heavy trucks	-	207		89	none	-	-	Average (of DGAC and PCC)	0
2+604	104208	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	104208	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+604	104208	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	88128	Total	-	3672	-		none	-	-	Average (of DGAC and PCC)	0
3+005	88128	Automobiles	-	3320		89	none	-	-	Average (of DGAC and PCC)	0
3+005	88128	Medium trucks	-	177		89	none	-	-	Average (of DGAC and PCC)	0
3+005	88128	Heavy trucks	-	175		89	none	-	-	Average (of DGAC and PCC)	0
3+005	88128	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	88128	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+005	88128	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	79080	Total	-	3295	-		none	-	-	Average (of DGAC and PCC)	0
3+244	79080	Automobiles	-	2979		89	none	-	-	Average (of DGAC and PCC)	0
3+244	79080	Medium trucks	-	159		89	none	-	-	Average (of DGAC and PCC)	0
3+244	79080	Heavy trucks	-	157		89	none	-	-	Average (of DGAC and PCC)	0
3+244	79080	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	79080	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+244	79080	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+488	-						-	-	-	-	-
Alessandro Boulevard Westbound			Traffic direction:	In entry direction							
0+000	79080	Total	-	3295	-		none	-	-	Average (of DGAC and PCC)	0
0+000	79080	Automobiles	-	2979		89	none	-	-	Average (of DGAC and PCC)	0
0+000	79080	Medium trucks	-	159		89	none	-	-	Average (of DGAC and PCC)	0
0+000	79080	Heavy trucks	-	157		89	none	-	-	Average (of DGAC and PCC)	0
0+000	79080	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	79080	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+000	79080	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	88128	Total	-	3672	-		none	-	-	Average (of DGAC and PCC)	0
0+238	88128	Automobiles	-	3320		89	none	-	-	Average (of DGAC and PCC)	0
0+238	88128	Medium trucks	-	177		89	none	-	-	Average (of DGAC and PCC)	0
0+238	88128	Heavy trucks	-	175		89	none	-	-	Average (of DGAC and PCC)	0
0+238	88128	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	88128	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+238	88128	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	104208	Total	-	4342	-		none	-	-	Average (of DGAC and PCC)	0
0+470	104208	Automobiles	-	3926		89	none	-	-	Average (of DGAC and PCC)	0
0+470	104208	Medium trucks	-	210		89	none	-	-	Average (of DGAC and PCC)	0
0+470	104208	Heavy trucks	-	207		89	none	-	-	Average (of DGAC and PCC)	0
0+470	104208	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	104208	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+470	104208	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	102984	Total	-	4291	-		none	-	-	Average (of DGAC and PCC)	0
0+868	102984	Automobiles	-	3879		89	none	-	-	Average (of DGAC and PCC)	0
0+868	102984	Medium trucks	-	207		89	none	-	-	Average (of DGAC and PCC)	0
0+868	102984	Heavy trucks	-	204		89	none	-	-	Average (of DGAC and PCC)	0
0+868	102984	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	102984	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
0+868	102984	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92784	Total	-	3866	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92784	Automobiles	-	3495		89	none	-	-	Average (of DGAC and PCC)	0
2+103	92784	Medium trucks	-	187		89	none	-	-	Average (of DGAC and PCC)	0
2+103	92784	Heavy trucks	-	184		89	none	-	-	Average (of DGAC and PCC)	0
2+103	92784	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92784	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+103	92784	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90984	Total	-	3791	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90984	Automobiles	-	3427		89	none	-	-	Average (of DGAC and PCC)	0
2+288	90984	Medium trucks	-	183		89	none	-	-	Average (of DGAC and PCC)	0
2+288	90984	Heavy trucks	-	180		89	none	-	-	Average (of DGAC and PCC)	0
2+288	90984	Buses	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90984	Motorcycles	-	-	-		none	-	-	Average (of DGAC and PCC)	0
2+288	90984	Auxiliary Vehicle	-	-	-		none	-	-	Average (of DGAC and PCC)	0
3+479	-						-	-	-	-	-

9309 Sycamore Hills Distribution Center
SoundPLAN - Off-Site Traffic Noise

No.	Coordinates X	Y	Floor	Height	Existing L(Aeq1h)	Existing + Project L(Aeq1h)	2023 L(Aeq1h)	2023 + Project L(Aeq1h)	2040 L(Aeq1h)	2040 + Project L(Aeq1h)
	in meter			m	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1	471059.62	3752927.31	1.Fl	1.5	76.9	76.9	77.7	77.7	79.9	79.9
2	471283.94	3752929.48	1.Fl	1.5	77.2	77.2	78.0	78.1	80.2	80.2
3	471882.32	3752935.11	1.Fl	1.5	77.3	77.5	78.2	78.3	80.5	80.6
4	472817.69	3752943.75	1.Fl	1.5	78.1	78.2	78.9	79.0	81.3	81.3
5	473131.28	3752946.94	1.Fl	1.5	78.5	78.6	79.4	79.6	81.9	82.0
6	473293.81	3752948.90	1.Fl	1.5	77.7	77.8	78.8	78.8	81.2	81.2

ATTACHMENT 2

Noise Measurement Data

9309 Sycamore Hills Distribution Center
Noise Measurement Data

Summary									
Filename	LxT_Data.005								
Serial Number	3828								
Model	SoundExpert™ LxT								
Firmware Version	2.302								
User	Jesse Fleming								
Location	Sycamore Hills Distribution Center								
Job Description	9309.0								
Note									
Measurement Description									
Start	2019/07/11 10:55:02								
Stop	2019/07/11 11:11:16								
Duration	0:15:44.2								
Run Time	0:15:44.2								
Pause	0:00:00.0								
Pre Calibration	2019/07/11 8:59:17								
Post Calibration	None								
Calibration Deviation	---								
Overall Settings									
RMS Weight	A Weighting								
Peak Weight	A Weighting								
Detector	Slow								
Preamp	PRMLxT1L								
Microphone Correction	Off								
Integration Method	Linear								
OBA Range	Normal								
OBA Bandwidth	1/1 and 1/3								
OBA Freq. Weighting	A Weighting								
OBA Max Spectrum	At Lmax								
Overload	121.9 dB								

	A		C		Z	
Under Range Peak	**78.1**		75.1		80.1	dB
Under Range Limit	**27.1**		25.9		33.1	dB
Noise Floor	16.8		16.7		22.9	dB
Results						
LAeq	50.9	dB				
LAE	80.6	dB				
EA	12.778	µPa²h				
LApeak (max)	2019/07/11 10:55:37		107.9	dB		
LASmax	2019/07/11 10:55:37		75.0	dB		
LASmin	2019/07/11 11:09:57		34.0	dB		
SEA	-99.9	dB				
LAS > 85.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LAS > 115.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LApeak > 135.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LApeak > 137.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LApeak > 140.0 dB (Exceedence Counts / Duration)	0		0.0	s		

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	50.9	50.9	-99.9	50.9	50.9	-99.9	-99.9
LCeq	60.5 dB						
LAeq	50.9 dB						
LCeq - LAeq	9.6 dB						
LAleq	62.7 dB						
LAeq	50.9 dB						
LAleq - LAeq	11.8 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						
Statistics							
LAS5.00	55.0 dB						
LAS10.00	50.5 dB						
LAS33.30	41.5 dB						
LAS50.00	38.8 dB						
LAS66.60	37.1 dB						
LAS90.00	35.5 dB						

Summary									
Filename	LxT_Data.006								
Serial Number	3828								
Model	SoundExpert™ LxT								
Firmware Version	2.302								
User	Jesse Fleming								
Location	Sycamore Hills Distribution Center								
Job Description	9309.0								
Note									
Measurement Description									
Start	2019/07/11 11:22:36								
Stop	2019/07/11 11:39:16								
Duration	0:16:40.0								
Run Time	0:16:40.0								
Pause	0:00:00.0								
Pre Calibration	2019/07/11 8:59:17								
Post Calibration	None								
Calibration Deviation	---								
Overall Settings									
RMS Weight	A Weighting								
Peak Weight	A Weighting								
Detector	Slow								
Preamp	PRMLxT1L								
Microphone Correction	Off								
Integration Method	Linear								
OBA Range	Normal								
OBA Bandwidth	1/1 and 1/3								
OBA Freq. Weighting	A Weighting								
OBA Max Spectrum	At Lmax								
Overload	121.9 dB								
	A		**C**		**Z**				
Under Range Peak	**78.1**		75.1		80.1 dB				
Under Range Limit	**27.1**		25.9		33.1 dB				
Noise Floor	16.8		16.7		22.9 dB				
Results									
LAeq	70.3 dB								
LAE	100.3 dB								
EA	1.179 mPa²h								
LApeak (max)	2019/07/11 11:25:37		100.1 dB						
LASmax	2019/07/11 11:25:37		81.1 dB						
LASmin	2019/07/11 11:37:20		44.1 dB						
SEA	-99.9 dB								
LAS > 85.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LAS > 115.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LApeak > 135.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LApeak > 137.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LApeak > 140.0 dB (Exceedence Counts / Duration)	0		0.0 s						
Community Noise	**Ldn**	**LDay 07:00-22:00**		**LNight 22:00-07:00**		**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	70.3	70.3		-99.9		70.3	70.3	-99.9	-99.9
LCeq	77.1 dB								
LAeq	70.3 dB								
LCeq - LAeq	6.8 dB								
LAleq	71.5 dB								
LAeq	70.3 dB								
LAleq - LAeq	1.3 dB								
# Overloads	0								
Overload Duration	0.0 s								
# OBA Overloads	0								
OBA Overload Duration	0.0 s								
Statistics									
LAS5.00	75.3 dB								
LAS10.00	74.0 dB								
LAS33.30	70.7 dB								
LAS50.00	68.3 dB								
LAS66.60	64.6 dB								
LAS90.00	55.4 dB								

9309 Sycamore Hills Distribution Center
Noise Measurement Data

Summary									
Filename	LxT_Data.001								
Serial Number	3828								
Model	SoundExpert™ LxT								
Firmware Version	2.302								
User	Jesse Fleming								
Location	Sycamore Hill Distribution Center								
Job Description	9309.0								
Note									
Measurement Description									
Start	2019/12/18 10:04:34								
Stop	2019/12/18 10:22:23								
Duration	0:16:21.1								
Run Time	0:16:21.1								
Pause	0:00:00.0								
Pre Calibration	2019/12/12 14:25:12								
Post Calibration	None								
Calibration Deviation	---								
Overall Settings									
RMS Weight	A Weighting								
Peak Weight	A Weighting								
Detector	Slow								
Preamp	PRMLxT1L								
Microphone Correction	Off								
Integration Method	Linear								
OBA Range	Normal								
OBA Bandwidth	1/1 and 1/3								
OBA Freq. Weighting	A Weighting								
OBA Max Spectrum	At Lmax								
Overload	121.8 dB								

	A		C		Z	
Under Range Peak	**78.1**		75.1		80.1	dB
Under Range Limit	**27.1**		25.8		33.1	dB
Noise Floor	16.8		16.7		22.8	dB
Results						
LAeq	59.7	dB				
LAE	89.6	dB				
EA	101.611	µPa²h				
LApeak (max)	2019/12/18	10:10:21	90.8	dB		
LASmax	2019/12/18	10:11:55	68.9	dB		
LASmin	2019/12/18	10:19:23	42.4	dB		
SEA	-99.9	dB				
LAS > 85.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LAS > 115.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LApeak > 135.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LApeak > 137.0 dB (Exceedence Counts / Duration)	0		0.0	s		
LApeak > 140.0 dB (Exceedence Counts / Duration)	0		0.0	s		

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	59.7	59.7	-99.9	59.7	59.7	-99.9	-99.9
LCeq	70.2 dB						
LAeq	59.7 dB						
LCeq - LAeq	10.5 dB						
LAleq	61.3 dB						
LAeq	59.7 dB						
LAleq - LAeq	1.7 dB						
# Overloads	0						
Overload Duration	0.0 s						
# OBA Overloads	0						
OBA Overload Duration	0.0 s						
Statistics							
LAS5.00	64.1 dB						
LAS10.00	63.1 dB						
LAS33.30	60.0 dB						
LAS50.00	58.6 dB						
LAS66.60	56.6 dB						
LAS90.00	50.6 dB						

9309 Sycamore Hills Distribution Center
Noise Measurement Data

Summary									
Filename	LxT_Data.001								
Serial Number	3827								
Model	SoundExpert™ LxT								
Firmware Version	2.301								
User	Jesse Fleming								
Location	Sycamore Hills Distribution Center								
Job Description	9309.0								
Note									
Measurement Description									
Start	2019/12/18 9:53:32								
Stop	2019/12/20 10:37:08								
Duration	22:36:55.9								
Run Time	22:36:55.9								
Pause	0:00:00.0								
Pre Calibration	2016/12/05 8:48:15								
Post Calibration	None								
Calibration Deviation	---								
Overall Settings									
RMS Weight	A Weighting								
Peak Weight	A Weighting								
Detector	Slow								
Preamp	Direct								
Microphone Correction	Off								
Integration Method	Linear								
OBA Range	Normal								
OBA Bandwidth	1/1 and 1/3								
OBA Freq. Weighting	A Weighting								
OBA Max Spectrum	At Lmax								
Overload	119.7 dB								
	A		**C**		**Z**				
Under Range Peak	**76.0**		73.0		78.0 dB				
Under Range Limit	**25.0**		23.0		31.0 dB				
Noise Floor	11.8		12.5		20.1 dB				
Results									
LAeq	50.3 dB								
LAE	99.4 dB								
EA	967.396 µPa²h								
LApeak (max)	2019/12/18 9:55:01		114.3 dB						
LASmax	2019/12/18 9:55:01		81.7 dB						
LASmin	2019/12/20 10:37:04		6.9 dB						
SEA	-99.9 dB								
LAS > 85.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LAS > 115.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LApeak > 135.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LApeak > 137.0 dB (Exceedence Counts / Duration)	0		0.0 s						
LApeak > 140.0 dB (Exceedence Counts / Duration)	0		0.0 s						
Community Noise	**Ldn**	**LDay 07:00-22:00**		**LNight 22:00-07:00**		**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**
	56.6	50.4		50.1		56.8	50.8	48.8	50.1
LCeq	-34.6 dB								
LAeq	50.3 dB								
LCeq - LAeq	-84.9 dB								
LAleq	-35.0 dB								
LAeq	50.3 dB								
LAleq - LAeq	-85.3 dB								
# Overloads	0								
Overload Duration	0.0 s								
# OBA Overloads	0								
OBA Overload Duration	0.0 s								
Statistics									
LAS5.00	54.5 dB								
LAS10.00	53.0 dB								
LAS33.30	48.7 dB								
LAS50.00	46.7 dB								
LAS66.60	45.0 dB								
LAS90.00	42.1 dB								

ATTACHMENT 3

HVAC Specifications

Fan Performance

Table 6. Standard motor & low static drive accessory sheave/fan speed (rpm)

Tons	Unit Model Number	Fan Sheave	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Closed
5	WSC060ED	AK44x3/4"	N/A	720	791	861	931	1002	1072
6	WSC072ED	AK56x1"	N/A	558	612	665	718	772	825
7½	WSC090ED	AK57x1"	N/A	688	737	787	837	887	N/A
10	WSC120ED	AK105X1"	N/A	724	776	828	880	932	984

Note: Factory set at 3 turns open.

Table 7. Standard motor & high static drive accessory sheave/fan speed (rpm)

Tons	Unit Model Number	Fan Sheave	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Closed
6	WSC072ED	AK56x1"	N/A	968	1018	1068	1118	1169	1219
7½	WSC090ED	AK57x1"	1053	1091	1129	1166	1204	1242	N/A
10	WSC120ED	AK105X1"	1110	1159	1209	1258	1308	1357	N/A

Note: Factory set at 3 turns open.

Table 8. Oversized motor & high static drive accessory sheave/fan speed (rpm)

Tons	Unit Model Number	Fan Sheave	6 Turns Open	5 Turns Open	4 Turns Open	3 Turns Open	2 Turns Open	1 Turn Open	Closed
7½	WSC090ED	AK85x1"	1186	1249	1311	1373	1436	N/A	N/A

Note: Factory set at 3 turns open.

Table 9. Outdoor sound power level—dB (ref. 10—2 W)

Tons	Unit Model Number	Octave Center Frequency								Overall dBA
		63	125	250	500	1000	2000	4000	8000	
5	T/YSC060ED	84	91	79	77	74	71	68	63	80
6	T/YSC072ED	83	90	86	82	79	75	70	63	85
7½	T/YSC090ED	83	90	86	83	80	75	71	64	85
8.5	T/YSC102ED	83	89	84	81	77	72	69	62	83
10	T/YSC120ED	83	86	80	77	73	69	66	60	79

Note: Tests follow ARI270-95.

Table 10. Outdoor sound power level—dB (ref. 10—12 W)

Tons	Unit Model Number	Octave Center Frequency								Overall dBA
		63	125	250	500	1000	2000	4000	8000	
5	WSC060ED	84	91	79	77	74	71	68	63	80
6	WSC072ED	83	90	86	82	79	75	70	63	85
7½	WSC090ED	83	90	86	83	80	75	71	64	85
10	WSC120ED	83	86	80	77	73	69	66	60	79

Note: Tests follow ARI270-95.

ATTACHMENT 4

SoundPLAN Data – Construction Noise

Source name	Reference	Level Leq1 dB(A)	Corrections Kwall dB(A)	Corrections CI dB(A)	Corrections CT dB(A)
Construction Area - Building B	Unit	119.6	-	-	-
Construction Area - Building A	Unit	119.6	-	-	-
Construction Area - Access Road	Unit	111.0	-	-	-

9309 Sycamore Hills Distribution Center
SoundPLAN - Construction

No.	Coordinates X	Y	Height	Level w/o NP Leq1	Level w. NP Leq1	Difference Leq1
	in meter		m	dB(A)	dB(A)	dB(A)
1	471763.18	3752928.55	490.67	54.9	54.6	-0.3
2	471632.84	3752927.46	490.98	57.0	56.6	-0.4
3	471510.18	3752925.63	492.22	58.7	58.3	-0.4
4	471379.85	3752923.08	493.37	60.0	59.9	-0.1
5	471276.17	3752924.90	494.67	59.1	59.0	-0.1
6	471447.02	3752873.06	492.89	57.6	57.5	-0.1
7	471385.69	3752870.87	493.49	57.8	57.7	-0.1
8	471323.63	3752871.24	493.80	57.7	57.7	0
9	471277.63	3752871.97	494.38	57.6	57.5	-0.1
10	471164.09	3752924.17	494.22	58.2	58.1	-0.1
11	471026.09	3752922.35	493.63	57.1	57.1	0
12	471234.19	3752873.79	494.38	57.4	57.3	-0.1
13	471104.95	3752868.68	493.97	56.6	56.5	-0.1
14	471002.36	3752870.87	493.52	55.8	55.8	0
15	470963.67	3752909.21	493.36	56.2	56.1	-0.1
16	470867.29	3752908.84	492.94	55.0	54.9	-0.1
17	470792.81	3752907.75	492.61	53.9	53.8	-0.1
18	470961.84	3753013.62	493.23	58.5	58.5	0
19	470965.49	3753113.28	494.34	58.9	58.8	-0.1
20	471047.63	3753146.50	494.53	71.6	71.6	0
21	471138.17	3753146.87	492.56	71.8	71.8	0
22	471254.63	3753147.23	488.61	69.3	69.1	-0.2
23	471333.49	3753057.74	488.91	69.3	61.3	-8
24	471354.69	3753022.05	488.32	67.8	61.8	-6
25	471399.87	3753025.39	488.86	68.6	62.1	-6.5
26	471440.59	3753073.92	489.06	68.6	60.9	-7.7
27	471532.62	3753088.98	486.95	69.3	59.6	-9.7
28	471597.32	3753149.22	487.31	69.1	69.2	0.1
29	471596.21	3753274.16	488.33	69.5	69.5	0
30	471595.65	3753375.12	484.80	68.4	62.0	-6.4
31	471559.95	3753433.13	483.01	68.9	56.7	-12.2
32	471470.15	3753488.91	486.35	68.1	58.8	-9.3
33	471394.85	3753469.94	483.83	68.3	60.5	-7.8
34	471363.61	3753410.82	480.84	69.9	64.8	-5.1
35	471362.50	3753341.65	481.93	70.9	64.2	-6.7
36	471339.07	3753247.95	483.81	69.0	63.0	-6
37	471306.72	3753109.06	487.38	68.9	63.5	-5.4
38	471267.12	3753175.99	486.86	70.5	63.7	-6.8
39	471252.06	3753237.91	490.28	71.0	65.2	-5.8
40	471242.57	3753326.04	482.60	68.7	60.7	-8
41	471168.39	3753370.66	492.31	70.6	60.7	-9.9
42	471058.51	3753350.02	490.68	71.5	61.2	-10.3
43	471282.18	3753284.20	486.03	71.7	65.4	-6.1
44	471297.80	3753331.06	482.78	72.4	64.2	-8.2
45	471335.72	3753341.10	480.60	74.4	65.0	-9.4

ATTACHMENT 5

SoundPLAN Data – On-Site Generated Noise

9309 Sycamore Hills Distribution Center
SoundPLAN - On-Site Sources

Source name	Reference	Level Daytime dB(A)	Nighttime dB(A)	Corrections Kwall dB(A)	CI dB(A)	CT dB(A)
Loading Dock1	Unit	70	70	-	-	-
Loading Dock2	Unit	70	-	-	-	-
Loading Dock3	Unit	70	-	-	-	-
Loading Dock4	Unit	70	-	-	-	-
Loading Dock5	Unit	70	70	-	-	-
Loading Dock6	Unit	70	-	-	-	-
Loading Dock7	Unit	70	-	-	-	-
Loading Dock8	Unit	70	-	-	-	-
Loading Dock9	Unit	70	70	-	-	-
Loading Dock10	Unit	70	-	-	-	-
Loading Dock11	Unit	70	-	-	-	-
Loading Dock12	Unit	70	-	-	-	-
Loading Dock13	Unit	70	70	-	-	-
Loading Dock14	Unit	70	-	-	-	-
Loading Dock15	Unit	70	-	-	-	-
Loading Dock16	Unit	70	-	-	-	-
Loading Dock17	Unit	70	70	-	-	-
Loading Dock18	Unit	70	-	-	-	-
Loading Dock19	Unit	70	-	-	-	-
Loading Dock20	Unit	70	-	-	-	-
Loading Dock21	Unit	70	70	-	-	-
Loading Dock22	Unit	70	-	-	-	-
Loading Dock23	Unit	70	-	-	-	-
Loading Dock24	Unit	70	-	-	-	-
Loading Dock25	Unit	70	70	-	-	-
Loading Dock26	Unit	70	-	-	-	-
Loading Dock27	Unit	70	-	-	-	-
Loading Dock28	Unit	70	-	-	-	-
Loading Dock29	Unit	70	70	-	-	-
Loading Dock30	Unit	70	-	-	-	-
Loading Dock31	Unit	70	-	-	-	-
Loading Dock32	Unit	70	-	-	-	-
Loading Dock33	Unit	70	70	-	-	-
Loading Dock34	Unit	70	-	-	-	-
Loading Dock35	Unit	70	-	-	-	-
Loading Dock36	Unit	70	-	-	-	-
Loading Dock37	Unit	70	70	-	-	-
Loading Dock38	Unit	70	-	-	-	-
Loading Dock39	Unit	70	-	-	-	-
Loading Dock40	Unit	70	-	-	-	-
Loading Dock41	Unit	70	70	-	-	-
Loading Dock42	Unit	70	-	-	-	-
Loading Dock43	Unit	70	-	-	-	-
Loading Dock44	Unit	70	-	-	-	-
Loading Dock45	Unit	70	70	-	-	-
Loading Dock46	Unit	70	-	-	-	-
Loading Dock47	Unit	70	-	-	-	-
Loading Dock48	Unit	70	-	-	-	-
Loading Dock49	Unit	70	70	-	-	-
Loading Dock50	Unit	70	-	-	-	-
Loading Dock51	Unit	70	-	-	-	-
Loading Dock52	Unit	70	-	-	-	-

Loading Dock53	Unit	70	70	-	-	-
Loading Dock54	Unit	70	-	-	-	-
Loading Dock55	Unit	70	-	-	-	-
Loading Dock56	Unit	70	-	-	-	-
Loading Dock57	Unit	70	70	-	-	-
Loading Dock58	Unit	70	-	-	-	-
Loading Dock59	Unit	70	-	-	-	-
Loading Dock60	Unit	70	-	-	-	-
Loading Dock61	Unit	70	70	-	-	-
Loading Dock62	Unit	70	-	-	-	-
Loading Dock63	Unit	70	-	-	-	-
Loading Dock64	Unit	70	-	-	-	-
Loading Dock65	Unit	70	70	-	-	-
Loading Dock66	Unit	70	-	-	-	-
Loading Dock67	Unit	70	-	-	-	-
Loading Dock68	Unit	70	-	-	-	-
Loading Dock69	Unit	70	70	-	-	-
Loading Dock70	Unit	70	-	-	-	-
Loading Dock71	Unit	70	-	-	-	-
Loading Dock72	Unit	70	-	-	-	-
Loading Dock73	Unit	70	70	-	-	-
Loading Dock74	Unit	70	-	-	-	-
Loading Dock75	Unit	70	-	-	-	-
Loading Dock76	Unit	70	-	-	-	-
Loading Dock77	Unit	70	70	-	-	-
Loading Dock78	Unit	70	-	-	-	-
Loading Dock79	Unit	70	-	-	-	-
Loading Dock80	Unit	70	-	-	-	-
Loading Dock81	Unit	70	70	-	-	-
Loading Dock82	Unit	70	-	-	-	-
Loading Dock83	Unit	70	-	-	-	-
Loading Dock84	Unit	70	-	-	-	-
Loading Dock85	Unit	70	70	-	-	-
Loading Dock86	Unit	70	-	-	-	-
Loading Dock87	Unit	70	-	-	-	-
Loading Dock88	Unit	70	-	-	-	-
Loading Dock89	Unit	70	70	-	-	-
Loading Dock90	Unit	70	-	-	-	-
Loading Dock91	Unit	70	70	-	-	-
Loading Dock92	Unit	70	-	-	-	-
Loading Dock93	Unit	70	-	-	-	-
Loading Dock94	Unit	70	-	-	-	-
Loading Dock95	Unit	70	70	-	-	-
Loading Dock96	Unit	70	-	-	-	-
Loading Dock97	Unit	70	-	-	-	-
Loading Dock98	Unit	70	-	-	-	-
Loading Dock99	Unit	70	70	-	-	-
Loading Dock100	Unit	70	-	-	-	-
Loading Dock101	Unit	70	-	-	-	-
Loading Dock102	Unit	70	-	-	-	-
Loading Dock103	Unit	70	70	-	-	-
Loading Dock104	Unit	70	-	-	-	-
Loading Dock105	Unit	70	-	-	-	-
Loading Dock106	Unit	70	-	-	-	-
Loading Dock107	Unit	70	70	-	-	-

Loading Dock108	Unit	70	-	-	-	-
Loading Dock109	Unit	70	-	-	-	-
Loading Dock110	Unit	70	-	-	-	-
Loading Dock111	Unit	70	70	-	-	-
Loading Dock112	Unit	70	-	-	-	-
Loading Dock113	Unit	70	-	-	-	-
Loading Dock114	Unit	70	-	-	-	-
Loading Dock115	Unit	70	70	-	-	-
Loading Dock116	Unit	70	-	-	-	-
Loading Dock117	Unit	70	-	-	-	-
Loading Dock118	Unit	70	-	-	-	-
Loading Dock119	Unit	70	70	-	-	-
Loading Dock120	Unit	70	-	-	-	-
Loading Dock121	Unit	70	-	-	-	-
Loading Dock122	Unit	70	-	-	-	-
Loading Dock123	Unit	70	70	-	-	-
Loading Dock124	Unit	70	-	-	-	-
Loading Dock125	Unit	70	-	-	-	-
HVAC Building A	Unit	83.8	-	-	-	-
HVAC Building B	Unit	83.8	-	-	-	-
Trash Compactor 1 Building A	Unit	78.8	-	-	-	-
Trash Compactor 2 Building A	Unit	78.8	-	-	-	-
Trash Compactor 1 Building B	Unit	78.8	-	-	-	-
Trash Compactor 2 Building B	Unit	78.8	-	-	-	-
Truck Enter/Exit A	Unit	96.4	90.4	-	-	-
Truck Enter/Exit B	Unit	93.8	87.8	-	-	-
Parking Lot1	Unit	73.1	73.1	-	-	-
Parking Lot2	Unit	62.7	62.7	-	-	-
Parking Lot3	Unit	72.7	72.7	-	-	-
Parking Lot4	Unit	67.5	67.5	-	-	-
Parking Lot5	Unit	62.7	62.7	-	-	-
Parking Lot6	Unit	72.7	72.7	-	-	-
Parking Lot7	Unit	62.7	62.7	-	-	-
Parking Lot8	Unit	68.7	68.7	-	-	-
Parking Lot9	Unit	70.5	70.5	-	-	-
Parking Lot10	Unit	67.5	67.5	-	-	-
Parking Lot11	Unit	75.7	75.7	-	-	-
Parking Lot12	Unit	67.5	67.5	-	-	-

9309 Sycamore Hills Distribution Center
SoundPLAN - On-Site Sources

No.	Coordinates X	Coordinates Y	Height	Level w/o NP Daytime	Level w/o NP Nighttime	Level w. NP Daytime	Level w. NP Nighttime	Difference Daytime	Difference Nighttime	Limit Daytime	Limit Nighttime
	in meter		m	dB(A)		dB(A)		dB(A)		dB(A)	
1	471763.18	3752928.55	490.67	31.6	25.5	32	26	0	0	55	45
2	471632.84	3752927.46	490.98	34.1	28.2	34	28	0	0	55	45
3	471510.18	3752925.63	492.22	36.2	30.3	36	30	0	0	65	65
4	471379.85	3752923.08	493.37	39.2	33.3	39	33	0	0	55	45
5	471276.17	3752924.90	494.67	36.4	30.4	36	30	0	0	55	45
6	471447.02	3752873.06	492.89	35.2	29.3	35	29	0	0	55	45
7	471385.69	3752870.87	493.49	35.7	29.7	36	30	-0.1	-0.1	55	45
8	471323.63	3752871.24	493.80	35.0	29.1	35	29	0	0	55	45
9	471277.63	3752871.97	494.38	34.4	28.4	34	28	0	0	55	45
10	471164.09	3752924.17	494.22	34.1	28.0	34	28	0	-0.1	65	65
11	471026.09	3752922.35	493.63	37.9	31.8	38	32	0	0	65	65
12	471234.19	3752873.79	494.38	33.8	27.8	34	28	0	0	55	45
13	471104.95	3752868.68	493.97	33.4	27.2	33	27	0	0	55	45
14	471002.36	3752870.87	493.52	34.9	28.7	35	29	0	0	55	45
15	470963.67	3752909.21	493.36	37.3	31.1	37	31	0	0	55	45
16	470867.29	3752908.84	492.94	33.7	27.5	34	28	0	0	55	45
17	470792.81	3752907.75	492.61	31.7	25.4	32	25	0	0	55	45
18	470961.84	3753013.62	493.23	44.6	38.6	45	39	0	0	70	70
19	470965.49	3753113.28	494.34	46.9	40.9	47	41	0	0	70	70
20	471047.63	3753146.50	494.53	48.0	41.6	48	42	0	0	65	65
21	471138.17	3753146.87	492.56	46.6	40.3	47	40	0	0	65	65
22	471254.63	3753147.23	488.61	43.5	37.1	44	37	0	0	65	65
23	471333.49	3753057.74	488.88	45.0	39.3	45	39	0	0	55	45
24	471354.69	3753022.05	488.32	46.5	40.5	47	41	0	0	55	45
25	471399.87	3753025.39	488.86	49.5	43.5	50	44	0	0	55	45
26	471440.59	3753073.92	489.06	46.5	40.9	47	41	0	0	55	45
27	471532.62	3753088.98	486.95	50.7	44.8	51	45	0	0	55	45
28	471597.32	3753149.22	487.31	44.3	38.7	44	39	-0.2	-0.2	70	70
29	471596.21	3753274.16	488.33	44.5	38.4	45	38	0	0	70	70
30	471595.65	3753375.12	484.80	43.0	37.0	43	37	0	0	55	45
31	471559.95	3753433.13	483.01	47.4	41.5	46	40	-1.5	-1.4	55	45
32	471470.15	3753488.91	486.35	40.8	35.0	40	35	-0.5	-0.5	55	45
33	471394.85	3753469.94	483.83	41.9	36.1	41	35	-0.9	-1	55	45
34	471363.61	3753410.82	480.84	42.8	36.9	42	36	-0.9	-0.9	55	45
35	471362.50	3753341.65	481.93	47.9	41.9	46	40	-2.3	-2.3	55	45
36	471339.07	3753247.95	483.81	42.9	36.7	41	35	-1.6	-1.7	55	45
37	471306.72	3753109.06	487.38	42.8	37.1	43	37	0	0	55	45
38	471267.12	3753175.99	486.86	43.6	37.2	43	37	-0.2	-0.2	55	45
39	471252.06	3753237.91	489.04	41.7	37.6	41	35	-1.1	-2.4	55	45
40	471242.57	3753326.04	482.60	36.5	30.5	36	30	-0.5	-0.7	55	45
41	471168.39	3753370.66	492.31	35.1	31.6	35	31	-0.2	-0.2	55	45
42	471058.51	3753350.02	490.68	32.7	30.7	32	30	-0.6	-0.8	55	45
43	471282.18	3753284.20	485.75	39.9	33.9	39	33	-0.5	-0.5	55	45
44	471297.80	3753331.06	482.69	39.8	33.7	39	33	-0.3	-0.4	55	45
45	471335.72	3753341.1	480.6	42.2	36.2	41	35	-0.9	-0.9	55	45

	1-22, 28, 29	23-27, 30-45
Day Min	32	32
Day Max	48	51
Night Min	25	30
Night Max	42	45

ATTACHMENT 6

SoundPLAN Data – Backup Beeper Noise

Source name	Reference	Level Leq1 dB(A)	Max Leq1 dB(A)	Corrections Kwall dB(A)	Corrections CI dB(A)	Corrections CT dB(A)
Backup Beep1	Unit	85.2	103	-	-	-
Backup Beep2	Unit	85.2	103	-	-	-
Backup Beep3	Unit	85.2	103	-	-	-

9309 Sycamore Hills Distribution Center
SoundPLAN - Backup Beeper

No.	Coordinates X	Y	Height	Level w/o NP Average Hour	Max	Level w. NP Average Hour	Max	Difference Average Hour	Max
	in meter		m	dB(A)		dB(A)		dB(A)	
1	471763.18	3752928.55	490.67	20.7	36.8	19.4	34.7	-1.3	-2.1
2	471632.84	3752927.46	490.98	23.2	38.1	23.1	38.0	-0.1	-0.1
3	471510.18	3752925.63	492.22	22.5	39.9	22.5	39.9	0	0
4	471379.85	3752923.08	493.37	22.3	39.8	22.3	39.8	0	0
5	471276.17	3752924.90	494.67	22.2	38.8	22.2	38.8	0	0
6	471447.02	3752873.06	492.89	22.2	39.7	22.2	39.7	0	0
7	471385.69	3752870.87	493.49	20.3	37.7	20.3	37.7	0	0
8	471323.63	3752871.24	493.80	21.3	37.7	21.3	37.7	0	0
9	471277.63	3752871.97	494.38	21.0	37.5	20.9	37.2	-0.1	-0.3
10	471164.09	3752924.17	494.22	19.5	35.4	19.5	35.4	0	0
11	471026.09	3752922.35	493.63	15.3	30.7	15.3	30.7	0	0
12	471234.19	3752873.79	494.38	20.7	37.1	20.6	36.9	-0.1	-0.2
13	471104.95	3752868.68	493.97	18.0	33.4	18.0	33.4	0	0
14	471002.36	3752870.87	493.52	15.4	31.3	15.4	31.3	0	0
15	470963.67	3752909.21	493.36	15.3	30.8	15.3	30.8	0	0
16	470867.29	3752908.84	492.94	17.3	33.0	17.3	33.0	0	0
17	470792.81	3752907.75	492.61	15.6	30.6	15.6	30.6	0	0
18	470961.84	3753013.62	493.23	15.6	31.8	15.6	31.8	0	0
19	470965.49	3753113.28	494.34	18.5	35.2	18.0	35.2	-0.5	0
20	471047.63	3753146.50	494.53	32.1	49.4	32.1	49.4	0	0
21	471138.17	3753146.87	492.56	35.8	53.4	35.8	53.4	0	0
22	471254.63	3753147.23	488.61	37.8	55.1	37.7	55.1	-0.1	0
23	471333.49	3753057.74	488.88	30.6	46.6	30.2	46.6	-0.4	0
24	471354.69	3753022.05	488.32	29.1	44.8	29.1	44.8	0	0
25	471399.87	3753025.39	488.86	26.1	43.8	26.1	43.8	0	0
26	471440.59	3753073.92	489.06	24.0	41.7	24.0	41.7	0	0
27	471532.62	3753088.98	486.95	13.3	28.4	13.3	28.4	0	0
28	471597.32	3753149.22	487.31	28.5	46.3	26.9	44.7	-1.6	-1.6
29	471596.21	3753274.16	488.33	39.4	57.2	38.2	56.0	-1.2	-1.2
30	471595.65	3753375.12	484.80	32.4	50.2	32.4	50.2	0	0
31	471559.95	3753433.13	483.01	27.6	45.4	25.9	43.7	-1.7	-1.7
32	471470.15	3753488.91	486.35	8.4	23.4	8.4	23.4	0	0
33	471394.85	3753469.94	483.83	22.0	39.7	19.7	37.3	-2.3	-2.4
34	471363.61	3753410.82	480.84	22.3	40.0	19.6	37.1	-2.7	-2.9
35	471362.50	3753341.65	481.93	28.0	45.8	24.4	42.1	-3.6	-3.7
36	471339.07	3753247.95	483.81	36.9	53.7	32.1	47.5	-4.8	-6.2
37	471306.72	3753109.06	487.38	33.5	50.1	33.0	50.1	-0.5	0
38	471267.12	3753175.99	486.86	38.5	55.9	33.2	49.7	-5.3	-6.2
39	471252.06	3753237.91	489.04	30.2	47.3	31.6	48.9	1.4	1.6
40	471242.57	3753326.04	482.60	28.0	45.2	26.0	42.8	-2	-2.4
41	471168.39	3753370.66	492.31	24.3	42.0	23.8	41.5	-0.5	-0.5
42	471058.51	3753350.02	490.68	10.4	26.3	10.4	26.3	0	0
43	471282.18	3753284.20	485.75	31.6	49.0	30.9	48.3	-0.7	-0.7
44	471297.80	3753331.06	482.69	30.0	47.7	28.5	45.8	-1.5	-1.9
45	471335.72	3753341.1	480.6	29.1	46.9	26.5	43.9	-2.6	-3

Source name			Level w/o NP		Level w. NP	
			Leq1	Lmax	Leq1	Lmax
			dB(A)		dB(A)	
1	1.Fl	20.7	36.8	19.4	34.7	
Backup	Beep1		15.6	33.4	15.6	33.4
Backup	Beep2		-2.4	15.4	-2.4	15.4
Backup	Beep3		19	36.8	16.9	34.7
2	1.Fl	23.2	38.1	23.1	38.0	
Backup	Beep1		20.1	37.9	20	37.8
Backup	Beep2		-0.5	17.3	-0.5	17.3
Backup	Beep3		20.3	38.1	20.2	38
3	1.Fl	22.5	39.9	22.5	39.9	
Backup	Beep1		22.1	39.9	22.1	39.9
Backup	Beep2		2.6	20.4	2.6	20.4
Backup	Beep3		11.1	28.9	11.1	28.9
4	1.Fl	22.3	39.8	22.3	39.8	
Backup	Beep1		22	39.8	22	39.8
Backup	Beep2		9.4	27.2	9.4	27.2
Backup	Beep3		1.4	19.2	1.4	19.2
5	1.Fl	22.2	38.8	22.2	38.8	
Backup	Beep1		15.9	33.7	15.9	33.7
Backup	Beep2		21	38.8	21	38.8
Backup	Beep3		-1.2	16.6	-1.2	16.6
6	1.Fl	22.2	39.7	22.2	39.7	
Backup	Beep1		21.9	39.7	21.9	39.7
Backup	Beep2		8.2	26	8.2	26
Backup	Beep3		4.4	22.2	4.4	22.2
7	1.Fl	20.3	37.7	20.3	37.7	
Backup	Beep1		19.9	37.7	19.9	37.7
Backup	Beep2		8.6	26.4	8.6	26.4
Backup	Beep3		1.5	19.3	1.5	19.3
8	1.Fl	21.3	37.7	21.3	37.7	
Backup	Beep1		15.6	33.4	15.6	33.4
Backup	Beep2		19.9	37.7	19.9	37.7
Backup	Beep3		-0.4	17.4	-0.4	17.4
9	1.Fl	21.0	37.5	20.9	37.2	
Backup	Beep1		15.2	33	15.2	33
Backup	Beep2		19.7	37.5	19.4	37.2
Backup	Beep3		-1.5	16.3	-1.5	16.3
10	1.Fl	19.5	35.4	19.5	35.4	
Backup	Beep1		15	32.8	15	32.8
Backup	Beep2		17.6	35.4	17.6	35.4
Backup	Beep3		-3.2	14.6	-3.2	14.6
11	1.Fl	15.3	30.7	15.3	30.7	
Backup	Beep1		11.5	29.3	11.5	29.3
Backup	Beep2		12.9	30.7	12.9	30.7
Backup	Beep3		-5	12.8	-5	12.8
12	1.Fl	20.7	37.1	20.6	36.9	
Backup	Beep1		15	32.8	15	32.8
Backup	Beep2		19.3	37.1	19.1	36.9
Backup	Beep3		-2.4	15.4	-2.4	15.4
13	1.Fl	18.0	33.4	18.0	33.4	
Backup	Beep1		14.3	32.1	14.3	32.1
Backup	Beep2		15.6	33.4	15.6	33.4
Backup	Beep3		-4.5	13.3	-4.5	13.3

14	1.Fl	15.4	31.3	15.4	31.3	
Backup	Beep1	11	28.8	11	28.8	
Backup	Beep2	13.5	31.3	13.5	31.3	
Backup	Beep3	-5.8	12	-5.8	12	
15	1.Fl	15.3	30.8	15.3	30.8	
Backup	Beep1	11.4	29.2	11.4	29.2	
Backup	Beep2	13	30.8	13	30.8	
Backup	Beep3	-5.9	11.9	-5.9	11.9	
16	1.Fl	17.3	33.0	17.3	33.0	
Backup	Beep1	15.2	33	15.2	33	
Backup	Beep2	13	30.8	13	30.8	
Backup	Beep3	-7.1	10.7	-7.1	10.7	
17	1.Fl	15.6	30.6	15.6	30.6	
Backup	Beep1	12.3	30.1	12.3	30.1	
Backup	Beep2	12.8	30.6	12.8	30.6	
Backup	Beep3	-7.9	9.9	-7.9	9.9	
18	1.Fl	15.6	31.8	15.6	31.8	
Backup	Beep1	14	31.8	14	31.8	
Backup	Beep2	10.6	28.4	10.6	28.4	
Backup	Beep3	-5.2	12.6	-5.2	12.6	
19	1.Fl	18.5	35.2	18.0	35.2	
Backup	Beep1	17.4	35.2	17.4	35.2	
Backup	Beep2	11.9	29.7	8.6	26.4	
Backup	Beep3	-4.5	13.3	-4.5	13.3	
20	1.Fl	32.1	49.4	32.1	49.4	
Backup	Beep1	31.6	49.4	31.6	49.4	
Backup	Beep2	23	40.8	22.9	40.7	
Backup	Beep3	-3	14.8	-3	14.8	
21	1.Fl	35.8	53.4	35.8	53.4	
Backup	Beep1	35.6	53.4	35.6	53.4	
Backup	Beep2	23	40.8	23	40.8	
Backup	Beep3	1.2	19	1.2	19	
22	1.Fl	37.8	55.1	37.7	55.1	
Backup	Beep1	37.3	55.1	37.3	55.1	
Backup	Beep2	27.2	45	26.8	44.6	
Backup	Beep3	1.5	19.3	1.5	19.3	
23	1.Fl	30.6	46.6	30.2	46.6	
Backup	Beep1	28.8	46.6	28.8	46.6	
Backup	Beep2	25.9	43.7	24.7	42.5	
Backup	Beep3	1.7	19.5	1.7	19.5	
24	1.Fl	29.1	44.8	29.1	44.8	
Backup	Beep1	27	44.8	27	44.8	
Backup	Beep2	24.8	42.6	24.8	42.6	
Backup	Beep3	1.3	19.1	1.3	19.1	
25	1.Fl	26.1	43.8	26.1	43.8	
Backup	Beep1	26	43.8	26	43.8	
Backup	Beep2	9.6	27.4	9.6	27.4	
Backup	Beep3	2.3	20.1	2.3	20.1	
26	1.Fl	24.0	41.7	24.0	41.7	
Backup	Beep1	23.9	41.7	23.9	41.7	
Backup	Beep2	7.7	25.5	7.7	25.5	
Backup	Beep3	4.2	22	4.2	22	
27	1.Fl	13.3	28.4	13.3	28.4	
Backup	Beep1	10.6	28.4	10.6	28.4	
Backup	Beep2	5.5	23.3	5.5	23.3	

Backup	Beep3		7.8		25.6	7.8	25.6
28	1.Fl	28.5	46.3	26.9	44.7		
Backup	Beep1		4.5		22.3	4.5	22.3
Backup	Beep2		4.9		22.7	4.9	22.7
Backup	Beep3		28.5		46.3	26.9	44.7
29	1.Fl	39.4	57.2	38.2	56.0		
Backup	Beep1		7.1		24.9	7.1	24.9
Backup	Beep2		5.9		23.7	5.9	23.7
Backup	Beep3		39.4		57.2	38.2	56
30	1.Fl	32.4	50.2	32.4	50.2		
Backup	Beep1		4.8		22.6	4.8	22.6
Backup	Beep2		4.4		22.2	4.4	22.2
Backup	Beep3		32.4		50.2	32.4	50.2
31	1.Fl	27.6	45.4	25.9	43.7		
Backup	Beep1		0.2		18	0.2	18
Backup	Beep2		4		21.8	4	21.8
Backup	Beep3		27.6		45.4	25.9	43.7
32	1.Fl	8.4	23.4	8.4	23.4		
Backup	Beep1		-0.2		17.6	-0.2	17.6
Backup	Beep2		3.8		21.6	3.8	21.6
Backup	Beep3		5.6		23.4	5.6	23.4
33	1.Fl	22.0	39.7	19.7	37.3		
Backup	Beep1		1.4		19.2	1.4	19.2
Backup	Beep2		21.9		39.7	19.5	37.3
Backup	Beep3		4.5		22.3	4.5	22.3
34	1.Fl	22.3	40.0	19.6	37.1		
Backup	Beep1		3.5		21.3	3.5	21.3
Backup	Beep2		22.2		40	19.3	37.1
Backup	Beep3		5.2		23	5.2	23
35	1.Fl	28.0	45.8	24.4	42.1		
Backup	Beep1		5.6		23.4	5.6	23.4
Backup	Beep2		28		45.8	24.3	42.1
Backup	Beep3		6.4		24.2	6.4	24.2
36	1.Fl	36.9	53.7	32.1	47.5		
Backup	Beep1		29.9		47.7	28.2	46
Backup	Beep2		35.9		53.7	29.7	47.5
Backup	Beep3		6.1		23.9	6.1	23.9
37	1.Fl	33.5	50.1	33.0	50.1		
Backup	Beep1		32.3		50.1	32.3	50.1
Backup	Beep2		27.6		45.4	24.8	42.6
Backup	Beep3		2.2		20	2.2	20
38	1.Fl	38.5	55.9	33.2	49.7		
Backup	Beep1		38.1		55.9	31.9	49.7
Backup	Beep2		28.6		46.4	27.5	45.3
Backup	Beep3		2.2		20	2.2	20
39	1.Fl	30.2	47.3	31.6	48.9		
Backup	Beep1		21.9		39.7	21.7	39.5
Backup	Beep2		29.5		47.3	31.1	48.9
Backup	Beep3		4.2		22	5.9	23.7
40	1.Fl	28.0	45.2	26.0	42.8		
Backup	Beep1		19.5		37.3	19	36.8
Backup	Beep2		27.4		45.2	25	42.8
Backup	Beep3		2		19.8	2	19.8
41	1.Fl	24.3	42.0	23.8	41.5		
Backup	Beep1		7.3		25.1	7.3	25.1

Backup Beep2		24.2	42	23.7	41.5	
Backup Beep3		-0.1	17.7	-0.1	17.7	
42	1.Fl	10.4	26.3	10.4	26.3	
Backup Beep1		5.3	23.1	5.3	23.1	
Backup Beep2		8.5	26.3	8.5	26.3	
Backup Beep3		-2.5	15.3	-2.5	15.3	
43	1.Fl	31.6	49.0	30.9	48.3	
Backup Beep1		20.8	38.6	20.8	38.6	
Backup Beep2		31.2	49	30.5	48.3	
Backup Beep3		3.4	21.2	4.8	22.6	
44	1.Fl	30.0	47.7	28.5	45.8	
Backup Beep1		8.1	25.9	18.5	36.3	
Backup Beep2		29.9	47.7	28	45.8	
Backup Beep3		3.9	21.7	3.9	21.7	
45	1.Fl	29.1	46.9	26.5	43.9	
Backup Beep1		6.4	24.2	15.5	33.3	
Backup Beep2		29.1	46.9	26.1	43.9	
Backup Beep3		5.2	23	5.2	23	