Noise Technical Report for the Nakano Project Chula Vista, California

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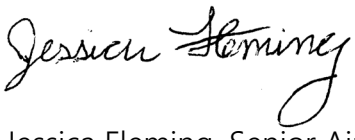
RECON Number 3396-1
September 20, 2023



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Acronyms and Abbreviations

ACC	air-cooled condenser
ADT	average daily traffic
ALUCP	Airport Land Use Compatibility Plan
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
CVMC	Chula Vista Municipal Code
dB	decibel
dB(A)	A-weighted decibel
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-805	Interstate 805
ips	inches per second
LAFCO	Local Agency Formation Commission
L_{dn}	day–night average noise level
L_{eq}	equivalent noise level
L_{max}	maximum sound level
L_{min}	minimum sound level
MSCP	Multiple Species Conservation Plan
NSR	noise-sensitive receptor
PPV	peak particle velocity
project	Nakano Project
RCNM	Roadway Construction Noise Model
SANDAG	San Diego Association of Governments
SDCRAA	San Diego County Regional Airport Authority
SDMC	San Diego Municipal Code
SLM	sound level meter
ST	short-term
STC	sound transmission class

1.0 Introduction and Background

This technical noise report evaluates the potential noise impacts during construction and operation of the proposed Nakano project (project). This assessment is based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.) and the City of San Diego CEQA Significance Determination Thresholds (City of San Diego 2022).

1.1 Project Description

The project consists of development of 215 residential dwellings units consisting of 61 detached condominiums, 84 duplexes and 70 townhome dwelling units on 23.8 acres with approximately 5 acres of hardscaped/paved roadway area. However, to represent a conservative analysis of potential unit mix, the environmental analysis assumes a maximum of 221 residential units. The project site is located on the 450 block of Dennery Road, in the city of Chula Vista, California. Figure 1 shows the project location and Figure 2 shows an aerial photograph of the project site and vicinity. Figure 3 shows the site plan.

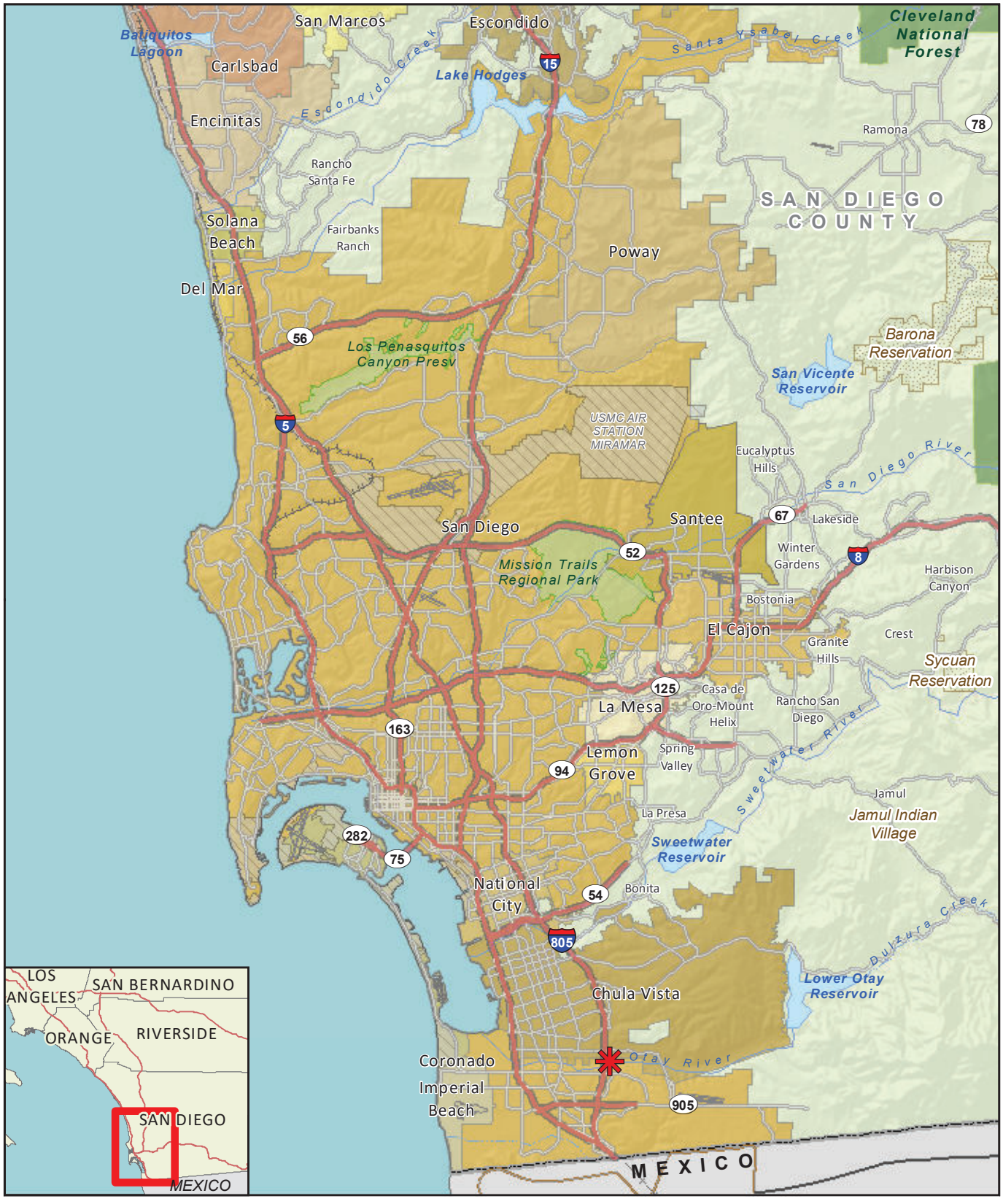
The project is evaluated under Scenario 1: No Annexation Scenario where the project would remain within the City of Chula Vista in addition to two Annexation scenarios.

Scenario 1, the No Annexation Scenario, assumes the project would stay in Chula Vista and not be annexed into San Diego. Local Agency Formation Commission (LAFCO) approval of out of agency service agreements for services and utilities from San Diego would be required. Under this scenario, Chula Vista would issue grading and development permits for the project site; however, the City of San Diego would require a site development permit and grading permit for the off-site improvements associated with primary site access and secondary emergency access.

Two potential Annexation scenarios are described below. The key difference between the two Annexation scenarios would be the agency responsibility for issuance of grading and development permits for the project site.

In Annexation Scenario 2a, grading and development of the project site would not proceed until the LAFCO reorganization process is complete. In this scenario, the City of San Diego would issue grading and development permits for the project site and all off-site improvement areas after approval of the LAFCO reorganization.

In Annexation Scenario 2b, grading and site development would proceed prior to LAFCO reorganization. In this scenario, the City of Chula Vista would issue grading and development permits for the project site and City of San Diego would issue a grading permit for the off-site portions. Grading permits, recordation of a final map, and Chula Vista issuance of all final certificates of occupancy would be completed prior to approval of the LAFCO reorganization. Annexation of the project site to San Diego would not occur until after site development in Chula Vista is complete.



Project Location

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FIGURE 1
Regional Location

Image Source: NearMap (flown January 2023)

Project Boundary

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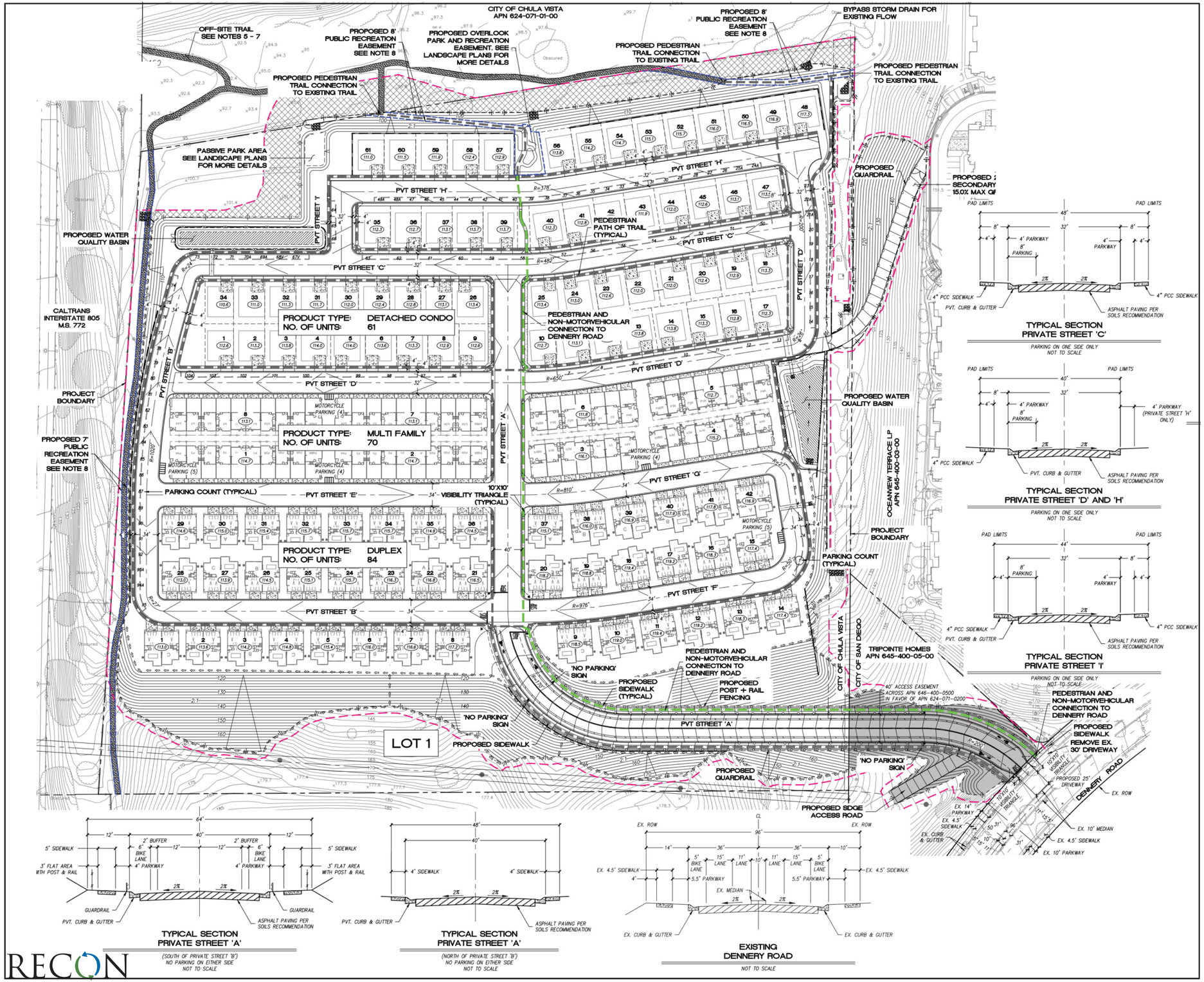
FIGURE 2
Project Location on Aerial Photograph

Map Source: Civil Sense, Inc.



LEGEND

- TM BOUNDARY
- 1 — BUILDING NUMBER
- 110.9 — PROPOSED PAD ELEVATION
- PROPOSED CURB / CURB AND GUTTER
- PROPOSED SIDEWALK
- 10' X 10' VISIBILITY TRIANGLE — NO OBSTRUCTION INCLUDING FENCES/SHRUBS OR SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 24 INCHES IN HEIGHT.
- PROPOSED PEDESTRIAN PATH OF TRAVEL
- PROPOSED STREET PER CITY STANDARD DRAWINGS
- 21A — A = ACCESSIBLE SPACES
- 16V — V = VAN ACCESSIBLE SPACES

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FIGURE 3
Site Plan

While the physical improvements proposed would be the same under all project scenarios, the discretionary actions would differ. The No Annexation Scenario would include a City of Chula Vista General Plan Amendment, Tentative Map, Specific Plan, out of service agreements for services and utilities, and certification of the Environmental Impact Report. More specifically, the General Plan Amendment would change the land use designation to Specific Plan – Residential Medium and the Specific Plan would implement the R-3 zone in Chula Vista.

The Annexation scenarios would include the annexation of the site from the City of Chula Vista and Otay Water District to the City of San Diego, an annexation agreement, City of San Diego and City of Chula Vista Sphere of Influence revision, City of San Diego and City of Chula Vista General Plan Amendment, Otay Mesa Community Plan Amendment, prezone in San Diego, San Diego Resolution of Initiation and Chula Vista Resolution Support, a Tentative Map, and certification of the Environmental Impact Report. Under the Annexation scenarios, the site would be designated by the City of San Diego as Residential – Low Medium and zoned as RM-1-1 (Residential-Multiple Unit). The Local Agency Formation Commission would provide oversight of the annexation process.

For purposes of the environmental analysis, the responsibility for permitting and implementing required mitigation measures detailed in this report would be the City of Chula Vista for the No Annexation Scenario and the Annexation Scenario 2b. Therefore, the analysis for these two scenarios is combined. The analysis for Annexation Scenario 2a is addressed separately as the City of San Diego would have responsibility for implementing applicable mitigation for project under this scenario.

1.2 Noise Characteristics

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of 1 A-weighted dB [dB(A)] when exposed to steady, single-frequency signals in the mid-frequency range.

Outside such controlled conditions, the trained ear can detect changes of 2 dB(A) in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dB. A change of 5 dB(A) is readily perceptible, and a change of 10 dB(A) is perceived as twice or half as loud (California Department of Transportation [Caltrans] 2013). A doubling of sound energy results in a 3 dB(A) increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in dB), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The dB(A) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

Several descriptors of noise (also known as, noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dB(A).

L_{eq} is a dB quantity that represents the constant or energy-averaged value equivalent to the amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour L_{eq} measurement of 60 dB(A) would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors, which can then be compared to an established L_{eq} standard or threshold of the same duration. Another descriptor is maximum sound level (L_{max}), which is the greatest sound level measured during a designated time interval or event. The minimum sound level (L_{min}) is often called the *floor* of a measurement period.

Unlike the L_{eq}, L_{max}, and L_{min} metrics, L_{dn} and CNEL descriptors always represent 24-hour periods and differ from a 24-hour L_{eq} value because they apply a time-weighted factor designed to emphasize noise events that occur during the non-daytime hours (when speech and sleep disturbance is of more concern). *Time weighted* refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding 5 dB(A) to the actual levels, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB(A) to the actual levels. L_{dn} differs from CNEL in that the daytime period is longer (defined instead as 7:00 a.m. to 10:00 p.m.), thus eliminating the dB(A) adjustment for the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5–1 dB(A), and are often considered or actually defined as being essentially equivalent by many jurisdictions.

1.3 Vibration Fundamentals

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

equipment and vehicles on a construction site also have the potential to cause high vibration amplitudes.

2.0 Regulatory Setting

2.1 Federal

2.1.1 Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dB(A) L_{eq} over an 8-hour period (FTA 2018) when detailed construction noise assessments are performed to evaluate potential impacts to community residences surrounding a project. Although this FTA guidance is not a regulation, it can serve as a quantified standard in the absence of such noise limits at the state and local jurisdictional levels.

2.2 State

2.2.1 California Code of Regulations, Title 24

Title 24 of the California Code of Regulations sets standards that new development in California must meet. According to Title 24, interior noise levels are not to exceed 45 CNEL in any habitable room (International Construction Code 2019).

2.2.2 California Department of Health Services Guidelines

The California Department of Health Services has developed guidelines of community noise acceptability for use by local agencies (State of California 2017). Selected relevant levels are listed here:

- Below 60 CNEL: normally acceptable for low-density residential use
- 50 to 70 CNEL: conditionally acceptable for low-density residential use
- Below 65 CNEL: normally acceptable for high-density residential use and transient lodging
- 60 to 70 CNEL: conditionally acceptable for high-density residential, transient lodging, churches, educational, and medical facilities

The normally acceptable exterior noise level for high-density residential use is up to 65 CNEL. Additionally, this exterior noise level limit is consistent with the City of Chula Vista General Plan Noise Element, which considers multi- family units noise-sensitive land uses.

2.2.3 California Department of Transportation

In its Transportation and Construction Vibration Guidance Manual (Caltrans 2020a), Caltrans recommends 0.5 ips PPV as a threshold for the avoidance of structural damage to typical newer residential buildings exposed to continuous or frequent intermittent sources of groundborne vibration. For transient vibration events, such as blasting, the damage risk threshold would be 1.0 ips PPV (Caltrans 2020a) at the same type of newer residential structures. For older structures, these guidance thresholds would be more stringent: 0.3 ips PPV for continuous/intermittent vibration sources, and 0.5 ips PPV for transient vibration events. With respect to human annoyance, Caltrans guidance indicates that building occupants exposed to continuous groundborne vibration at a level of 0.1 ips PPV would find it either "strongly perceptible" or "begins to annoy" and thus for purposes of this assessment would be considered a likely significant impact. Although these Caltrans guidance thresholds are not regulations, they can serve as quantified standards in the absence of such limits at the local jurisdictional level.

2.3 Local

The following are summarized or reproduced portions of relevant City of Chula Vista and City of San Diego regulations and General Plan policies.

2.3.1 City of Chula Vista

2.3.1.1 City of Chula Vista Municipal Code 19.68 (Noise Ordinance)

The City of Chula Vista Noise Ordinance (Chula Vista Municipal Code [CVMC] Section 19.68) (City of Chula Vista 2020) contains regulations restricting land use related noise-generating activities and operations, so as to avoid noise nuisance in the community. Section 19.68.030 of the CVMC establishes the maximum allowable exterior noise limits, based upon the classification of the receiving land use. These standards typically apply to stationary sources such as noise from mechanical equipment (including mechanical ventilation and air condition noise, pool pump noise, etc.) or event noise, as opposed to traffic noise. For instance, a school, commercial enterprise, or industrial operation must not generate noise that exceeds a certain specified noise level at any property boundary where an adjacent residential use exists. The property-line noise standards are presented in Table 1.

Table 1 City of Chula Vista Exterior Property-Line Noise Limits		
	Noise Level (dB(A) L_{eq})	
	10 p.m. to 7 a.m. (Weekdays)	7 a.m. to 10 p.m. (Weekdays)
Receiving Land Use Category	10 p.m. to 8 a.m. (Weekends)	8 a.m. to 10 p.m. (Weekends)
All residential (except multiple dwelling)	45	55
Multiple-dwelling residential	50	60
Commercial	60	65
Light industry – I-R and I-L zone	70	70
Heavy industry – I zone	80	80
Note: dB(A) = A-weighted decibels		

Title 17 of the CVMC (Environmental Quality), Chapter 24, addresses managing noisy and disorderly conduct. Section 17.24.040.C.8 specifically addresses restrictions against generation of construction noise in overnight periods. The use of any tools, power machinery, or equipment, or the conduct of construction and building work in residential zones so as to cause noises disturbing to the peace, comfort, and quiet enjoyment of property of any person residing or working in the vicinity, shall be prohibited between the hours of 10:00 p.m. and 7:00 a.m., Monday through Friday, and between the hours of 10:00 p.m. and 8:00 a.m., Saturday and Sunday, except when the work is necessary for emergency repairs required for the health and safety of any member of the community (City of Chula Vista 2020).

Although the City does not set specific numerical limits for noise associated with temporary construction activities, it can be perceived as a nuisance; thus, the City restricts the times of day when construction may occur (7:00 a.m.–10:00 p.m., Monday–Friday, and 8:00 a.m.–10:00 p.m., Saturday and Sunday).

2.3.1.2 City of Chula Vista General Plan Noise Element

The City of Chula Vista General Plan Noise Element establishes noise criteria for various land uses (City of Chula Vista 2005). The maximum allowable exterior noise level at outdoor usable areas for new residential development is an annual CNEL of 65 dB. The City's exterior land use-noise compatibility guidelines for various land uses are depicted in Table 2. For residential development, the City typically applies the noise criteria at the backyards of single-family homes and at private patios, exterior balconies, and exterior common use areas of multi-family developments. The minimum amount of required exterior use space shall meet this criteria, with any additional are being provided being exempt from this requirement.

Table 2 City of Chula Vista Exterior Land Use/Noise Compatibility Guidelines						
Land Use	Annual CNEL in Decibels					
	50	55	60	65	70	75
Residential	■	■	■	■		
Schools, Libraries, Daycare Facilities, Convalescent Homes, Outdoor Use Areas, and other Similar Uses Considered Noise Sensitive	■	■	■	■		
Neighborhood Parks, Playgrounds	■	■	■	■		
Community Parks, Athletic Fields	■	■	■	■	■	
Offices and Professional	■	■	■	■	■	
Places of Worship (excluding outdoor use areas)	■	■	■	■	■	
Golf Courses	■	■	■	■	■	■
Retail and Wholesale Commercial, Restaurants, Movie Theaters	■	■	■	■	■	■
Industrial, Manufacturing	■	■	■	■	■	■
Note: Shaded box indicates allowable decibel level Source: City of Chula Vista 2005						

Policy E21.1 of the Chula Vista General Plan requires the application of the exterior land use-noise compatibility guidelines listed in Table 2 to "new development, where applicable, and in light of project-specific considerations." In addition, Objective E22 (Protect the community from the effects of transportation noise) of the City's General Plan Noise Element, Policy E22.5 requires projects to construct appropriate mitigation measures to attenuate existing and projected traffic noise levels, in accordance with applicable standards, including the exterior land use/noise compatibility guidelines listed in Table 2.

For off-site project-related traffic, Chula Vista considers a noise impact to be significant if implementation of the project results in noise levels that exceed the exterior noise limits established in the City's General Plan, including 65 CNEL for residences, schools, and recreational uses; 70 CNEL for offices, community parks and athletic fields; and 75 CNEL for commercial uses. For transportation-related noise, a significant impact would occur if the project results in a 3 dB(A) or greater increase in traffic noise on a roadway segment and the resultant noise level would exceed the General Plan exterior noise limits.

2.3.1.3 City of Chula Vista Multiple Species Conservation Program Subarea Plan

The municipalities of southwestern San Diego County collaborated in producing the Multiple Species Conservation Program (MSCP) Subregional Plan (City of San Diego 1998). The MSCP Subregional Plan is implemented through individual Subarea Plans adopted by each jurisdiction in order to receive take authorization for impacts to covered species and habitats. The MSCP is implemented in Chula Vista through the City of Chula Vista's MSCP Subarea Plan (City of Chula Vista 2003). The MSCP Subarea Plan regulates impacts to sensitive biological resources, including noise impacts. In accordance with Section 7.5.2 of the Chula Vista Subarea Plan, Adjacency Management Issues, uses in or adjacent to the Preserve should be designed to minimize noise impacts. Berms or walls should

be constructed adjacent to commercial areas and any other use that may introduce noises that could impact or interfere with wildlife utilization of the Preserve. Excessively noisy areas or activities adjacent to breeding areas, including temporary grading activities, must incorporate noise reduction measures or be curtailed during the breeding season of sensitive bird species, consistent with Table 3-5 of the MSCP Subregional Plan, included as Appendix A to the MSCP Subarea Plan. In general, the construction noise threshold for sensitive biological resources is an hourly average noise level of 60 dB(A) and no clearing, grubbing, and/or grading is permitted within the MSCP Preserve during the breeding season of the sensitive species present. Within the City of Chula Vista Subarea Plan, the project area is designated as "Development Area Outside Covered Projects" (i.e., not designated a preserve or conservation area) and is not located immediately adjacent to any 75 percent or 100 percent Conservation Areas. The closest Chula Vista Subarea Plan conservation area (75 percent) is located approximately 197 feet north of the project area within the Otay River.

2.3.2 City of San Diego

2.3.2.1 City of San Diego Municipal Code 9.5 (Noise Ordinance)

Applicable noise standards for the project are codified in the following City of San Diego Municipal Code (SDMC) regulations (City of San Diego 2010):

SDMC Section 59.5.0401: Sound Level Limits

It shall be unlawful for any person to cause noise by any means to the extent that the one-hour average sound level exceeds the applicable limit given in Table 3, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

Table 3
San Diego Exterior Noise Limits

Land Use	Time of Day	One-Hour Average Sound Level (Decibels)
1. Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
3. All other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
4. Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
5. Industrial or Agriculture	Anytime	75
Source: City of San Diego 2010		

The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by SDMC Sections 59.5.0404 of this article.

Fixed–location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of Part A of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

SDMC Section 59.5.0404: Construction Noise

It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the SDMC, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

Except as provided in subsection C, hereof, it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level no greater than 75 dB during the 12-hour period from 7:00 a.m. to 7:00 p.m.

The provisions of subsection B. of this section shall not apply to construction equipment used in construction with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

2.3.2.2 City of San Diego General Plan Noise Element

The City of San Diego General Plan Noise Element (2015) establishes noise compatibility guidelines for uses affected by traffic noise, as detailed in Table 4.

Table 4
City of San Diego Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (CNEL)				
	60	65	70	75	
Parks and Recreational					
Parks, Active and Passive Recreation				45, 50	
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities					
Agricultural					
Crop Raising and Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries and Greenhouses; Animal Raising, Maintaining and Keeping; Commercial Stables					
Residential					
Single Dwelling Units; Mobile Homes		45			
Multiple Dwelling Units **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		45	45		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities		45			
Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities		45	45		
Cemeteries					
Retail Sales					
Building Supplies/Equipment; Food, Beverage, and Groceries; Pets and Pet Supplies; Sundries, Pharmaceutical, and Convenience Sales; Wearing Apparel and Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating and Drinking; Financial Institutions; Maintenance & Repair; Personal Services; Assembly and Entertainment (includes public and religious assembly); Radio and Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business and Professional; Government; Medical, Dental, and Health Practitioner; Regional and Corporate Headquarters			50	50	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair and Maintenance; Commercial or Personal Vehicle Sales and Rentals; Vehicle Equipment and Supplies Sales and Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment and Materials Storage Yards; Moving and Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking and Transportation Terminals; Mining and Extractive Industries					
Research and Development				50	

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level.
		Outdoor Uses	Activities associated with the land use may be carried out.
45, 50	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable.
	Incompatible	Indoor Uses	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

SOURCE: City of San Diego 2015.

Applicable Noise Element policies with respect to the project include are as follows:

- NE-A.1. Separate excessive noise-generating uses from residential and other noise-sensitive land uses with a sufficient spatial buffer of less sensitive uses.
- NE-A.2. Assure the appropriateness of proposed developments relative to existing and future noise levels by consulting the guidelines for noise-compatible land use (shown on Table 4) to minimize the effects on noise-sensitive land uses.
- NE-A.3. Limit future residential and other noise-sensitive land uses in areas exposed to high levels of noise.
- NE-A.4. Require an acoustical study consistent with Acoustical Study Guidelines (Table NE-4) for proposed developments in areas where the existing or future noise level exceeds or would exceed the "compatible" noise level thresholds as indicated on the Land Use - Noise Compatibility Guidelines (see Table 4), so that noise mitigation measures can be included in the project design to meet the noise guidelines.
- NE-A.5. Prepare noise studies to address existing and future noise levels from noise sources that are specific to a community when updating community plans.

2.3.2.3 City of San Diego Multiple Species Conservation Program Subarea Plan

The MSCP is implemented in the City of San Diego through the City of San Diego's MSCP Subarea Plan (City of San Diego 1997). The City of San Diego's MSCP Subarea Plan identifies lands designated as Multi-Habitat Planning Area (MHPA), which is a "hard-line" preserve developed by the City of San Diego in cooperation with the wildlife agencies, developers, property owners, and various environmental groups. Within the MHPA, biological core resource areas and corridors targeted for conservation are identified and discussed, in which development restrictions may occur (City of San Diego 1997). Development adjacent to MHPA is subject to the City's Land Use Adjacency Guidelines which include minimizing noise impacts to the MHPA as well as control of noise during the breeding season of sensitive species. No MHPA is located on-site and the nearest City of San Diego MHPA is approximately 180 feet west of the project site, across Interstate 805 (I-805). The project is located outside the City of San Diego Subarea Plan, with the exception that the project's primary and secondary access roads are located within the City of San Diego and the San Diego's Subarea Plan. These off-site access road areas are subject to San Diego's Subarea Plan which requires that noise impacts to certain sensitive species are avoided. Under the Annexation Scenario 2a, the project parcel would be annexed and developed into the City of San Diego and subject to the City of San Diego's Subarea Plan (City of San Diego 1997) as well as the associated City of San Diego Biology Guidelines (City of San Diego 2018).

2.3.3 Brown Field Airport Land Use Compatibility Plan

The Airport Land Use Compatibility Plan (ALUCP) for Brown Field identifies land uses compatible with annual noise levels due to operations at Brown Field. These land use compatibility noise levels are to

be used in determining whether a proposed land use is consistent with ALUCP policies and guidelines. The Brown Field Municipal ALUCP residential exterior and interior noise exposure standards are 65 CNEL and 45 CNEL, respectively (San Diego County Regional Airport Authority [SDCRAA] 2010).

3.0 Existing Conditions

Noise measurements were conducted near the project site on June 4, 2020, to quantify and characterize the existing outdoor ambient sound levels. Table 5 provides the location, date, and time period at which these baseline noise level measurements were performed by an attending Dudek field investigator using a Rion-branded Model NL-52 sound level meter (SLM) equipped with a 0.5-inch, pre-polarized condenser microphone with pre- amplifier. The SLM meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the SLM was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Four (4) short-term (ST) noise level measurement locations (ST1–ST4) that represent existing noise-sensitive receivers were selected on and near the project site. These locations are depicted as receivers ST1, ST2, ST3, and ST4 on Figure 4, Noise Assessment Locations. The measured L_{eq} and L_{max} noise levels are provided in Table 5. The primary noise sources at the sites identified in Table 5 consisted of traffic along adjacent roadways, the sounds of leaves rustling, audible distant aircrafts, and birdsong. As shown in Table 5, noise levels ranged from approximately 62 dB(A) L_{eq} at ST1 to 65.6 dB(A) L_{eq} at ST4. Beyond the summarized information presented in Table 5, detailed noise measurement data is included in Attachment 1, Baseline Noise Measurement Field Data (Dudek 2022).

Table 5
Measured Baseline Outdoor Ambient Noise Levels

Site	Location/Address	Date (yyyy-mm-dd), Time	L_{eq} dB(A)	L_{max} dB(A)
ST1	Southeast of project site boundary; north of Dennery Road	2020-06-04, 10:50 AM to 11:00 AM	62.0	75.1
ST2	South of southern project site boundary; northeast corner of Kaiser Permanente parking structure	2020-06-04, 11:45 AM to 11:55 AM	62.1	66.3
ST3	East of project site; near 122 Golden Sky Way, San Diego, CA 92154	2020-06-04, 10:30 AM to 10:40 AM	62.8	64.5
ST4	Southwest corner of project site boundary	2020-06-04, 11:20 AM to 11:30 AM	65.6	74.6

Source: Attachment 1.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dB(A) = A-weighted decibels; ST = short-term noise measurement locations.

Generally, the measured samples of daytime L_{eq} agree with expectations: ST4 is above 65 dB(A) due largely to its proximity to Interstate 805, a major roadway; ST2 is farther up the bluff, south of the southern boundary of the project; and ST1 and ST3 are closer to the residential neighborhoods east of the project and much more distant from these sources of roadway traffic noise.

Image Source: NearMap (flown January 2023)

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FIGURE 4
Noise Measurement Locations

4.0 Thresholds of Significance

The following significance criteria are based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) and intended to frame the assessment of potentially significant noise and vibration impacts associated with a studied project's effects to the neighboring off-site community:

a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

b. Generation of excessive groundborne vibration or groundborne noise levels; and,

c. Expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport).

The City of San Diego has adopted its own CEQA Significance Thresholds (and corresponding impact assessment metrics) that are presented in Section 4.2 below.

4.1 City of Chula Vista Significance Determination Thresholds

The analysis for the No Annexation Scenario and Annexation Scenario 2b uses the following City of Chula Vista standards to evaluate potential noise and vibration impacts at on-site and off-site land uses under City of Chula Vista jurisdiction.

- Construction noise – The City regulates construction noise by restricting the allowable hours of construction. Section 9.40.110 of the CVMC exempts construction noise from the stationary noise standards, provided that construction occurs between 7:00 a.m. and 10:00 p.m., Monday through Friday, and 8:00 a.m. to 10:00 p.m., Saturday and Sunday. Through adherence to the limitation of allowable construction times provided in the CVMC, the construction-related noise levels would not exceed any municipal standards. However, since the City of Chula Vista lacks a quantified construction noise level threshold, consistent with the "or applicable standards of other agencies" clause in the first bulleted CEQA Guidelines Appendix G criterion above for noise, for purposes of information disclosure this assessment adopts the FTA guidance-based standard of 80 dB(A) over an 8-hour L_{eq} at the exterior of a residential land use. This FTA standard would be applied to the nearest existing medium (zoned "R2") and high-density (zoned "R3P13") City of Chula Vista residential receptors that are approximately 700 feet northwest of the project site.

- Off-site project-attributed transportation noise – For purposes for this analysis, a direct roadway noise impact would be considered significant if increases in roadway traffic noise levels attributed to the project are greater than 3 dB(A) at an existing noise-sensitive land use.

- Off-site project-attributed stationary noise – For purposes for this analysis, a noise impact would be considered significant if noise from typical operation of heating, ventilation, and air conditioning and other electro-mechanical systems associated with the project exceeded 55 dB(A) hourly L_{eq} at the property line from 7:00 a.m. to 9:59 p.m., and 45 dB(A) hourly L_{eq} from 10:00 p.m. to 6:59 a.m.

- Construction vibration – Guidance from Caltrans indicates that a vibration velocity level of 0.1 ips PPV received at a structure would be considered potentially annoying to occupants within (Caltrans 2020a). As for the receiving structure itself, aforementioned Caltrans guidance from Section 2 recommends that a vibration level of 0.3 ips PPV would represent the threshold for building damage risk to older residences, and 0.5 ips PPV to newer residential structures.

For purposes of disclosure, since current CEQA noise criteria listed above do not consider the impacts of the environment on a project, this analysis also evaluates compatibility of on-site noise levels with the City of Chula Vista exterior and interior noise standards of 65 CNEL and 45 CNEL, respectively, as well as the Brown Field Municipal ALUCP residential noise exposure standard of 65 CNEL (SDCRAA 2010).

4.2 City of San Diego Significance Determination Thresholds

This analysis for the Annexation Scenario 2a uses the following City of San Diego CEQA Significance Determination Thresholds (City of San Diego 2022) to evaluate potential noise impacts at off-site land uses under City of San Diego jurisdiction. For the purposes of this assessment for the project, the aforementioned Caltrans guidance is used to determine potential vibration impacts.

Based on the City of San Diego's CEQA Significance Determination Thresholds (City of San Diego 2022), noise impacts may be significant if the project would:

- Construction noise – Result in construction noise exposure levels that exceeds 75 dB(A) L_{eq} (12-hour) at the property line of a residentially-zoned property from 7:00 a.m. to 7:00 p.m. (as identified in Section 59.0404 of the City of San Diego's Municipal Code) or if non-emergency construction occurs during the 12-hour period from 7:00 p.m. to 7:00 a.m. Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, such as day care facilities, a significant noise impact may be identified.

- Project-attributed stationary noise – Result in the exposure of people to noise levels that exceed the City of San Diego's adopted Noise Ordinance, SDMC Section 5.9.5.0401.

- Project-attributed transportation noise – Result in the exposure of people to transportation noise levels that exceed the sound level limits as presented in City of San Diego Land Use – Noise Compatibility Guidelines (refer to Table 4 above) and generates more than a 3 dB increase (City of San Diego 2022).

- Construction vibration – Result in the generation of excessive groundborne vibration or groundborne noise levels. Guidance from Caltrans indicates that a vibration velocity level of 0.1 ips PPV received at a structure would be considered potentially annoying to occupants within (Caltrans 2020a). As for the receiving structure itself, aforementioned Caltrans guidance from Section 2 recommends that a vibration level of 0.3 ips PPV would represent the threshold for building damage risk to older residences, and 0.5 ips PPV to newer residential structures.

For purposes of disclosure, since current CEQA noise criteria listed above do not consider the impacts of the environment on a project, this analysis also evaluates compatibility of on-site noise levels with the City of San Diego exterior and interior noise standards of 65 CNEL and 45 CNEL, respectively, as well as the Brown Field Municipal ALUCP residential noise exposure standard of 65 CNEL (SDCRAA 2010).

5.0 Impact Discussion

5.1 Short-Term Construction Noise

5.1.1 Potential Effects to Neighboring Communities

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor.

Equipment that would be in use during construction would include, in part, graders, backhoes, concrete saws, excavators, dump trucks, loaders, cranes, manlifts, cement mixers, pavers, rollers, welders, and air compressors. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 6. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the listed maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 6 Typical Construction Equipment Maximum Noise Levels	
Equipment Type	Typical Equipment (L_{max}, dB(A) at 50 Feet)
Air compressor	78
Backhoe	78
Concrete pump truck	81
Grader	85
Crane	81
Dump Truck	76
Roller	80
Manlift	75
Generator	72
Front End Loader	79
Paver	77
Concrete Saw	90
Welder	74
Source: U.S. Department of Transportation 2006 Note: L_{max} = maximum sound level; dB(A) = A-weighted decibels.	

Aggregate noise emission from project construction activities, broken down by sequential phase, was predicted at two distances to the nearest existing noise-sensitive receptor (NSR): 1) from the nearest position of the construction site boundary and 2) from the geographic center of the construction site, which serves as the time-averaged location or geographic acoustical centroid of active construction equipment for the phase under study. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary for some period of time, which would be most appropriate for phases such as site preparation, grading, and paving. The latter distance is used in a manner similar to the general assessment technique as described in FTA guidance for construction noise assessment (FTA 2018), when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety of) the construction site area. Because of this uncertainty, all the equipment for a construction phase is assumed to operate—on average—from the acoustical centroid. Table 7 summarizes these two distances for each apparent closest NSR within the City of San Diego and the City of Chula Vista. For the former, the existing NSR would be one of the existing multi-family residential structures to the east of the project site on Golden Sky Way in the "River Edge Terrace" community; and for the latter, there are multi-family homes south of Rancho Drive immediately west of the I-805 southbound lanes.

At the project site boundary, and as detailed in Attachment 2 (Dudek 2022), this analysis assumes that up to only one piece of equipment of each listed type per phase will be involved in the construction activity for a limited portion of a typical 8-hour construction work shift. In other words, at such proximity, the operating equipment cannot "stack" or crowd the vicinity and still operate. For the acoustical centroid case, which is a geographic average position for all equipment during the indicated phase, this analysis assumes that the equipment may be operating up to all of eight (8) hours per day (i.e., comparable to a typical on-site work shift).

Table 7 Estimated Distances between Construction Activities and the Nearest Existing City of San Diego and City of Chula Vista Noise-Sensitive Receptors (NSR)				
Construction Phase (and Equipment Types Involved)	Distance from Construction Site Boundary (feet)	Distance from Acoustical Centroid of Site (feet)	Distance from Construction Site Boundary (feet)	Distance from Acoustical Centroid of Site (feet)
	to City of San Diego NSR		to City of Chula Vista NSR	
Site Preparation (Dozer, Loader)	180	743	700	1,230
Grading (Excavator, Grader, Dozer, Scraper, Backhoe)*	60	743	700	1,230
Building Construction (Crane, Forklift, Loader, Welder, Generator)	210	743	700	1,230
Architectural Finishes (Air Compressor)	210	743	700	1,230
Paving (Roller, Backhoe, Dump Truck, Paver)	60	743	700	1,230
*Off-site improvement areas are accounted for in the grading phase of construction.				

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) (Federal Highway Administration [FHWA] 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 6, Typical Construction Equipment Maximum Noise Levels), and the distance from the noise-sensitive receptor. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. For the City of San Diego receivers, the shielding provided by the topography of the project site, the slope to the east of the project site, and the elevation of the residential receivers was taken into account. For the more distant City of Chula Vista residential receivers, no topographical or structural shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Attachment 2, Construction Noise Modeling Input and Output. Modeling results generated predicted construction noise levels as detailed in Table 8.

Table 8 Predicted Construction Noise Levels per Activity Phase at Sensitive Receptors				
Construction Phase (and Equipment Types Involved)	12-Hour L_{eq} at Nearest NSR to Construction Site Boundary dB(A)	12-Hour L_{eq} at Nearest NSR to Acoustical Centroid of Site dB(A)	8-Hour L_{eq} at Nearest NSR to Construction Site Boundary dB(A)	8-Hour L_{eq} at Nearest NSR to Acoustical Centroid of Site dB(A)
	at nearest City of San Diego NSR		at nearest City of Chula Vista NSR	
First Floor Receptors				
Site Preparation (Dozer, Loader)	52.9	54.5	51.6	51.3
Grading (Excavator, Grader, Dozer, Scraper, Backhoe)	70.2	56.8	57.5	53.6
Building Construction (Crane, Forklift, Loader, Welder, Generator)	55.7	55.2	53.3	52.0
Architectural Finishes (Air Compressor)	47.0	43.5	44.6	40.3
Paving (Roller, Backhoe, Dump Truck, Paver)	62.4	50.4	49.7	47.2
Second Floor Receptors				
Site Preparation (Dozer, Loader)	63.2	54.5	51.6	51.3
Grading (Excavator, Grader, Dozer, Scraper, Backhoe)	74.0	56.8	57.5	53.6
Building Construction (Crane, Forklift, Loader, Welder, Generator)	63.3	55.2	53.3	52.0
Architectural Finishes (Air Compressor)	54.6	43.5	44.6	40.3
Paving (Roller, Backhoe, Dump Truck, Paver)	66.2	50.4	49.7	47.2
Notes: L_{eq} = equivalent noise level; dB(A) = A-weighted decibels; NSR = noise-sensitive receptor				

As presented in Table 8, the estimated construction noise levels at the nearest City of Chula Vista NSR are predicted to be far less than 80 dB(A) L_{eq} over an 8-hour period—even when phase activities may take place near the northwest project boundaries. At the nearest City of San Diego NSR, predicted 12-hour L_{eq} values shown in Table 8 for each project construction phase are less than 75 dB(A). Hence, under these conditions, predicted operation of construction equipment and processes do not exceed both the FTA-based guidance construction noise threshold of 80 dB(A) 8-hour L_{eq} and the City of San Diego code-based threshold for construction noise level of 75 dB(A) 12-hour L_{eq}.

Compared to measurements of the daytime outdoor ambient sound level at representative sample locations as shown in Table 5, predicted construction noise levels ranging in the middle to upper sixties (for City of San Diego second floor receptors) of dB(A) as appearing in Table 8 are considerably higher and would be clearly perceptible to an average listener having healthy human hearing. However, at nearby off-site residences exposed to such construction-related noise, the increased noise levels would typically be relatively short term and temporary—lasting only as long as construction occurs during allowable hours. Construction activities associated with the project would be limited to those hours specified in the applicable city municipal code, which are detailed in Section 2.3, Local. More specifically, the No Annexation Scenario construction would be limited to 7:00 a.m.–10:00 p.m., Monday–Friday, and 8:00 a.m.–10:00 p.m., Saturday and Sunday). Under the Annexation Scenario 2a, construction activities would be limited to 7:00 a.m. to 7:00 p.m., and construction noise would not exceed 75 dB during that 12-hour period. Temporary construction noise would not interfere with normal business communication, or affect sensitive receptors. Thus, project would

comply with both the SDMC and the City of Chula Vista Municipal Code, and construction noise impacts would be **less than significant** under both the No Annexation and Annexation scenarios.

5.1.2 Potential Effects to Nearby Sensitive Biological Resources

Indirect noise impacts to sensitive biological resources result primarily from adverse edge effects on-site or off-site, and may be short term (temporary), related to construction, or long term, associated with development in proximity to biological resources within natural open space. Noise impacts would be significant if construction or operational noise levels would exceed 60 dB(A) L_{eq}, or the existing ambient noise level if already above 60 dB(A) L_{eq} during the breeding season.

Within the City of Chula Vista Subarea Plan, the project parcel is designated as "Development Area Outside Covered Projects" (i.e., not designated a preserve or conservation area) and is not located immediately adjacent to any 75 percent or 100 percent Conservation Areas. The closest conservation area (75 percent) is located approximately 197 feet north of the project area within the Otay River. While the project parcel and land to the north of the parcel is within the City of Chula Vista Subarea Plan, the land to the west, south and east of the parcel are located within the City of San Diego Subarea Plan. The nearest City of San Diego Subarea Plan MHPA area is located approximately 180 feet west of the project parcel, across I-805.

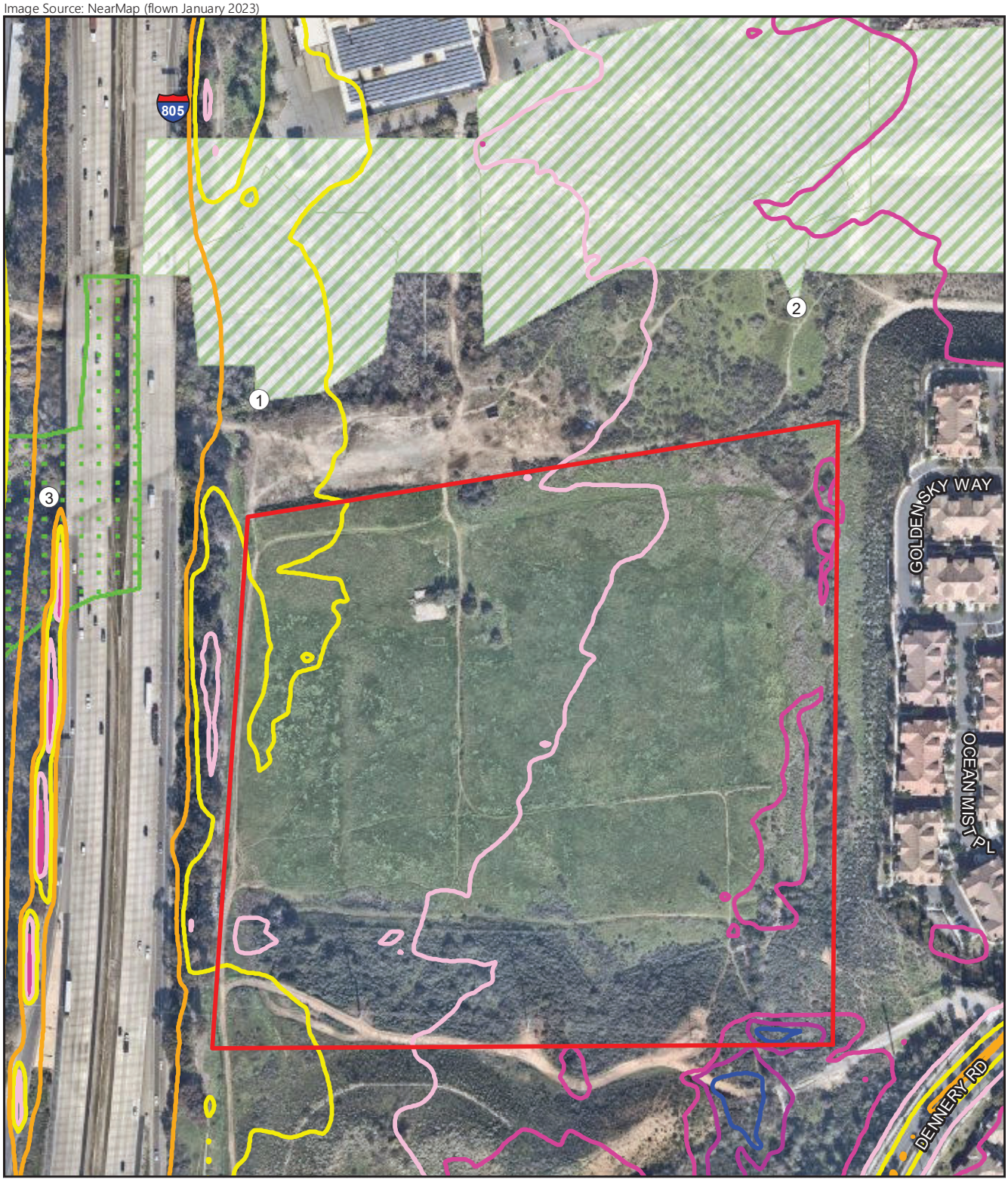
Noise in the vicinity of the project site is dominated by vehicle traffic on I-805. To determine the existing ambient noise level at the adjacent habitat, existing noise levels due to traffic on I-805 and Dennery Road were modeled using the SoundPLAN program. Based on Caltrans traffic counts, the existing volume on I-805 is 150,000 average daily traffic (ADT) (Caltrans 2020b). The existing traffic volumes on Dennery Road are 13,869 ADT south of Regatta Lane and 8,333 ADT north of Regatta Lane (LOS Engineers, Inc. 2022). Existing vehicle traffic noise contours are shown in Figure 5.

Existing ambient noise levels and maximum construction noise levels, which would occur during the grading phase) were calculated at three specific receivers located at the Chula Vista conservation areas and the San Diego MHPA (see Figure 5). The results are shown in Table 9. SoundPLAN data is provided in Attachment 3.

Table 9
Predicted Construction Noise Levels at Sensitive Habitat

Receiver	Location	Existing Ambient Noise Level		Maximum Construction Noise Level [dB(A) L_{eq}]
		Average Daytime Hourly Noise Level [dB(A) L_{eq}]	Peak Hour Noise Level [dB(A) L_{eq}]	
1	Chula Vista Conservation Area – West	71	72	57
2	Chula Vista Conservation Area – East	60	62	58
3	San Diego MHPA - 180 feet to the West	77	79	57

Image Source: NearMap (flown January 2023)



Project Boundary

Habitat Receivers

City of San Diego MSCP Subarea Plan

City of San Diego MHPA

City of Chula Vista MSCP Subarea Plan

75% Conservation Area - Habitat Preserve

Vehicle Traffic Noise

50 CNEL

55 CNEL

60 CNEL

65 CNEL

70 CNEL

75 CNEL

0 Feet 250

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FIGURE 5

Existing Vehicle Traffic Noise Contours

As shown, existing ambient noise levels currently exceed 60 dB(A) L_{eq}. During daytime hours when construction activity noise would occur, pre-existing outdoor ambient sound in the MSCP preserve areas north of the project site are already dominated by I-805 traffic noise that is greater than 60 dB(A) as shown in Table 9. Therefore, construction noise levels would not have the potential to result in a construction noise impact to sensitive species inhabiting proximate preserve areas as the pre-existing outdoor noise environment is already in excess of 60 dB(A) L_{eq}. On this basis, potential construction noise impacts to sensitive wildlife species inside the MSCP preserve would be considered **less than significant**. However, as further detailed in the Biological Resources Technical Report (RECON 2023), Least Bell's vireo are located on and adjacent to the project site outside the MSCP preserve. Indirect impacts to least Bell's vireo may occur if construction activities are conducted during this species' breeding season of March 15 to September 15. Occupied suitable habitat (southern willow scrub, mule fat scrub) for this species occurs both on-site and adjacent to the project impact area and construction is likely to cause noise levels within these habitat areas to exceed 60 dB(A) L_{eq}, which would be considered a **significant indirect impact** requiring mitigation under both cities' Subarea Plans. Implementation of mitigation measures SD-BIO-5 and CV-BIO-5, as detailed in the Biological Resources Technical Report would be required.

5.2 Conventional Construction Activity Vibration

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities (Caltrans 2020a). Information from Caltrans indicates that continuous vibrations with a velocity amplitude of approximately 0.1 ips PPV can be characterized as being "strongly perceptible" or "begins to annoy" building occupants. For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the project site, have peak particle velocities of approximately 0.089 ips or less at a reference distance of 25 feet (FTA 2018).

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance. By way of example, for a bulldozer operating on site and as close as the eastern project boundary (i.e., approximately 60 feet from the nearest receiving occupied structure on Golden Sky Way, when the project emergency access roadway would be graded) the estimated vibration velocity level would be 0.024 ips per the equation as follows (FTA 2018):

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.024 = 0.089 * (25/60)^{1.5};$$

where PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and D is the actual horizontal distance to the receiver. Therefore, at this predicted PPV that is less than the 0.1 ips PPV guidance-based threshold adopted herein, the impact of vibration-induced annoyance to occupants of nearby existing homes would be **less than significant** under both the No Annexation and Annexation scenarios.

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, the predicted 0.024 ips PPV at the nearest residential receiver 60 feet away from on-site operation

of the bulldozer during grading would not surpass the guidance limit of 0.3 to 0.5 ips PPV for preventing damage to residential structures (Caltrans 2020a). Because the predicted vibration level at 60 feet (in the City of San Diego) is less than both the annoyance and building damage risk thresholds, vibration from project conventional construction activities is considered less than significant. The nearest City of Chula Vista existing residential receptor is even more distant from the project, and would therefore also be expected to experience a less than significant impact.

Once operational, the project would not be expected to feature major on-site producers of groundborne vibration. Anticipated mechanical systems like pumps are designed and manufactured to feature rotating components (e.g., impellers) that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, potential vibration impacts due to project operation would be **less than significant**.

5.3 Long-Term Operational Noise

5.3.1 Off-Site Roadway Traffic Noise

The project would increase traffic volumes on local roadways. 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. A substantial noise increase is defined as an increase of 3 dB(A) above existing conditions.

The roadways included in the traffic impact analysis are Dennery Road and Palm Avenue. Traffic noise levels were calculated based on the total average daily traffic volumes on each roadway segment. 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. Modeled off-site noise levels do not account for shielding provided by intervening barriers and structures.

Existing (year 2020), near term (year 2025), and future (year 2062) traffic volumes on Dennery Road and Palm Avenue with and without the project were obtained from the Local Mobility Analysis prepared for the project (LOS Engineers, Inc. 2022). Table 10 summarizes the roadway segment volumes.

Table 10 Roadway Segment ADT Volumes							
	Average Daily Traffic						
Roadway Segment	Year 2020	Year 2020 + Project	Year 2025	Year 2025 + Project	Year 2062	Year 2062 + Project	Speed (mph)
Dennery Road							
Palm Avenue to Regatta Lane	13,869	15,733	13,994	15,858	19,500	21,364	35
Regatta Lane to Landing Driveway	8,333	10,235	8,473	10,375	12,500	14,402	35
Landing Driveway to Red Coral	8,224	10,126	8,354	10,256	12,500	14,402	35
Palm Avenue							
I-805 Southbound Ramps to I-805 Northbound Ramps	36,383	37,315	38,031	38,963	46,000	46,932	45
I-805 Northbound Ramps to Dennery Road	49,173	50,733	51,613	53,173	59,500	31,060	45
mph = miles per hour SOURCE: LOS Engineering, Inc. 2023.							

Using these parameters, noise levels were calculated at 50 feet from the centerline using the FHWA RD-77-108 model. Table 11 presents a conservative assessment of traffic noise levels based on the existing (year 2020), near term (year 2025), and future (year 2062) noise levels without and with the project. Table 11 also summarizes the direct and cumulative traffic noise level increases due to the project. Noise level calculations are contained in Attachment 4. It is noted that this traffic volume data is considered conservative, as the Local Mobility Analysis (LOS Engineering, Inc. 2023) utilized a 221-unit project scenario that has higher volumes than the proposed 215-unit project.

Table 11 Traffic Noise Level with and without Project and Ambient Noise Increases (CNEL)										
	Year 2020			Year 2025			Year 2062			Cumulative Increase Over Existing
Roadway Segment	No Project	Project	Increase	No Project	Project	Increase	No Project	Project	Increase	
Dennery Road										
Palm Avenue to Regatta Lane	69.6	70.2	0.6	69.6	70.2	0.6	71.1	71.5	0.4	1.9
Regatta Lane to Landing Driveway	67.4	68.3	0.9	67.5	68.3	0.8	69.2	69.8	0.6	2.4
Landing Driveway to Red Coral	67.3	68.2	0.9	67.4	68.3	0.9	69.2	69.8	0.6	2.5
Palm Avenue										
I-805 Southbound Ramps to I-805 Northbound Ramps	75.9	76.0	0.1	76.1	76.2	0.1	76.9	77.0	0.1	1.1
I-805 Northbound Ramps to Dennery Road	77.2	77.3	0.1	77.4	77.5	0.1	78.0	78.1	0.1	0.9
Note: Increase calculations may vary due to independent rounding.										

As shown, the project would result in direct noise level increases ranging from 0.4 to 0.9 dB(A) on Dennery Road, and a direct noise level increase of 0.1 dB(A) on Palm Avenue. Cumulatively, when

comparing future year 2062 traffic noise levels to existing noise levels, the increase would range from 0.9 to 2.5 dB(A). The project would not result in a direct or cumulative noise increase of more than 3 dB. Therefore, the project would result in less than significant direct and cumulative impacts related to traffic noise for both the No Annexation and Annexation scenarios.

5.3.2 Stationary Operations Noise

The proposed residential project will add a variety of noise-producing mechanical equipment discussed below. Most of these noise-producing equipment or sound sources would be considered stationary, or limited in mobility to a defined area. Predicted noise levels associated with the post-construction operation of the project on-site stationary equipment have been calculated using the SoundPLAN model.

The project includes 61 detached condominiums that function similar to single-family home structures, 84 duplexes, and 70 townhome dwelling unit structures. Each of these 215 structures would be expected to feature mechanical ventilation and an outdoor-exposed air-cooled condenser (ACC) that provides cooling (expressed herein as refrigeration tonnage). For purposes of this analysis, each single-family structure was assigned an ACC rated for 1.5 to 3 tons of cooling, which can be represented by a Carrier 16NA18 model having a sound pressure level of 68 dB(A) at a distance of one meter (Carrier 2012). Each duplex and multi-family structure would have two such Carrier units (or comparable from a different manufacturer) or a larger unit delivering twice the refrigeration capacity but emitting a 3 dB(A) (i.e., double the sound energy) higher noise level. The locations of these anticipated ACC units, assumed to be point-type sources at a height of one meter above local grade, are shown in Figure 6.

The project would also include pocket parks throughout the site. These pocket parks would include mostly passive uses such as benches, shade structures, trails, and decorative landscaping that would not be a significant source of noise. However, pocket parks may also include play structures or tot-lots that would generate noise from children at play. Noise levels due to children at play are not anticipated to exceed Chula Vista or San Diego noise level limits; however, as a conservative analysis, these noise sources were also included in the SoundPLAN modeling. A sound power level of 55 dB(A) was modeled at each pocket park location (Navcon Engineering, Inc. 2018).

Noise levels were modeled at receivers located at the multi-family residential uses to the east and at the project property lines. The results are summarized in Table 12. SoundPLAN data is provided in Attachment 5.

Image Source: NearMap (flown January 2023)

Project Boundary
Covenant of Easement
Receivers
HVAC
Site Plan

Operational Noise

40 dB(A) L_{eq}
45 dB(A) L_{eq}
50 dB(A) L_{eq}
55 dB(A) L_{eq}
60 dB(A) L_{eq}

0 Feet 200

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FIGURE 6
Operational Noise Contours

Table 12 Predicted Project Stationary Source Operations Noise		
Modeled Receiver Position	Receiver Position Description	Predicted hourly L_{eq} [dB(A)]
R01	Near southwestern corner of River Edge Terrace building north of Golden Sky Way	36.1
R02	Near River Edge Terrace building east of Golden Sky Way	34.7
R03	Near River Edge Terrace building east of Golden Sky Way	35.5
R04	Near River Edge Terrace building west of Ocean Mist Place	39.6
R05	Near River Edge Terrace building west of Ocean Mist Place	39.7
R06	Near River Edge Terrace building west of Ocean Mist Place	37.6
R07	Near River Edge Terrace building south of Ocean Mist Place	29.9
REPL	Approximate midpoint of eastern project property line	43.5
RSPL	Approximate midpoint of southern project property line	38.9
RWPL	Approximate midpoint of western project property line	45.4
RNPL	Approximate midpoint of northern project property line	43.8

The most restrictive City of Chula Vista noise level limit for multi-family uses is 50 dB(A) L_{eq}, and the most restrictive City of San Diego noise level limit for multi-family uses is 45 dB(A) L_{eq}. Predicted aggregate pocket park and ACC operation noise levels, even assuming all units are operating on a hot summer night, at receiver positions along the River Edge Terrace property line (R01 through R07) would be less than 45 dB(A) and thus be considered compliant with both the City of Chula Vista and the City of San Diego noise ordinance limits, resulting in a **less than significant** impact related to stationary operational noise for both the No Annexation and Annexation scenarios.

Furthermore, the predicted stationary-source operation noise level of 29.9 to 39.7 dB(A) at Receivers R01 through R07 are substantially lower than the predicted transportation noise level of 60 CNEL as shown in Figure 5; hence, noise from the project's residential air-conditioning units is not expected to cause more than an imperceptible dB increase to the outdoor ambient sound level at off-site receivers, which would be considered a **less than significant** impact for both the No Annexation and Annexation scenarios.

As previously discussed, noise impacts would be significant if construction or operational noise levels would exceed 60 dB(A) L_{eq}, or the existing ambient noise level if already above 60 dB(A) L_{eq} during the breeding season. As discussed in Section 5.1.2, least Bell's vireo have been observed on and adjacent to the project site. As shown in Table 12, operational noise levels at the property boundaries would range from 38.9 to 45.4 dB(A) L_{eq} at the property lines. These noise levels would be less at greater distances from the property line. Additionally, as shown in Figure 6, operational noise levels within the avoided on-site areas that would be placed in a covenant of easement as detailed in the Biological Resources Technical Report, are not projected to exceed 60 dB(A) L_{eq}. Therefore, operational noise levels would not exceed 60 dB(A) L_{eq} within the on-site drainage or adjacent habitat areas that may support least Bell's vireo. Impacts would be considered **less than significant**.

5.4 Land Use Noise Compatibility (Non-CEQA Analysis)

CEQA requires analysis of a project's effects on the environment and is not intended to evaluate the impacts of the environment on a project. Therefore, the analysis of potential adverse effects of

existing noise levels on the project is not a required analysis under CEQA. However, for the purposes of disclosure and land use consistency analysis, a noise compatibility analysis is provided of on-site noise levels with the City of Chula Vista and City of San Diego exterior and interior noise standards of 65 CNEL and 45 CNEL, respectively, as well as the Brown Field Municipal ALUCP residential noise exposure standard of 65 CNEL (SDCRAA 2010).

5.4.1 Aviation Noise Exposure

There are no private airstrips within the vicinity of the project site. The closest airport to the project site is the Brown Field Municipal Airport approximately 2.3 miles southeast of the site. Although the project site is located within "Review 2 Area" Airport Influence Area per Exhibit III-6 of the Brown Field Municipal ALUCP (SDCRAA 2010), the project site is located outside of the 55 CNEL future aviation noise contour and thus well below the 65 CNEL compatibility standard. Hence, future residences would not be exposed to significant aircraft noise levels under both the No Annexation and Annexation scenarios.

5.4.2 Traffic Noise Exposure

The SoundPLAN program was used to calculate on-site vehicle traffic noise levels. The SoundPLAN program uses the FHWA Traffic Noise Model algorithms and reference levels to calculate noise levels at selected receiver locations. 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 plans and drawings. Project site grading and area topography were taken into account.

The main source of traffic noise at the project site is from vehicle traffic on I-805 and Dennery Road. Future year 2062 with project traffic volumes for Dennery Road (see Table 10) were obtained from the Local Mobility Analysis prepared for the project (LOS Engineers 2022). Future year 2050 traffic volumes for I-805 were obtained from San Diego Association of Governments (SANDAG) Series 14 traffic projections (SANDAG 2022). I-805 has a future year 2050 traffic volume of 157,250 (73,700 ADT on the northbound segments and 81,500 ADT on the southbound segments). A vehicle classification mix of 93.0 percent automobiles, 3.7 percent medium trucks, and 3.3 percent heavy trucks was obtained from Caltrans truck counts (Caltrans 2020c).

Vehicle traffic noise level contours across the project site were calculated using SoundPLAN. These contours take into account shielding provided by proposed buildings, topography, and proposed grading. These noise contours are shown in Figure 7. As shown, first-floor noise levels would exceed 70 CNEL across the western portion project site closest to I-805. Noise levels would be less than 65 CNEL across the eastern half of the project site.

To determine exterior noise levels at the exterior use areas and the first-, second-, and third-floor building façades, noise levels were modeled at 75 specific receiver locations, as shown in Figure 7. Exterior noise levels were modeled at first- through third-floor elevations. The results are summarized in Table 13. SoundPLAN data are provided in Attachment 6.

Image Source: NearMap (flown January 2023)

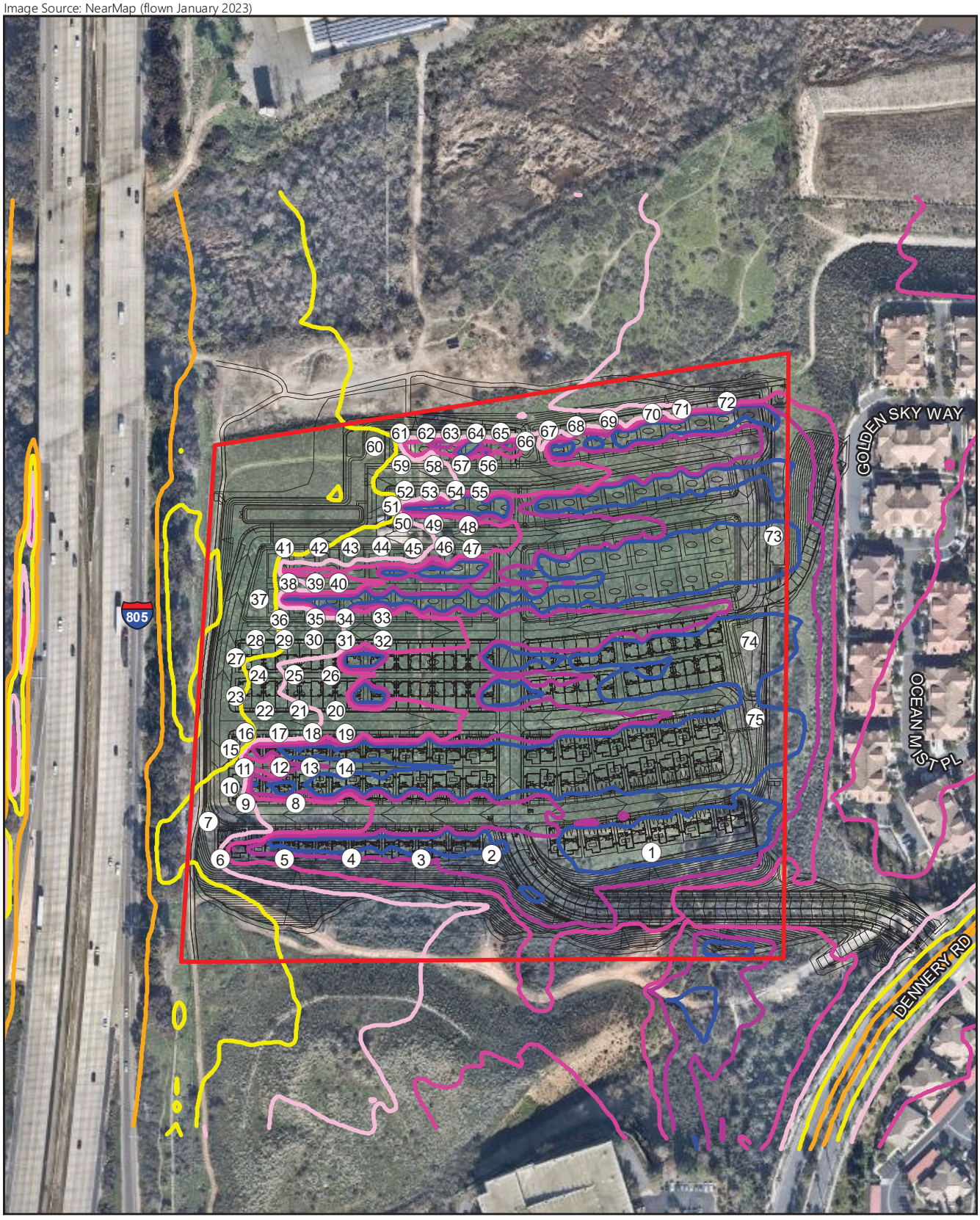

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FIGURE 7

Future Vehicle Traffic Noise Contours

Table 13 Future Vehicle Traffic Noise Levels				
		Exterior Noise Level (CNEL)		
Receiver	Location	First Floor	Second Floor	Third Floor
1	Duplex Backyard	47	51	54
2	Mini Park	51	54	58
3	Duplex Backyard	55	56	58
4	Duplex Backyard	59	58	60
5	Duplex Backyard	59	61	64
6	Duplex Backyard	63	67	70
7	Building Façade	67	69	72
8	Building Façade	63	64	66
9	Building Façade	64	67	69
10	Building Façade	68	71	73
11	Duplex Backyard	66	68	69
12	Duplex Backyard	58	59	62
13	Duplex Backyard	56	57	60
14	Duplex Backyard	54	56	59
15	Building Façade	70	73	74
16	Building Façade	69	71	72
17	Building Façade	67	68	69
18	Building Façade	65	65	66
19	Building Façade	63	64	65
20	Building Façade	64	65	66
21	Building Façade	65	66	67
22	Building Façade	67	68	69
23	Building Façade	72	74	75
24	Building Façade	67	68	69
25	Building Façade	64	64	65
26	Building Façade	61	62	63
27	Building Façade	73	74	75
28	Building Façade	70	71	72
29	Building Façade	67	69	70
30	Building Façade	65	66	67
31	Building Façade	63	64	65
32	Building Façade	61	62	63
33	Building Façade	62	62	64
34	Building Façade	63	64	66
35	Building Façade	64	65	67
36	Building Façade	68	69	71
37	Building Façade	72	73	74
38	Condo Backyard	66	67	69
39	Condo Backyard	62	63	65
40	Condo Backyard	61	62	64
41	Building Façade	70	70	71
42	Building Façade	70	70	70
43	Building Façade	70	70	70
44	Building Façade	69	69	69
45	Building Façade	67	67	67
46	Building Façade	63	64	64
47	Building Façade	60	61	62
48	Building Façade	60	61	63
49	Building Façade	63	63	64

Table 13 Future Vehicle Traffic Noise Levels				
		Exterior Noise Level (CNEL)		
Receiver	Location	First Floor	Second Floor	Third Floor
50	Building Façade	66	66	67
51	Building Façade	70	71	71
52	Condo Backyard	**69**	69	69
53	Condo Backyard	**66**	67	66
54	Condo Backyard	64	65	65
55	Condo Backyard	63	64	64
56	Building Façade	61	63	63
57	Building Façade	63	64	64
58	Building Façade	65	65	66
59	Building Façade	67	67	68
60	Mini Park	**71**	71	71
61	Condo Backyard	**69**	69	69
62	Condo Backyard	**69**	68	68
63	Condo Backyard	**68**	68	68
64	Condo Backyard	**68**	67	67
65	Condo Backyard	**67**	67	67
66	Mini Park	63	62	63
67	Condo Backyard	**67**	67	66
68	Condo Backyard	**66**	66	66
69	Condo Backyard	**66**	66	66
70	Condo Backyard	**66**	65	65
71	Condo Backyard	65	65	65
72	Condo Backyard	65	64	64
73	Eastern Property Line	48	49	52
74	Eastern Property Line	48	50	53
75	Eastern Property Line	44	46	51
Bold = Exceeds 65 CNEL at exterior use area				

5.4.2.1 Exterior Noise

No Annexation Scenario and Annexation Scenario 2b

Under the No Annexation Scenario and Annexation Scenario 2b, the project would be developed within the City of Chula Vista; therefore, the City of Chula Vista standards apply. The City of Chula Vista's exterior noise level standard for residential uses is 65 CNEL. This noise level is applicable at the exterior use areas. The interior noise level standard is 45 CNEL.

As shown in Table 13, exterior noise levels are projected to range from 44 to 75 CNEL. The exterior use areas include the mini parks (Receivers 2, 60, and 66) and the backyards of the duplexes (Receivers 1, 3 through 6, and 11 through 14) and detached condominiums (Receivers 38 through 40, 52 through 55, 61 through 65, and 67 through 72). As shown in Table 13, exterior noise levels are projected to exceed the residential standard of 65 CNEL at the mini park closest to I-805 (Receiver 60) and at the backyards closest to I-805 (Receivers 11, 38, 52, 53, 61 through 65, and 67 through 70). To reduce exterior noise levels at these locations, as a project design feature, six-foot barriers were modeled as shown in Figure 8. The resulting noise levels at the exterior use areas are summarized in Table 14.

Image Source: NearMap (flown January 2023)

Project Boundary
Receivers
6-foot Backyard Barrier
6-foot Park Barrier Site
Plan

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FIGURE 8
Noise Barriers

Table 14 Unmitigated and Mitigated Noise Levels at Exterior Use Areas			
		Exterior Noise Level (CNEL)	
Receiver		Without Barrier	With Barrier
1	Duplex Backyard	47	47
2	Mini Park	51	51
3	Duplex Backyard	55	55
4	Duplex Backyard	59	59
5	Duplex Backyard	59	59
6	Duplex Backyard	63	63
11	Duplex Backyard	**66**	64
12	Duplex Backyard	58	58
13	Duplex Backyard	56	56
14	Duplex Backyard	54	54
38	Condo Backyard	**66**	65
39	Condo Backyard	62	63
40	Condo Backyard	61	61
52	Condo Backyard	**69**	65
53	Condo Backyard	**66**	63
54	Condo Backyard	64	63
55	Condo Backyard	63	62
60	Mini Park	**71**	**67**
61	Condo Backyard	**69**	63
62	Condo Backyard	**69**	62
63	Condo Backyard	**68**	62
64	Condo Backyard	**68**	61
65	Condo Backyard	**67**	61
66	Mini Park	63	62
67	Condo Backyard	**67**	59
68	Condo Backyard	**66**	63
69	Condo Backyard	**66**	62
70	Condo Backyard	**66**	60
71	Condo Backyard	65	58
72	Condo Backyard	65	57
Bold = Exceeds 65 CNEL at exterior use area			

As shown in Table 14, without incorporation of the six-foot barriers shown in Figure 8, exterior noise levels at the proposed backyards would exceed 65 CNEL at Receivers 11, 38, 52, 53, 61 through 65, and 67 through 70. With the incorporation of noise barriers, noise levels at the mini park would be reduced, but not to 65 CNEL or less. However, as discussed in Section 2.3.1.2, the minimum amount of required exterior use space shall meet the 65 CNEL criteria, with any additional area being exempt from this requirement. As the mini park is in excess of minimum required exterior use space, it is not subject to the 65 CNEL exterior noise level. Construction of the six-foot backyard barriers identified in Figure 8 would be required to reduce exterior noise levels at the backyards to 65 CNEL or less. The following project design feature would be required as a condition of approval.

PDF-CV- NOS-1 **On-Site Noise Barriers.** Exterior noise levels at the backyards (Receivers 11, 38, 52, 53, 61 through 65, and 67 through 70) as identified on Figure 8 shall be reduced to the City of Chula Vista's threshold of 65 CNEL for residential uses. Noise reduction for exterior traffic noise impacts can be accomplished through

on-site noise barriers. Six-foot sound walls as identified on Figure 8 shall be constructed. The sound attenuation walls must be solid and free of cracks or holes. They can be constructed of masonry, wood, plastic, plexi-glass, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot.

With the incorporation of project design feature PDF-CV-NOS-1, exterior noise levels at all backyards would be reduced to the City of Chula Vista's compatibility standard 65 CNEL or below.

Annexation Scenario 2a

Under Annexation Scenario 2a, the project would be annexed to the City of San Diego. Multi-family residential uses are "compatible" with exterior noise levels up to 60 CNEL, and "conditionally compatible" with exterior noise levels up to 70 CNEL. In "conditionally compatible" areas, feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable, and building structures must attenuate exterior noise levels to an indoor noise level of 45 CNEL. Additionally, as stated in Section B of the City's Noise Element, although not generally considered compatible, the City conditionally allows multi-family and mixed-use residential uses up to 75 CNEL in areas affected by motor vehicle traffic noise with existing residential uses. Any future residential use exposed to noise levels up to 75 CNEL must include attenuation measures to ensure an interior noise level of 45 CNEL and be located in an area where a community plan allows multi-family and mixed-use residential uses. The project would also include pocket parks. Parks are "compatible" in areas up to 70 CNEL and "conditionally compatible" in areas up to 75 CNEL. Refer to Section 5.3.2.2. for Interior Noise Analysis.

As shown in Figure 7 and Table 13, exterior noise levels are projected to exceed 70 CNEL only at the receivers located closest to I-805 (Receivers 23, 27, 37, and 60). However, Receivers 23, 27, and 37 do not represent exterior use areas, and were modeled for the purposes of the interior noise analysis below. Noise levels at Receiver 60 (Mini Park) would exceed the parks compatibility level of 70 CNEL and noise levels at the residential exterior use areas would be exposed to the "conditionally compatible" range of 60 to 70 CNEL at (Receivers 11, 38, 52, 53, 61 through 65, and 67 through 70). The following project design feature would be required as a condition of approval.

PDF-SD-NOS-1 On-Site Noise Barriers. Exterior noise levels at the backyards and at the mini park (Receivers 11, 38, 52, 53, 60, 61 through 65, and 67 through 70) as identified on Figure 8 shall be reduced to the City of San Diego noise compatibility standards for residential and park uses (60 CNEL and 70 CNEL, respectively). Noise reduction for exterior traffic noise impacts can be accomplished through on-site noise barriers. Six-foot sound walls as identified on Figure 6 shall be constructed. The sound attenuation walls must be solid and free of cracks or holes. They can be constructed of masonry, wood, plastic, plexi-glass, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot.

As shown in Table 14, construction of the six-foot park barrier would reduce noise levels to 67 CNEL at the mini park (Receiver 60) which would result in noise compatible with the City's exterior noise level standard for parks. For the receivers located in areas exposed to the "conditionally compatible" range of 60 to 70 CNEL, construction of the six-foot backyard barriers shown in Figure 8 (PDF-SD-NOS-1) would reduce exterior noise levels to 65 CNEL or less. While the noise levels at residential receivers would be above the exterior noise exposure compatibility level of 60 CNEL identified in the City of San Diego General Plan Noise Element (City of San Diego 2015), interior residential noise levels would be controlled to the 45 CNEL interior noise limit as discussed below.

5.4.2.2 Interior Noise

No Annexation and Annexation Scenarios

Typically, with the windows open, building shells provide approximately 15 dB(A) (i.e., an average of 12–18 dB(A) [OPR 2017]) of exterior-to-interior noise reduction; while with windows closed residential construction generally provides a minimum of 25 dB(A) attenuation (FHWA 2011). Arithmetically adding this minimum 25 dB(A) closed-window exterior-to-interior sound insulation performance to the acoustical goal of 45 CNEL interior background sound level means up to 70 CNEL exterior noise level (i.e., 25+45=70) would not be anticipated to cause an exceedance to the inhabited indoor space. But Table 13 shows that the 1st floor through 3rd floor façade locations at the western portion of the project site are anticipated to be exposed to an exterior noise level greater than 70 CNEL, resulting in interior noise levels that would exceed the compatibility standard of 45 CNEL.

For these future occupied residences, where predicted exterior noise exposure would exceed 70 CNEL as shown in Table 13, an exterior-to-interior noise analysis was performed to assess compliance with the interior background sound level threshold of 45 CNEL. This analysis involves estimating the composite sound transmission class (STC) of sample project exterior wall assemblies, including fenestration, that are typical of modern energy-efficient residential building construction.

This exterior-to-interior noise assessment presumes the above exterior wall assembly features represent a minimum for purposes of sound insulation performance and are compatible with the Design Guidelines outlined in the Specific Plan. Results of this analysis for the three listed façade receptor positions (and their associated inhabited interior spaces, such as a bedroom or living room) appears in Table 15.

Table 15 Predicted Net Sound Transmission Class of Sample Occupied Room Façade				
Modeled Receiver Position	Occupied Room Façade	Predicted Net STC for Scenario		
		No Window	Closed Window	Window Open (1-foot tall)
6	Proposed SW Duplex – 2nd or 3rd Floor "Bedroom 4" (facing I-805)[1]	n/a	38	13
37	Proposed NW Single-Family – 2nd Floor "Primary Bedroom" (facing I-805)[2]	40	n/a	n/a
37	Proposed NW Single-Family – 2nd Floor "Bedroom 4" (facing I-805)[3]	n/a	39	14
STC = sound transmission class; I-805 = Interstate 805; n/a = not applicable [1]per Nakano Design Guidelines, room has 10.5-foot-long wall; analysis assumes 9 feet tall; window is 4' x 4' [2]per Nakano Design Guidelines, room has 16-foot-long wall; analysis assumes 9 feet tall; no window [3]per Nakano Design Guidelines, room has 13-foot-long wall; analysis assumes 9 feet tall; window is 4' x 4' n/a = not applicable				

Table 15 illustrates that partially open windows greatly compromise the sound insulation performance of the studied wall assemblies, consistent with aforementioned guidance. However, when such windows are closed, all studied sample facades are anticipated to exhibit a predicted STC rating of at least 38, and thus would provide sufficient exterior-to-interior sound insulation from outdoor traffic noise to yield interior background sound levels that are less than 45 CNEL and thus compliant with the City and state standards. Recall that none of the predicted exterior traffic noise levels at the studied receptor locations exceeded 75 CNEL; thus, the STC rating value (for closed windows and doors) subtracted from these exterior noise values must result in interior noise levels of less than 45 CNEL (e.g., 75 – 38 = 37 CNEL, which is less than 45).

To ensure that the interior noise level standard for residential uses of 45 CNEL can be met, a site-specific interior noise analysis would be required prior to issuance of a building permit to ensure that window, door, and wall components would achieve a necessary sound transmission class rating required to reduce interior noise levels to 45 CNEL or less. As a condition of approval, the following project design feature would be required:

PDF-NOS-2 Interior Noise An exterior-to-interior noise analysis shall be conducted by the project applicant for the proposed dwelling units expected to be exposed to noise levels in excess of 60 CNEL (e.g., units facing Interstate 805) prior to issuance of building permits. Installation of mechanical ventilation systems or air conditioning systems and sound-rated windows shall be required if the predicted interior background noise due to traffic noise intrusion through the building envelope assemblies exceeds the 45 CNEL interior standard. The acoustical analysis shall substantiate that the resulting interior background noise levels, with appropriate implementation of interior comfort systems and sound insulation, would be less than this noise standard.

Implementation of project design feature PDF-NOS-2 would ensure that the interior background noise level for inhabited rooms would meet the state and both City of San Diego and City of Chula Vista interior noise standard of 45 CNEL.

6.0 Mitigation Measures and Project Design Features

6.1 Mitigation Measures

Noise impacts associated with short-term construction noise to neighboring communities, vibration, off-site traffic noise, and stationary noise would be less than significant. No mitigation would be required. However, short-term construction noise would result in indirect impacts to least Bell's vireo. With implementation of mitigation measures CV-BIO-5 in the No Annexation Scenario and Annexation Scenario 2b and SD-BIO-5 in the Annexation Scenario 2a, construction noise impacts to sensitive wildlife species would be reduced to less than significant.

CV-BIO-5 **Least Bell's Vireo Avoidance.** For any work proposed between March 15 and September 15, a pre-construction survey for the least Bell's vireo shall be performed in order to reaffirm the presence and extent of occupied habitat. The pre-construction survey area for the species shall encompass all potentially suitable habitat within the project work zone, as well as a 300-foot survey buffer. The pre-construction survey shall be performed to the satisfaction of the Development Services Director (or their designee) by a qualified biologist familiar with the City of Chula Vista MSCP Subarea Plan. The results of the pre-construction survey must be submitted in a report to the Development Services Director (or their designee) for review and approval prior to the issuance of any land development permits and prior to initiating any construction activities. If least Bell's vireo is detected, a minimum 300-foot buffer delineated by orange biological fencing shall be established around the detected species to ensure that no work shall occur within occupied habitat from March 15 through September 15. On-site noise reduction techniques shall be implemented to ensure that construction noise levels not exceed 60 dB(A) L_{eq} at the location of any occupied sensitive habitat areas. The Development Services Director (or their designee) shall have the discretion to modify the buffer width depending on site-specific conditions. If the results of the pre-construction survey determine that the survey area is unoccupied, the work may commence at the discretion of the Development Services Director (or their designee) following the review and approval of the pre-construction report.

SD-BIO-5 **Direct Impact Avoidance and Noise Restrictions for Least Bell's Vireo**

Prior to the preconstruction meeting, the City Manager (or appointed designee) shall verify that the following project requirements regarding the least Bell's vireo are shown on the construction plans:

No clearing, grubbing, grading, or other construction activities shall occur between March 15 and September 15, the breeding season of the least Bell's vireo, until the following requirements have been met to the satisfaction of the City Manager:

A. A Qualified Biologist (possessing a valid Endangered Species Act Section 10(a)(1)(a) Recovery Permit) shall survey those wetland areas that would be subject to construction noise levels exceeding 60 decibels [dB(A)] hourly average for the presence of the least Bell's vireo. Surveys for this species shall be conducted pursuant to the protocol survey guidelines established by the USFWS within the breeding season prior to the commencement of construction. If the least Bell's vireo is present, then the following conditions must be met:
   I. Between March 15 and September 15, no clearing, grubbing, or grading of occupied least Bell's vireo habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and
   II. Between March 15 and September 15, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB(A) hourly average at the edge of occupied least Bell's vireo or habitat. An analysis showing that noise generated by construction activities would not exceed 60 dB(A) hourly average at the edge of occupied habitat must be completed a qualified acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the City Manager at least two weeks prior to the commencement of construction activities. Prior to the commencement of any of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; or
   III. At least two weeks prior to the commencement of construction activities, under the direction of a qualified acoustician, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities will not exceed 60 dB(A) hourly average at the edge of habitat occupied by the least Bell's vireo. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring* shall be conducted at the edge of the occupied habitat area to ensure that noise levels do not exceed 60 dB(A) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the qualified acoustician or biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (September 16).

*Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the City Manager, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.

B. If least Bell's vireo are not detected during the protocol survey, the Qualified Biologist shall submit substantial evidence to the City Manager and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 15 and September 15 as follows:
   I. If this evidence indicates the potential is high for least Bell's vireo to be present based on historical records or site conditions, then condition A.III shall be adhered to as specified above.
   II. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

6.2 Project Design Features

Due to the project site's location adjacent to I-805, future residents would be exposed to exterior and interior noise levels that exceed the City of Chula Vista and City of San Diego land use compatibility levels. With implementation of project design features PDF-CV-NOS-1, PDF-SD-NOS-1 and PDF-NOS-2, on-site exterior and interior traffic noise levels would be reduced to within the compatibility standards. The following project design features would be required as a condition of approval for each scenario as specified.

The following project design feature applies to the No Annexation Scenario and Annexation Scenario 2b:

PDF-CV-NOS-1 **On-Site Noise Barriers.** Exterior noise levels at the backyards (Receivers 11, 38, 52, 53, 61 through 65, and 67 through 70) as identified on Figure 8 shall be reduced to the City of Chula Vista's threshold of 65 CNEL for residential uses. Noise reduction for exterior traffic noise impacts can be accomplished through on-site noise barriers. Six-foot sound walls as identified on Figure 8 shall be constructed. The sound attenuation walls must be solid and free of cracks or holes. They can be constructed of masonry, wood, plastic, plexi-glass, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot.

The following project design feature applies to Annexation Scenario 2a:

PDF-SD-NOS-1 **On-Site Noise Barriers.** Exterior noise levels at the backyards (Receivers 11, 38, 52, 53, 61 through 65, and 67 through 70) as identified on Figure 8 shall be reduced to the City of San Diego noise compatibility standards for residential and park uses (60 CNEL and 70 CNEL, respectively). Noise reduction for exterior traffic noise impacts can be accomplished through on-site noise barriers. Six-foot sound walls as identified on Figure 8 shall be constructed. The sound attenuation walls must be solid and free of cracks or holes. They can be constructed of masonry, wood, plastic, plexi-glass, fiberglass, steel, or a combination of those materials, as long as there are no cracks or gaps, through or below the wall. Any seams or cracks must be filled

or caulked. If wood is used, it can be tongue and groove and must be at least one-inch total thickness or have a density of at least 3.5 pounds per square foot.

The following project design feature applies to all scenarios:

PDF-NOS-2 **Interior Noise.** An exterior-to-interior noise analysis shall be conducted by the project applicant for the proposed dwelling units facing the adjoining major highway (e.g., I-805) prior to issuance of building permits. Installation of mechanical ventilation systems or air conditioning systems and sound-rated windows shall be required if the predicted interior background noise due to traffic noise intrusion through the building envelope assemblies exceeds the 45 CNEL interior standard. The acoustical analysis shall substantiate that the resulting interior background noise levels, with appropriate implementation of interior comfort systems and sound insulation, would be less than this noise standard.

In addition, for all proposed dwelling units in project areas where exterior noise levels (largely attributed to I-805 acoustical contribution) are expected to exceed 60 CNEL, mechanical ventilation and/or air conditioning systems shall be installed so as to allow closed windows and thus ensure attainment of the 45 CNEL interior background sound level due to exterior-to-interior noise intrusion.

7.0 References Cited

California, State of
2017 2017 State of California General Plan Guidelines.

California Department of Transportation (Caltrans)
2013 Technical Noise Supplement to the Traffic Noise Analysis Protocol. September. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf

2020a Transportation and Construction Vibration Guidance Manual. Division of Environmental Analysis, Environmental Engineering, Hazardous Waste, Air, Noise, Paleontology Office. Sacramento, California. April. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf.

2020b Traffic Census Program. Traffic Volumes: Annual Average Daily Traffic. Year 2020.

2020c Traffic Census Program. Truck Traffic: Annual Average Daily Truck Traffic. Year 2020.

Carrier
2012 CA16NA 018-061 Single-Stage Air Conditioner w/ Puron Refrigerant. Catalog No: CA16NA-06PD. https://resource.carrierenterprise.com/is/content/Watscocom/carrier_ca16na03600g_article_1404816 230548_en_ss?_ga=2.123164302.489492439.1570570581-792571132.1570570581

Chula Vista, City of
2003 MSCP Subarea Plan. https://www.chulavistaca.gov/home/showdocument?id=7106

2005 City of Chula Vista General Plan Environmental Element.

2013 City of Chula Vista Sensitive Areas (map). July 24th. https://www.chulavistaca.gov/home/showpublisheddocument/12728/636064180193700000

2020 Chula Vista Municipal Code. Updated February 25, 2020. https://chulavista.municipal.codes/CVMC.

Federal Highway Administration (FHWA)
2008 Roadway Construction Noise Model (RCNM), Software Version 1.1. U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center, Environmental Measurement and Modeling Division. Washington, D.C. December 8, 2008.

2011 Highway Traffic Noise: Analysis and Abatement Guidance. FHWA-HEP-10-025. December 2011. https://www.fhwa.dot.gov/environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/revguidance.pdf.

Federal Transit Administration (FTA)
2018 Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 123. September.

International Construction Code
2019 California Building Code. Section 1206 – Sound Transmission. https://codes.iccsafe.org/content/CABCV12019JUL21S/cover.

LOS Engineering, Inc.
2023 Local Mobility Analysis Report. June 30.

Navcon Engineering, Inc.
2018 SoundPLAN Essential version 4.1.

RECON Environmental, Inc. (RECON)
2023 Biological Resources Technical Report for the Nakano Project Chula Vista, California. May.

San Diego, City of
1997 Multiple Species Conservation Program, City of San Diego MSCP Subarea Plan. March.

2010 City of San Diego Municipal Code, Article 9.5: Noise Abatement and Control.

2015 City of San Diego General Plan Noise Element.

2018 San Diego Municipal Code Land Development Code, Biology Guidelines. Amended February 1, 2018.

2021 A Resolution of the Council of the City of San Diego Adopting a New Citywide Park Development Impact Fee. https://docs.sandiego.gov/council_reso_ordinance/rao2021/R-313688.pdf

2022 City of San Diego CEQA Significance Determination Thresholds. September.

San Diego Association of Governments (SANDAG)
2022 Series 14: Regional Growth Forecast. https://tfic.sandag.org/

San Diego County Regional Airport Authority (SDCRAA)
2010 Brown Field Municipal Airport Land Use Compatibility Plan. Amended December 20.

U.S. Department of Transportation
2006 FHWA Roadway Construction Noise Model: User's Guide. Final Report. FHWA-HEP-06-015. DOT-VNTSC-FHWA-06-02. Cambridge, Massachusetts: DOT, Research and Innovative Technology Administration. August 2006.

ATTACHMENTS

ATTACHMENT 1

Baseline Noise Measurement Field Data

FORMS DUDEK FIELD DATA REPORT

Field Noise Measurement Data

Record: 1279	
Project Name	*Nakano*
Observer(s)	*Connor Burke*
Date	*2020-06-04*

Meteorological Conditions	
Temp (F)	*68*
Humidity % (R.H.)	*77*
Wind	*Light*
Wind Speed (MPH)	*6*
Wind Direction	*East*
Sky	*Overcast*

Instrument and Calibrator Information	
Instrument Name List	*(ENC) Rion NL-52*
Instrument Name	*(ENC) Rion NL-52*
Instrument Name Lookup Key	*(ENC) Rion NL-52*
Manufacturer	*Rion*
Model	*NL-52*
Serial Number	*553896*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name	*(ENC) LD CAL150*
Calibrator Name Lookup Key	*(ENC) LD CAL150*
Calibrator Manufacturer	*Larson Davis*
Calibrator Model	*LD CAL150*
Calibrator Serial #	*5152*
Pre-Test (dBA SPL)	*94*
Post-Test (dBA SPL)	*94*
Windscreen	*Yes*
Weighting?	*A-WTD*
Slow/Fast?	*Slow*
ANSI?	*Yes*

Monitoring	
Record #	*1*
Site ID	*ST3*
Site Location Lat/Long	*32.589889, -117.031977*
Begin (Time)	*10:30:00*
End (Time)	*10:40:00*
Leq	*62.8*
Lmax	*64.5*
Lmin	*60*
Other Lx?	*L90, L50, L10*
L90	*61.7*
L50	*62.8*
L10	*63.9*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Distant Traffic*
Other Noise Sources Additional Description	*805 traffic dominant*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	
Comments / Description	*Facing west*

Monitoring

Record #	*2*
Site ID	*ST1*
Site Location Lat/Long	*32.587685, -117.031401*
Begin (Time)	*10:50:00*
End (Time)	*11:00:00*
Leq	*62*
Lmax	*75.1*
Lmin	*54.9*
Other Lx?	*L90, L50, L10*
L90	*56.6*
L50	*58.8*
L10	*65.10*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Aircraft, Distant Traffic*
Other Noise Sources Additional Description	*805 traffic dominant*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	
	

Monitoring

Record #	*3*
Site ID	*ST4*
Site Location Lat/Long	*32.588248, -117.035646*
Begin (Time)	*11:20:00*
End (Time)	*11:30:00*
Leq	*65.6*
Lmax	*74.6*
Lmin	*61.2*
Other Lx?	*L90, L50, L10*
L90	*62.6*
L50	*64.8*
L10	*67.1*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	
Other Noise Sources Additional Description	*805 traffic dominant*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	

Monitoring

Record #	*4*
Site ID	*ST2*
Site Location Lat/Long	*32.586611, -117.033279*
Begin (Time)	*11:45:00*
End (Time)	*11:55:00*
Leq	*62.1*
Lmax	*66.3*
Lmin	*55*
Other Lx?	*L90, L50, L10*
L90	*58.7*
L50	*61.8*
L10	*64.4*
Other Lx (Specify Metric)	*L*
Primary Noise Source	*Traffic*
Other Noise Sources (Background)	*Birds, Distant Traffic*
Other Noise Sources Additional Description	*805 traffic dominant*
Is the same instrument and calibrator being used as previously noted?	*Yes*
Are the meteorological conditions the same as previously noted?	*Yes*

Description / Photos

Site Photos

Photo	
	
Comments / Description	*Facing north*

ATTACHMENT 2

Construction Noise Modeling Input and Output

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at occupied building, per FTA Guidance = 80
allowable hours over which Leq is to be averaged: 8 per FTA Guidance = 8

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	1	40	82		700	0.0		53.8	8	480	50	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Front End Loader	1	40	79		700	0.0		50.8	8	480	47	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
									Total for Site Preparation Phase:			**51.6**												
Grading	Excavator	1	40	81		700	0.0		52.8	8	480	49	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Grader	1	40	85		700	0.0		56.8	8	480	53	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Dozer	1	40	82		700	0.0		53.8	8	480	50	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Scraper	1	40	84		700	0.0		55.8	8	480	52	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Backhoe	1	40	78		700	0.0		49.8	8	480	46	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
									Total for Grading Phase:			**57.5**												
Building Construction	Crane	1	16	81		700	0.0		52.8	7	420	44	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Gradall	1	40	83		700	0.0		54.8	8	480	51	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Generator	1	50	72		700	0.0		43.8	8	480	41	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Front End Loader	1	40	79		700	0.0		50.8	7	420	46	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Welder / Torch	1	40	73		700	0.0		44.8	8	480	41	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
									Total for Building Construction Phase:			**53.3**												
Paving	Paver	1	50	77		700	0.0		48.8	8	480	46	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Dump Truck	1	40	76		700	0.0		47.8	8	480	44	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
	Roller	1	20	80		700	0.0		51.8	8	480	45	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
									Total for Paving Phase:			**49.7**												
Architectural Coating	Compressor (air)	1	40	78		700	0.0		49.8	6	360	45	5	5	0	350	350	700	350.0	350.0	700.0	0.00	0.1	0.0
									Total for Architectural Coating Phase:			**44.6**												

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at occupied building, per FTA Guidance = 80
allowable hours over which Leq is to be averaged: 8 per FTA Guidance = 8

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	1	40	82		700	0.0		53.8	8	480	50	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Front End Loader	1	40	79		700	0.0		50.8	8	480	47	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
									Total for Site Preparation Phase:			**51.6**												
Grading	Excavator	1	40	81		700	0.0		52.8	8	480	49	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Grader	1	40	85		700	0.0		56.8	8	480	53	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Dozer	1	40	82		700	0.0		53.8	8	480	50	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Scraper	1	40	84		700	0.0		55.8	8	480	52	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Backhoe	1	40	78		700	0.0		49.8	8	480	46	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
									Total for Grading Phase:			**57.5**												
Building Construction	Crane	1	16	81		700	0.0		52.8	7	420	44	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Gradall	1	40	83		700	0.0		54.8	8	480	51	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Generator	1	50	72		700	0.0		43.8	8	480	41	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Front End Loader	1	40	79		700	0.0		50.8	7	420	46	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Welder / Torch	1	40	73		700	0.0		44.8	8	480	41	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
									Total for Building Construction Phase:			**53.3**												
Paving	Paver	1	50	77		700	0.0		48.8	8	480	46	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Dump Truck	1	40	76		700	0.0		47.8	8	480	44	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
	Roller	1	20	80		700	0.0		51.8	8	480	45	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
									Total for Paving Phase:			**49.7**												
Architectural Coating	Compressor (air)	1	40	78		700	0.0		49.8	6	360	45	5	13	0	350	350	700	350.0	350.2	700.0	0.00	0.1	0.0
									Total for Architectural Coating Phase:			**44.6**												

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at occupied building, per FTA Guidance = 80
allowable hours over which Leq is to be averaged: 8 per FTA Guidance = 8

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	3	40	82		1230	0.0		48.3	8	480	49	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Front End Loader	4	40	79		1230	0.0		45.3	8	480	47	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
									Total for Site Preparation Phase:			**51.3**												
Grading	Excavator	2	40	81		1230	0.0		47.3	8	480	46	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Grader	1	40	85		1230	0.0		51.3	8	480	47	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Dozer	1	40	82		1230	0.0		48.3	8	480	44	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Scraper	2	40	84		1230	0.0		50.3	8	480	49	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Backhoe	2	40	78		1230	0.0		44.3	8	480	43	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
									Total for Grading Phase:			**53.6**												
Building Construction	Crane	1	16	81		1230	0.0		47.3	8	480	39	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Gradall	3	40	83		1230	0.0		49.3	8	480	50	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Generator	1	50	72		1230	0.0		38.3	8	480	35	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Front End Loader	3	40	79		1230	0.0		45.3	8	480	46	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Welder / Torch	1	40	73		1230	0.0		39.3	8	480	35	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
									Total for Building Construction Phase:			**52.0**												
Paving	Paver	2	50	77		1230	0.0		43.3	8	480	43	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Dump Truck	2	40	76		1230	0.0		42.3	8	480	41	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
	Roller	2	20	80		1230	0.0		46.3	8	480	42	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
									Total for Paving Phase:			**47.2**												
Architectural Coating	Compressor (air)	1	40	78		1230	0.0		44.3	8	480	40	5	5	0	615	615	1230	615.0	615.0	1230.0	0.00	0.1	0.0
									Total for Architectural Coating Phase:			**40.3**												

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase at occupied building, per FTA Guidance = 80
allowable hours over which Leq is to be averaged: 8 per FTA Guidance = 8

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	3	40	82		1230	0.0		48.3	8	480	49	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Front End Loader	4	40	79		1230	0.0		45.3	8	480	47	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
									Total for Site Preparation Phase:			**51.3**												
Grading	Excavator	2	40	81		1230	0.0		47.3	8	480	46	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Grader	1	40	85		1230	0.0		51.3	8	480	47	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Dozer	1	40	82		1230	0.0		48.3	8	480	44	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Scraper	2	40	84		1230	0.0		50.3	8	480	49	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Backhoe	2	40	78		1230	0.0		44.3	8	480	43	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
									Total for Grading Phase:			**53.6**												
Building Construction	Crane	1	16	81		1230	0.0		47.3	8	480	39	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Gradall	3	40	83		1230	0.0		49.3	8	480	50	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Generator	1	50	72		1230	0.0		38.3	8	480	35	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Front End Loader	3	40	79		1230	0.0		45.3	8	480	46	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Welder / Torch	1	40	73		1230	0.0		39.3	8	480	35	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
									Total for Building Construction Phase:			**52.0**												
Paving	Paver	2	50	77		1230	0.0		43.3	8	480	43	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Dump Truck	2	40	76		1230	0.0		42.3	8	480	41	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
	Roller	2	20	80		1230	0.0		46.3	8	480	42	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
									Total for Paving Phase:			**47.2**												
Architectural Coating	Compressor (air)	1	40	78		1230	0.0		44.3	8	480	40	5	13	0	615	615	1230	615.0	615.1	1230.0	0.00	0.1	0.0
									Total for Architectural Coating Phase:			**40.3**												

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allowable hours over which Leq is to be averaged: 12 per City of San Diego (59.5.0404(b)) = 12

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	1	40	82		180	10.2		56.9	8	480	51	110	155	150	128	52	180	134.1	52.2	185.5	0.80	12.1	10.2
	Front End Loader	1	40	79		180	10.2		53.9	8	480	48	110	155	150	128	52	180	134.1	52.2	185.5	0.80	12.1	10.2
									Total for Site Preparation Phase:			**52.9**												
Grading	Excavator	1	40	81		60	12.0		67.3	8	480	62	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
	Grader	1	40	85		60	12.0		71.3	8	480	66	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
	Dozer	1	40	82		60	12.0		68.3	8	480	63	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
	Scraper	1	40	84		60	12.0		70.3	8	480	65	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
	Backhoe	1	40	78		60	12.0		64.3	8	480	59	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
									Total for Grading Phase:			**70.2**												
Building Construction	Crane	1	16	81		210	7.6		57.0	7	420	47	110	155	150	158	52	210	163.0	52.2	214.8	0.46	9.6	7.6
	Gradall	1	40	83		210	7.6		59.0	8	480	53	110	155	150	158	52	210	163.0	52.2	214.8	0.46	9.6	7.6
	Generator	1	50	72		210	7.6		48.0	8	480	43	110	155	150	158	52	210	163.0	52.2	214.8	0.46	9.6	7.6
	Front End Loader	1	40	79		210	7.6		55.0	7	420	49	110	155	150	158	52	210	163.0	52.2	214.8	0.46	9.6	7.6
	Welder / Torch	1	40	73		210	7.6		49.0	8	480	43	110	155	150	158	52	210	163.0	52.2	214.8	0.46	9.6	7.6
									Total for Building Construction Phase:			**55.7**												
Paving	Paver	1	50	77		60	12.0		63.3	8	480	59	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
	Dump Truck	1	40	76		60	12.0		62.3	8	480	57	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
	Roller	1	20	80		60	12.0		66.3	8	480	58	145	155	150	8	52	60	9.4	52.2	60.8	0.85	12.3	12.0
									Total for Paving Phase:			**62.4**												
Architectural Coating	Compressor (air)	1	40	78		210	7.6		54.0	6	360	47	110	155	150	158	52	210	163.0	52.2	214.8	0.46	9.6	7.6
									Total for Architectural Coating Phase:			**47.0**												

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allowable hours over which Leq is to be averaged: 12 per City of San Diego (59.5.0404(b)) = 12

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	1	40	82		180	0.0		67.1	8	480	61	110	164	150	128	52	180	134.1	53.9	187.9	0.03	1.6	0.0
	Front End Loader	1	40	79		180	0.0		64.1	8	480	58	110	164	150	128	52	180	134.1	53.9	187.9	0.03	1.6	0.0
									Total for Site Preparation Phase:			**63.2**												
Grading	Excavator	1	40	81		60	8.3		71.1	8	480	65	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
	Grader	1	40	85		60	8.3		75.1	8	480	69	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
	Dozer	1	40	82		60	8.3		72.1	8	480	66	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
	Scraper	1	40	84		60	8.3		74.1	8	480	68	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
	Backhoe	1	40	78		60	8.3		68.1	8	480	62	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
									Total for Grading Phase:			**74.0**												
Building Construction	Crane	1	16	81		210	0.0		64.6	7	420	54	110	164	150	158	52	210	163.0	53.9	216.8	0.00	0.1	0.0
	Gradall	1	40	83		210	0.0		66.6	8	480	61	110	164	150	158	52	210	163.0	53.9	216.8	0.00	0.1	0.0
	Generator	1	50	72		210	0.0		55.6	8	480	51	110	164	150	158	52	210	163.0	53.9	216.8	0.00	0.1	0.0
	Front End Loader	1	40	79		210	0.0		62.6	7	420	56	110	164	150	158	52	210	163.0	53.9	216.8	0.00	0.1	0.0
	Welder / Torch	1	40	73		210	0.0		56.6	8	480	51	110	164	150	158	52	210	163.0	53.9	216.8	0.00	0.1	0.0
									Total for Building Construction Phase:			**63.3**												
Paving	Paver	1	50	77		60	8.3		67.1	8	480	62	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
	Dump Truck	1	40	76		60	8.3		66.1	8	480	60	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
	Roller	1	20	80		60	8.3		70.1	8	480	61	145	164	150	8	52	60	9.4	53.9	62.9	0.35	8.5	8.3
									Total for Paving Phase:			**66.2**												
Architectural Coating	Compressor (air)	1	40	78		210	0.0		61.6	6	360	55	110	164	150	158	52	210	163.0	53.9	216.8	0.00	0.1	0.0
									Total for Architectural Coating Phase:			**54.6**												

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allowable hours over which Leq is to be averaged: 12 per City of San Diego (59.5.0404(b)) = 12

Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	3	40	82		743	0.0		53.3	8	480	52	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
	Front End Loader	4	40	79		743	0.0		50.3	8	480	51	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
									Total for Site Preparation Phase:			**54.5**												
Grading	Excavator	2	40	81		743	0.0		52.3	8	480	50	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
	Grader	1	40	85		743	0.0		56.3	8	480	51	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
	Dozer	1	40	82		743	0.0		53.3	8	480	48	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
	Scraper	2	40	84		743	0.0		55.3	8	480	53	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
	Backhoe	2	40	78		743	0.0		49.3	8	480	47	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
									Total for Grading Phase:			**56.8**												
Building Construction	Crane	1	16	81		743	0.0		52.3	8	480	43	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
	Gradall	3	40	83		743	0.0		54.3	8	480	53	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
	Generator	1	50	72		743	0.0		43.3	8	480	38	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
	Front End Loader	3	40	79		743	0.0		50.3	8	480	49	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
	Welder / Torch	1	40	73		743	0.0		44.3	8	480	39	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
									Total for Building Construction Phase:			**55.2**												
Paving	Paver	2	50	77		743	0.0		48.3	8	480	47	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
	Dump Truck	2	40	76		743	0.0		47.3	8	480	45	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
	Roller	2	20	80		743	0.0		51.3	8	480	46	145	155	150	691	52	743	691.0	52.2	743.1	0.00	0.1	0.0
									Total for Paving Phase:			**50.4**												
Architectural Coating	Compressor (air)	1	40	78		743	0.0		49.3	8	480	44	110	155	150	691	52	743	692.2	52.2	744.4	0.00	0.1	0.0
									Total for Architectural Coating Phase:			**43.5**												

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Construction Activity	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	*Temporary Barrier Insertion Loss (dB)*	*Additional Noise Reduction*	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 12-hour Leq	Source Elevation (ft)	Receiver Elevation (ft)	Barrier Height (ft)	Source to Barr. ("A") Horiz. (ft)	Rcvr. to Barr. ("B") Horiz. (ft)	Source to Rcvr. ("C") Horiz. (ft)	"A" (ft)	"B" (ft)	"C" (ft)	Path Length Diff. "P" (ft)	Abarr (dB)	ILbarr (dB)
Site Preparation	Dozer	3	40	82		743	0.0		53.3	8	480	52	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
	Front End Loader	4	40	79		743	0.0		50.3	8	480	51	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
									Total for Site Preparation Phase:			**54.5**												
Grading	Excavator	2	40	81		743	0.0		52.3	8	480	50	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
	Grader	1	40	85		743	0.0		56.3	8	480	51	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
	Dozer	1	40	82		743	0.0		53.3	8	480	48	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
	Scraper	2	40	84		743	0.0		55.3	8	480	53	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
	Backhoe	2	40	78		743	0.0		49.3	8	480	47	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
									Total for Grading Phase:			**56.8**												
Building Construction	Crane	1	16	81		743	0.0		52.3	8	480	43	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
	Gradall	3	40	83		743	0.0		54.3	8	480	53	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
	Generator	1	50	72		743	0.0		43.3	8	480	38	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
	Front End Loader	3	40	79		743	0.0		50.3	8	480	49	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
	Welder / Torch	1	40	73		743	0.0		44.3	8	480	39	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
									Total for Building Construction Phase:			**55.2**												
Paving	Paver	2	50	77		743	0.0		48.3	8	480	47	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
	Dump Truck	2	40	76		743	0.0		47.3	8	480	45	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
	Roller	2	20	80		743	0.0		51.3	8	480	46	145	164	150	691	52	743	691.0	53.9	743.2	0.00	0.1	0.0
									Total for Paving Phase:			**50.4**												
Architectural Coating	Compressor (air)	1	40	78		743	0.0		49.3	8	480	44	110	164	150	691	52	743	692.2	53.9	745.0	0.00	0.1	0.0
									Total for Architectural Coating Phase:			**43.5**												

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Lesser of or available Lmax	Spec. 721 Lmax	Measured L_{max} @50ft (dBA, slow)
All Other Equipment > 5 HP	No	50	85	85	-- N/A --
Auger Drill Rig	No	20	84	85	84
Backhoe	No	40	78	80	78
Bar Bender	No	20	80	80	-- N/A --
Blasting	Yes	-- N/A --	94	94	-- N/A --
Boring Jack Power Unit	No	50	80	80	83
Chain Saw	No	20	84	85	84
Clam Shovel (dropping)	Yes	20	87	93	87
Compactor (ground)	No	20	80	80	83
Compressor (air)	No	40	78	80	78
Concrete Batch Plant	No	15	83	83	-- N/A --
Concrete Mixer Truck	No	40	79	85	79
Concrete Pump Truck	No	20	81	82	81
Concrete Saw	No	20	90	90	90
Crane	No	16	81	85	81
Dozer	No	40	82	85	82
Drill Rig Truck	No	20	79	84	79
Drum Mixer	No	50	80	80	80
Dump Truck	No	40	76	84	76
Excavator	No	40	81	85	81
Flat Bed Truck	No	40	74	84	74
Front End Loader	No	40	79	80	79
Generator	No	50	72	72	81
Generator (<25KVA, VMS signs)	No	50	70	70	73
Gradall	No	40	83	85	83
Grader	No	40	85	85	-- N/A --
Grapple (on backhoe)	No	40	85	85	87
Horizontal Boring Hydr. Jack	No	25	80	80	82
Hydra Break Ram	Yes	10	90	90	-- N/A --
Impact Pile Driver	Yes	20	95	95	101
Jackhammer	Yes	20	85	85	89
Man Lift	No	20	75	85	75
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	90
Pavement Scrafier	No	20	85	85	90
Paver	No	50	77	85	77
Pickup Truck	No	40	55	55	75
Pneumatic Tools	No	50	85	85	85
Pumps	No	50	77	77	81
Refrigerator Unit	No	100	73	82	73
Rivit Buster/chipping gun	Yes	20	79	85	79
Rock Drill	No	20	81	85	81
Roller	No	20	80	85	80
Sand Blasting (Single Nozzle)	No	20	85	85	96
Scraper	No	40	84	85	84
Shears (on backhoe)	No	40	85	85	96
Slurry Plant	No	100	78	78	78
Slurry Trenching Machine	No	50	80	82	80
Soil Mix Drill Rig	No	50	80	80	-- N/A --
Tractor	No	40	84	84	-- N/A --
Vacuum Excavator (Vac-truck)	No	40	85	85	85
Vacuum Street Sweeper	No	10	80	80	82
Ventilation Fan	No	100	79	85	79
Vibrating Hopper	No	50	85	85	87
Vibratory Concrete Mixer	No	20	80	80	80
Vibratory Pile Driver	No	20	95	95	101
Warning Horn	No	5	83	85	83
Welder / Torch	No	40	73	73	74

ATTACHMENT 3

SoundPLAN Data – Existing Vehicle Traffic Noise and Construction Noise at Sensitive Habitat

Station	ADT	Traffic values Vehicles type	Vehicle name	day	evening	night	Speed	Control device	Constr. Speed	Affect. veh.	Road surface	Gradient Min / Max
km	Veh/24h			Veh/h	Veh/h	Veh/h	km/h		km/h	%		%
I-805 Northbound		Traffic direction:	In entry direction									
0+000	75003	Total	-	4813	2500	1083	-	none	-	-	Average (of DGAC and PCC)	-2.08
0+000	75003	Automobiles	-	4476	2325	1007	105	none	-	-	Average (of DGAC and PCC)	-2.08
0+000	75003	Medium trucks	-	178	93	40	89	none	-	-	Average (of DGAC and PCC)	-2.08
0+000	75003	Heavy trucks	-	159	83	36	89	none	-	-	Average (of DGAC and PCC)	-2.08
0+000	75003	Buses	-	-	-		105	none	-	-	Average (of DGAC and PCC)	-2.08
0+000	75003	Motorcycles	-	-	-		105	none	-	-	Average (of DGAC and PCC)	-2.08
0+000	75003	Auxiliary vehicle	-	-	-		-	none	-	-	Average (of DGAC and PCC)	-2.08
0+912	-	-	-	-	-							
I-805 Southbound		Traffic direction:	In entry direction									
0+000	75003	Total	-	4813	2500	1083	-	none	-	-	Average (of DGAC and PCC)	-0.484848485
0+000	75003	Automobiles	-	4476	2325	1007	105	none	-	-	Average (of DGAC and PCC)	-0.484848485
0+000	75003	Medium trucks	-	178	93	40	89	none	-	-	Average (of DGAC and PCC)	-0.484848485
0+000	75003	Heavy trucks	-	159	83	36	89	none	-	-	Average (of DGAC and PCC)	-0.484848485
0+000	75003	Buses	-	-	-		105	none	-	-	Average (of DGAC and PCC)	-0.484848485
0+000	75003	Motorcycles	-	-	-		105	none	-	-	Average (of DGAC and PCC)	-0.484848485
0+000	75003	Auxiliary vehicle	-	-	-		-	none	-	-	Average (of DGAC and PCC)	-0.484848485
0+906	-	-	-	-	-							
Dennery Road		Traffic direction:	In entry direction									
0+000	13866	Total	-	890	462	200	-	none	-	-	Average (of DGAC and PCC)	102
0+000	13866	Automobiles	-	828	430	196	56	none	-	-	Average (of DGAC and PCC)	102
0+000	13866	Medium trucks	-	33	17	2	56	none	-	-	Average (of DGAC and PCC)	102
0+000	13866	Heavy trucks	-	29	15	2	56	none	-	-	Average (of DGAC and PCC)	102
0+000	13866	Buses	-	-	-		56	none	-	-	Average (of DGAC and PCC)	102
0+000	13866	Motorcycles	-	-	-		56	none	-	-	Average (of DGAC and PCC)	102
0+000	13866	Auxiliary vehicle	-	-	-		-	none	-	-	Average (of DGAC and PCC)	102
0+442	8334	Total	-	535	278	120	-	none	-	-	Average (of DGAC and PCC)	-1
0+442	8334	Automobiles	-	498	259	117	56	none	-	-	Average (of DGAC and PCC)	-1
0+442	8334	Medium trucks	-	20	10	1	56	none	-	-	Average (of DGAC and PCC)	-1
0+442	8334	Heavy trucks	-	18	9	1	56	none	-	-	Average (of DGAC and PCC)	-1
0+442	8334	Buses	-	-	-		56	none	-	-	Average (of DGAC and PCC)	-1
0+442	8334	Motorcycles	-	-	-		56	none	-	-	Average (of DGAC and PCC)	-1
0+442	8334	Auxiliary vehicle	-	-	-		-	none	-	-	Average (of DGAC and PCC)	-1
0+764	-	-	-	-	-							

SoundPLAN Data - Existing Vehicle Traffic and Construction at Sensitive Habitat

		Noise Level			Corrections		
Source name	Reference	Day	Evening	Night	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Construction	Lw/unit	117.3	-	-	-	-	-

3396.1 Nakano

SoundPLAN Data - Existing Vehicle Traffic and Construction at Sensitive Habitat

	Coordinates			Existing Traffic Noise Level				Construction Noise Level
No.	X	Y	Height	Day	Evening	Night	CNEL	
	(meters)		(meters)	dB(A)				dB(A)
1	496664.13	3605899.48	26.71	70.5	67.6	64	72.4	57.4
2	496945.74	3605949.98	32.76	60.2	57.4	53.7	62.1	57.5
3	496554.05	3605847.58	45.47	76.9	74.1	70.4	78.8	56.7

SoundPLAN Data - Existing Vehicle Traffic and Construction at Sensitive Habitat

Source name						Noise Level Day	Evening	Night	CNEL
						dB(A)			
1	1.Fl	70.7	67.6	64.0	72.4				
Construction						57.4	-	-	54.4
Dennery Road						29.5	26.6	21.1	30.4
I-805 Northbound						68.7	65.9	62.3	70.6
I-805 Southbound						65.7	62.8	59.2	67.6
2	1.Fl	62.1	57.4	53.7	62.8				
Construction						57.5	-	-	54.5
Dennery Road						38.9	36.0	30.8	40.0
I-805 Northbound						57.5	54.7	51.0	59.4
I-805 Southbound						56.8	53.9	50.3	58.7
3	1.Fl	77.0	74.1	70.4	78.8				
Construction						56.7	-	-	53.7
Dennery Road						38.4	35.6	30.2	39.5
I-805 Northbound						71.5	68.6	65.0	73.4
I-805 Southbound						75.5	72.6	69.0	77.4

ATTACHMENT 4

FHWA RD-77-108 Off-Site Traffic Noise Calculations

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Nakano
Project Number : 3396.1
Modeled Condition : 2020

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

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
WITHOUT PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	13,869	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
2		Regatta Lane to Landing Driveway	8,333	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
3		Landing Driveway to Red Coral	8,224	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
4	Palm Avenue	I-805 SB Ramps to NB Ramps	36,383	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
5		I-805 NB Ramps to Dennery Road	49,173	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
WITH PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	15,733	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
2		Regatta Lane to Landing Driveway	10,235	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
3		Landing Driveway to Red Coral	10,126	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
4	Palm Avenue	I-805 SB Ramps to NB Ramps	37,315	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
5		I-805 NB Ramps to Dennery Road	50,733	45	50	93.00	3.70	3.30	77.00	10.00	13.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Nakano
Project Number : 3396.1
Modeled Condition : 2020
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
WITHOUT PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	65.7	61.4	66.1	69.6	14	46	144	456	1,442	4,560
2		Regatta Lane to Landing Driveway	63.5	59.2	63.9	67.4	9	27	87	275	869	2,748
3		Landing Driveway to Red Coral	63.4	59.1	63.8	67.3	8	27	85	269	849	2,685
4	Palm Avenue	I-805 SB Ramps to NB Ramps	73.0	67.3	71.3	75.9	62	195	615	1,945	6,151	19,452
5		I-805 NB Ramps to Dennery Road	74.3	68.6	72.6	77.2	83	262	830	2,624	8,298	26,240
WITH PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	66.2	61.9	66.6	70.2	17	52	166	524	1,656	5,236
2		Regatta Lane to Landing Driveway	64.4	60.1	64.8	68.3	11	34	107	338	1,069	3,380
3		Landing Driveway to Red Coral	64.3	60.0	64.7	68.2	10	33	104	330	1,045	3,303
4	Palm Avenue	I-805 SB Ramps to NB Ramps	73.1	67.4	71.4	76.0	63	199	629	1,991	6,295	19,905
5		I-805 NB Ramps to Dennery Road	74.5	68.7	72.7	77.3	85	269	849	2,685	8,491	26,852

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Nakano
Project Number : 3396.1
Modeled Condition : 2024

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

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
WITHOUT PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	13,994	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
2		Regatta Lane to Landing Driveway	8,473	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
3		Landing Driveway to Red Coral	8,354	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
4	Palm Avenue	I-805 SB Ramps to NB Ramps	38,031	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
5		I-805 NB Ramps to Dennery Road	51,613	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
WITH PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	15,858	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
2		Regatta Lane to Landing Driveway	10,375	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
3		Landing Driveway to Red Coral	10,256	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
4	Palm Avenue	I-805 SB Ramps to NB Ramps	38,963	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
5		I-805 NB Ramps to Dennery Road	53,173	45	50	93.00	3.70	3.30	77.00	10.00	13.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Nakano
Project Number : 3396.1
Modeled Condition : 2024
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
WITHOUT PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	65.7	61.4	66.1	69.6	14	46	144	456	1,442	4,560
2		Regatta Lane to Landing Driveway	63.6	59.2	63.9	67.5	9	28	89	281	889	2,812
3		Landing Driveway to Red Coral	63.5	59.2	63.9	67.4	9	27	87	275	869	2,748
4	Palm Avenue	I-805 SB Ramps to NB Ramps	73.2	67.5	71.5	76.1	64	204	644	2,037	6,441	20,369
5		I-805 NB Ramps to Dennery Road	74.5	68.8	72.8	77.4	87	275	869	2,748	8,689	27,477
WITH PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	66.3	62.0	66.7	70.2	17	52	166	524	1,656	5,236
2		Regatta Lane to Landing Driveway	64.4	60.1	64.8	68.3	11	34	107	338	1,069	3,380
3		Landing Driveway to Red Coral	64.4	60.1	64.8	68.3	11	34	107	338	1,069	3,380
4	Palm Avenue	I-805 SB Ramps to NB Ramps	73.3	67.6	71.6	76.2	66	208	659	2,084	6,591	20,843
5		I-805 NB Ramps to Dennery Road	74.7	68.9	72.9	77.5	89	281	889	2,812	8,891	28,117

FHWA RD-77-108

Traffic Noise Prediction Model

Data Input Sheet

Project Name : Nakano
Project Number : 3396.1
Modeled Condition : 2062

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

Segment	Roadway	Segment	Traffic Vol.	Speed (Mph)	Distance to CL	% Autos	%MT	% HT	Day %	Eve %	Night %	K-Factor
WITHOUT PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	19,500	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
2		Regatta Lane to Landing Driveway	12,500	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
3		Landing Driveway to Red Coral	12,500	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
4	Palm Avenue	I-805 SB Ramps to NB Ramps	46,000	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
5		I-805 NB Ramps to Dennery Road	59,500	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
WITH PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	21,364	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
2		Regatta Lane to Landing Driveway	14,402	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
3		Landing Driveway to Red Coral	14,402	35	50	93.00	3.70	3.30	77.00	10.00	13.00	
4	Palm Avenue	I-805 SB Ramps to NB Ramps	46,932	45	50	93.00	3.70	3.30	77.00	10.00	13.00	
5		I-805 NB Ramps to Dennery Road	61,060	45	50	93.00	3.70	3.30	77.00	10.00	13.00	

FHWA RD-77-108

Traffic Noise Prediction Model

Predicted Noise Levels

Project Name : Nakano
Project Number : 3396.1
Modeled Condition : 2062
Assessment Metric: Hard

			Noise Levels, dBA Hard				Distance to Traffic Noise Level Contours, Feet					
Segment	Roadway	Segment	Auto	MT	HT	Total	75 dB	70 dB	65 dB	60 dB	55 dB	50 dB
WITHOUT PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	67.2	62.9	67.6	71.1	20	64	204	644	2,037	6,441
2		Regatta Lane to Landing Driveway	65.2	60.9	65.6	69.2	13	42	132	416	1,315	4,159
3		Landing Driveway to Red Coral	65.2	60.9	65.6	69.2	13	42	132	416	1,315	4,159
4	Palm Avenue	I-805 SB Ramps to NB Ramps	74.0	68.3	72.3	76.9	77	245	774	2,449	7,744	24,489
5		I-805 NB Ramps to Dennery Road	75.2	69.4	73.4	78.0	100	315	998	3,155	9,976	31,548
WITH PROJECT												
1	Dennery Road	Palm Avenue to Regatta Lane	67.6	63.3	68.0	71.5	22	71	223	706	2,233	7,063
2		Regatta Lane to Landing Driveway	65.9	61.5	66.2	69.8	15	48	151	477	1,510	4,775
3		Landing Driveway to Red Coral	65.9	61.5	66.2	69.8	15	48	151	477	1,510	4,775
4	Palm Avenue	I-805 SB Ramps to NB Ramps	74.1	68.4	72.4	77.0	79	251	792	2,506	7,924	25,059
5		I-805 NB Ramps to Dennery Road	75.3	69.5	73.5	78.1	102	323	1,021	3,228	10,209	32,283

ATTACHMENT 5

SoundPLAN Data – Operational Noise

Source name	Reference	Level	Corrections		
		Leq1	Cwall	CI	CT
		dB(A)	dB(A)	dB(A)	dB(A)
HVAC1	Lw/unit	76	-	-	-
HVAC2	Lw/unit	76	-	-	-
HVAC3	Lw/unit	76	-	-	-
HVAC4	Lw/unit	76	-	-	-
HVAC5	Lw/unit	76	-	-	-
HVAC6	Lw/unit	76	-	-	-
HVAC7	Lw/unit	76	-	-	-
HVAC8	Lw/unit	76	-	-	-
HVAC9	Lw/unit	76	-	-	-
HVAC10	Lw/unit	76	-	-	-
HVAC11	Lw/unit	76	-	-	-
HVAC12	Lw/unit	76	-	-	-
HVAC13	Lw/unit	76	-	-	-
HVAC14	Lw/unit	76	-	-	-
HVAC15	Lw/unit	76	-	-	-
HVAC16	Lw/unit	76	-	-	-
HVAC17	Lw/unit	76	-	-	-
HVAC18	Lw/unit	76	-	-	-
HVAC19	Lw/unit	76	-	-	-
HVAC20	Lw/unit	76	-	-	-
HVAC21	Lw/unit	76	-	-	-
HVAC22	Lw/unit	76	-	-	-
HVAC23	Lw/unit	76	-	-	-
HVAC24	Lw/unit	76	-	-	-
HVAC25	Lw/unit	76	-	-	-
HVAC26	Lw/unit	76	-	-	-
HVAC27	Lw/unit	76	-	-	-
HVAC28	Lw/unit	76	-	-	-
HVAC29	Lw/unit	76	-	-	-
HVAC30	Lw/unit	76	-	-	-
HVAC31	Lw/unit	76	-	-	-
HVAC32	Lw/unit	76	-	-	-
HVAC33	Lw/unit	76	-	-	-
HVAC34	Lw/unit	76	-	-	-
HVAC35	Lw/unit	76	-	-	-
HVAC36	Lw/unit	76	-	-	-
HVAC37	Lw/unit	76	-	-	-
HVAC38	Lw/unit	76	-	-	-
HVAC39	Lw/unit	76	-	-	-
HVAC40	Lw/unit	76	-	-	-
HVAC41	Lw/unit	76	-	-	-
HVAC42	Lw/unit	76	-	-	-
HVAC43	Lw/unit	76	-	-	-
HVAC44	Lw/unit	76	-	-	-
HVAC45	Lw/unit	76	-	-	-
HVAC46	Lw/unit	76	-	-	-
HVAC47	Lw/unit	76	-	-	-
HVAC48	Lw/unit	76	-	-	-
HVAC49	Lw/unit	76	-	-	-
HVAC50	Lw/unit	76	-	-	-
HVAC51	Lw/unit	76	-	-	-
HVAC52	Lw/unit	76	-	-	-
HVAC53	Lw/unit	76	-	-	-
HVAC54	Lw/unit	76	-	-	-
HVAC55	Lw/unit	76	-	-	-
HVAC56	Lw/unit	76	-	-	-
HVAC57	Lw/unit	76	-	-	-
HVAC58	Lw/unit	76	-	-	-
HVAC59	Lw/unit	76	-	-	-
HVAC60	Lw/unit	76	-	-	-
HVAC61	Lw/unit	76	-	-	-
HVAC62	Lw/unit	76	-	-	-
HVAC63	Lw/unit	76	-	-	-
HVAC64	Lw/unit	76	-	-	-
HVAC65	Lw/unit	76	-	-	-
HVAC66	Lw/unit	76	-	-	-
HVAC67	Lw/unit	76	-	-	-
HVAC68	Lw/unit	76	-	-	-
HVAC69	Lw/unit	76	-	-	-
HVAC70	Lw/unit	76	-	-	-
HVAC71	Lw/unit	76	-	-	-
HVAC72	Lw/unit	76	-	-	-

HVAC73	Lw/unit	76	-	-	-
HVAC74	Lw/unit	76	-	-	-
HVAC75	Lw/unit	76	-	-	-
HVAC76	Lw/unit	76	-	-	-
HVAC77	Lw/unit	76	-	-	-
HVAC78	Lw/unit	76	-	-	-
HVAC79	Lw/unit	76	-	-	-
HVAC80	Lw/unit	76	-	-	-
HVAC81	Lw/unit	76	-	-	-
HVAC82	Lw/unit	76	-	-	-
HVAC83	Lw/unit	76	-	-	-
HVAC84	Lw/unit	76	-	-	-
HVAC85	Lw/unit	76	-	-	-
HVAC86	Lw/unit	76	-	-	-
HVAC87	Lw/unit	76	-	-	-
HVAC88	Lw/unit	76	-	-	-
HVAC89	Lw/unit	76	-	-	-
HVAC90	Lw/unit	76	-	-	-
HVAC91	Lw/unit	76	-	-	-
HVAC92	Lw/unit	76	-	-	-
HVAC93	Lw/unit	76	-	-	-
HVAC94	Lw/unit	76	-	-	-
HVAC95	Lw/unit	76	-	-	-
HVAC96	Lw/unit	76	-	-	-
HVAC97	Lw/unit	76	-	-	-
HVAC98	Lw/unit	76	-	-	-
HVAC99	Lw/unit	76	-	-	-
HVAC100	Lw/unit	76	-	-	-
HVAC101	Lw/unit	76	-	-	-
HVAC102	Lw/unit	76	-	-	-
HVAC103	Lw/unit	76	-	-	-
HVAC104	Lw/unit	76	-	-	-
HVAC105	Lw/unit	76	-	-	-
HVAC106	Lw/unit	76	-	-	-
HVAC107	Lw/unit	76	-	-	-
HVAC108	Lw/unit	76	-	-	-
HVAC109	Lw/unit	76	-	-	-
HVAC110	Lw/unit	76	-	-	-
HVAC111	Lw/unit	76	-	-	-
HVAC112	Lw/unit	76	-	-	-
HVAC113	Lw/unit	76	-	-	-
HVAC114	Lw/unit	76	-	-	-
HVAC115	Lw/unit	76	-	-	-
HVAC116	Lw/unit	76	-	-	-
HVAC117	Lw/unit	76	-	-	-
HVAC118	Lw/unit	76	-	-	-
HVAC119	Lw/unit	76	-	-	-
HVAC120	Lw/unit	76	-	-	-
HVAC121	Lw/unit	76	-	-	-
HVAC122	Lw/unit	76	-	-	-
HVAC123	Lw/unit	76	-	-	-
HVAC124	Lw/unit	76	-	-	-
HVAC125	Lw/unit	76	-	-	-
HVAC126	Lw/unit	76	-	-	-
HVAC127	Lw/unit	76	-	-	-
HVAC128	Lw/unit	76	-	-	-
HVAC129	Lw/unit	76	-	-	-
HVAC130	Lw/unit	76	-	-	-
HVAC131	Lw/unit	76	-	-	-
HVAC132	Lw/unit	76	-	-	-
HVAC133	Lw/unit	76	-	-	-
HVAC134	Lw/unit	76	-	-	-
HVAC135	Lw/unit	76	-	-	-
HVAC136	Lw/unit	76	-	-	-
HVAC137	Lw/unit	76	-	-	-
HVAC138	Lw/unit	76	-	-	-
HVAC139	Lw/unit	76	-	-	-
HVAC140	Lw/unit	76	-	-	-
HVAC141	Lw/unit	76	-	-	-
HVAC142	Lw/unit	76	-	-	-
HVAC143	Lw/unit	76	-	-	-
HVAC144	Lw/unit	76	-	-	-
HVAC145	Lw/unit	76	-	-	-
HVAC146	Lw/unit	76	-	-	-
HVAC147	Lw/unit	76	-	-	-

HVAC148	Lw/unit	76	-	-	-
HVAC149	Lw/unit	76	-	-	-
HVAC150	Lw/unit	76	-	-	-
HVAC151	Lw/unit	76	-	-	-
HVAC152	Lw/unit	76	-	-	-
HVAC153	Lw/unit	76	-	-	-
HVAC154	Lw/unit	76	-	-	-
HVAC155	Lw/unit	76	-	-	-
HVAC156	Lw/unit	76	-	-	-
HVAC157	Lw/unit	76	-	-	-
HVAC158	Lw/unit	76	-	-	-
HVAC159	Lw/unit	76	-	-	-
HVAC160	Lw/unit	76	-	-	-
HVAC161	Lw/unit	76	-	-	-
HVAC162	Lw/unit	76	-	-	-
HVAC163	Lw/unit	76	-	-	-
HVAC164	Lw/unit	76	-	-	-
HVAC165	Lw/unit	76	-	-	-
HVAC166	Lw/unit	76	-	-	-
HVAC167	Lw/unit	76	-	-	-
HVAC168	Lw/unit	76	-	-	-
HVAC169	Lw/unit	76	-	-	-
HVAC170	Lw/unit	76	-	-	-
HVAC171	Lw/unit	76	-	-	-
HVAC172	Lw/unit	76	-	-	-
HVAC173	Lw/unit	76	-	-	-
HVAC174	Lw/unit	76	-	-	-
HVAC175	Lw/unit	76	-	-	-
HVAC176	Lw/unit	76	-	-	-
HVAC177	Lw/unit	76	-	-	-
HVAC178	Lw/unit	76	-	-	-
HVAC179	Lw/unit	76	-	-	-
HVAC180	Lw/unit	76	-	-	-
HVAC181	Lw/unit	76	-	-	-
HVAC182	Lw/unit	76	-	-	-
HVAC183	Lw/unit	76	-	-	-
HVAC184	Lw/unit	76	-	-	-
HVAC185	Lw/unit	76	-	-	-
HVAC186	Lw/unit	76	-	-	-
HVAC187	Lw/unit	76	-	-	-
HVAC188	Lw/unit	76	-	-	-
HVAC189	Lw/unit	76	-	-	-
HVAC190	Lw/unit	76	-	-	-
HVAC191	Lw/unit	76	-	-	-
HVAC192	Lw/unit	76	-	-	-
HVAC193	Lw/unit	76	-	-	-
HVAC194	Lw/unit	76	-	-	-
HVAC195	Lw/unit	76	-	-	-
HVAC196	Lw/unit	76	-	-	-
HVAC197	Lw/unit	76	-	-	-
HVAC198	Lw/unit	76	-	-	-
HVAC199	Lw/unit	76	-	-	-
HVAC200	Lw/unit	76	-	-	-
HVAC201	Lw/unit	76	-	-	-
HVAC202	Lw/unit	76	-	-	-
HVAC203	Lw/unit	76	-	-	-
HVAC204	Lw/unit	76	-	-	-
HVAC205	Lw/unit	76	-	-	-
HVAC206	Lw/unit	76	-	-	-
HVAC207	Lw/unit	76	-	-	-
HVAC208	Lw/unit	76	-	-	-
HVAC209	Lw/unit	76	-	-	-
HVAC210	Lw/unit	76	-	-	-
HVAC211	Lw/unit	76	-	-	-
HVAC212	Lw/unit	76	-	-	-
HVAC213	Lw/unit	76	-	-	-
HVAC214	Lw/unit	76	-	-	-
HVAC215	Lw/unit	76	-	-	-
Park1	Lw/unit	55	-	-	-
Park2	Lw/unit	55	-	-	-
Park3	Lw/unit	55	-	-	-
Park4	Lw/unit	55	-	-	-
Park5	Lw/unit	55	-	-	-

3396.1 Nakano

SoundPLAN Data - Operation

No.	Coordinates X	Y	Height	Noise Level
	(meters)		m	dB(A) Leq
1	497015.59	3605890.54	47.83	36.1
2	497010.86	3605836.20	48.44	34.7
3	497009.68	3605805.48	48.95	35.5
4	497000.23	3605760.59	48.69	39.6
5	496999.05	3605715.11	49.50	39.7
6	496996.69	3605667.26	49.66	37.6
7	497038.03	3605635.37	51.19	29.9
8	496967.68	3605735.78	38.26	43.5
9	496812.41	3605560.69	54.77	38.9
10	496652.46	3605715.51	34.75	45.4
11	496822.43	3605865.82	31.98	43.8

ATTACHMENT 6

SoundPLAN Data – Future Vehicle Traffic Noise

Station	ADT	Traffic values Vehicles type	Vehicle nar	day	evening	night	Speed	Control device	Constr. Speed	Affect. veh.	Road surface	Gradient Min / Max
km	Veh/24h			Veh/h	Veh/h	Veh/h	km/h		km/h	%		%
I-805 Northbound		Traffic direction:	In entry direction									
0+000	73704	Total	-	4729	2457	1065	-	none	-	-	Average (of DGAC and PCC)	-1.875
0+000	73704	Automobiles	-	4398	2285	990	105	none	-	-	Average (of DGAC and PCC)	-1.875
0+000	73704	Medium trucks	-	175	91	39	89	none	-	-	Average (of DGAC and PCC)	-1.875
0+000	73704	Heavy trucks	-	156	81	35	89	none	-	-	Average (of DGAC and PCC)	-1.875
0+000	73704	Buses	-	-	-	-	105	none	-	-	Average (of DGAC and PCC)	-1.875
0+000	73704	Motorcycles	-	-	-	-	105	none	-	-	Average (of DGAC and PCC)	-1.875
0+000	73704	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-1.875
0+912	-	-	-	-	-	-						
I-805 Southbound		Traffic direction:	In entry direction									
0+000	81504	Total	-	5230	2717	1177	-	none	-	-	Average (of DGAC and PCC)	-0.516129032
0+000	81504	Automobiles	-	4864	2527	1095	105	none	-	-	Average (of DGAC and PCC)	-0.516129032
0+000	81504	Medium trucks	-	194	101	44	89	none	-	-	Average (of DGAC and PCC)	-0.516129032
0+000	81504	Heavy trucks	-	173	90	39	89	none	-	-	Average (of DGAC and PCC)	-0.516129032
0+000	81504	Buses	-	-	-	-	105	none	-	-	Average (of DGAC and PCC)	-0.516129032
0+000	81504	Motorcycles	-	-	-	-	105	none	-	-	Average (of DGAC and PCC)	-0.516129032
0+000	81504	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-0.516129032
0+906	-	-	-	-	-	-						
Dennery Road		Traffic direction:	In entry direction									
0+000	21432	Total	-	1371	712	316	-	none	-	-	Average (of DGAC and PCC)	1.375
0+000	21432	Automobiles	-	1275	662	309	56	none	-	-	Average (of DGAC and PCC)	1.375
0+000	21432	Medium trucks	-	51	26	4	56	none	-	-	Average (of DGAC and PCC)	1.375
0+000	21432	Heavy trucks	-	45	23	3	56	none	-	-	Average (of DGAC and PCC)	1.375
0+000	21432	Buses	-	-	-	-	56	none	-	-	Average (of DGAC and PCC)	1.375
0+000	21432	Motorcycles	-	-	-	-	56	none	-	-	Average (of DGAC and PCC)	1.375
0+000	21432	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	1.375
0+442	14400	Total	-	924	480	208	-	none	-	-	Average (of DGAC and PCC)	-8.25
0+442	14400	Automobiles	-	859	446	203	56	none	-	-	Average (of DGAC and PCC)	-8.25
0+442	14400	Medium trucks	-	34	18	2	56	none	-	-	Average (of DGAC and PCC)	-8.25
0+442	14400	Heavy trucks	-	30	16	2	56	none	-	-	Average (of DGAC and PCC)	-8.25
0+442	14400	Buses	-	-	-	-	56	none	-	-	Average (of DGAC and PCC)	-8.25
0+442	14400	Motorcycles	-	-	-	-	56	none	-	-	Average (of DGAC and PCC)	-8.25
0+442	14400	Auxiliary vehicle	-	-	-	-	-	none	-	-	Average (of DGAC and PCC)	-8.25
0+764	-	-	-	-	-	-						

	Coordinates				Noise Level without Barrier				Noise Level with Barrier				Difference			
No.	X	Y	Floor	Height	Day	Evening	Night	Lden	Day	Evening	Night	Lden	Day	Evening	Night	Lden
1	496915.02	3605622.56	3.Fl	43.55	52.6	49.8	45.6	54.2	52.6	49.8	45.6	54.2	0	0	0	0
2	496862.79	3605613.92	3.Fl	43.57	55.6	52.8	49.0	57.5	55.6	52.7	49.0	57.4	0	0	0	0
3	496771.28	3605615.38	3.Fl	42.65	56.3	53.5	49.8	58.2	56.2	53.4	49.7	58.1	-0.1	-0.1	-0.1	-0.1
4	496733.70	3605615.35	3.Fl	42.34	57.8	55.0	51.3	59.7	58.1	55.2	51.6	60.0	0.3	0.3	0.3	0.3
5	496697.63	3605614.83	3.Fl	42.35	61.7	58.9	55.3	63.6	61.9	59.1	55.4	63.8	0.2	0.2	0.2	0.2
6	496662.79	3605614.34	3.Fl	42.35	67.7	64.9	61.3	69.6	67.4	64.6	61.0	69.3	-0.3	-0.3	-0.3	-0.3
7	496656.15	3605634.57	3.Fl	42.20	70.1	67.3	63.6	72.0	70.2	67.3	63.7	72.1	0	0	0	0
8	496703.49	3605645.08	3.Fl	41.56	64.4	61.6	57.9	66.3	64.4	61.6	57.9	66.3	0	0	0	0
9	496676.19	3605644.68	3.Fl	41.24	66.8	64.0	60.4	68.7	66.8	64.0	60.3	68.7	0	0	0	0
10	496667.19	3605653.53	3.Fl	41.24	71.3	68.5	64.9	73.2	71.4	68.5	64.9	73.3	0	0	0	0
11	496675.35	3605663.82	3.Fl	41.33	67.4	64.5	60.9	69.3	67.4	64.5	60.9	69.3	0	0	0	0
12	496694.86	3605664.40	3.Fl	41.58	59.8	57.0	53.3	61.7	59.9	57.0	53.4	61.8	0.1	0.1	0.1	0.1
13	496711.02	3605664.28	3.Fl	41.74	58.3	55.5	51.9	60.2	58.4	55.5	51.9	60.3	0	0	0	0
14	496730.08	3605664.05	3.Fl	41.85	56.9	54.0	50.4	58.8	56.9	54.1	50.4	58.8	0	0	0	0
15	496667.25	3605673.90	3.Fl	41.47	72.3	69.5	65.9	74.2	72.4	69.6	65.9	74.3	0.1	0.1	0.1	0.1
16	496676.12	3605682.84	3.Fl	41.63	70.3	67.4	63.8	72.2	70.3	67.4	63.8	72.2	0	0	0	0
17	496693.97	3605682.81	3.Fl	41.69	66.9	64.1	60.4	68.8	66.9	64.1	60.4	68.8	0	0	0	0
18	496712.16	3605682.93	3.Fl	41.83	64.3	61.5	57.9	66.2	64.3	61.5	57.8	66.2	0	0	0	0
19	496730.02	3605682.85	3.Fl	41.85	62.7	59.9	56.3	64.6	62.7	59.9	56.2	64.6	0	0	0	0
20	496724.66	3605695.08	3.Fl	41.84	63.6	60.8	57.1	65.5	63.6	60.8	57.1	65.5	0	0	0	0
21	496704.70	3605695.12	3.Fl	41.76	64.9	62.1	58.4	66.8	64.9	62.1	58.5	66.8	0	0	0	0
22	496686.11	3605694.80	3.Fl	41.72	67.3	64.4	60.8	69.2	67.3	64.4	60.8	69.2	0	0	0	0
23	496670.36	3605702.54	3.Fl	41.57	73.2	70.4	66.7	75.1	73.2	70.4	66.7	75.1	0	0	0	0
24	496682.74	3605714.04	3.Fl	41.40	67.3	64.5	60.9	69.2	67.3	64.5	60.9	69.2	0	0	0	0
25	496702.02	3605714.16	3.Fl	41.41	63.1	60.3	56.7	65.0	63.1	60.3	56.7	65.0	0	0	0	0
26	496721.99	3605714.16	3.Fl	41.63	61.0	58.1	54.5	62.9	61.0	58.1	54.5	62.9	0	0	0	0
27	496670.27	3605723.09	3.Fl	41.36	73.4	70.5	66.9	75.3	73.4	70.5	66.9	75.3	0	0	0	0
28	496681.18	3605733.06	3.Fl	41.08	70.5	67.6	64.0	72.4	70.5	67.6	64.0	72.4	0	0	0	0
29	496696.61	3605733.11	3.Fl	41.02	68.3	65.4	61.8	70.2	68.3	65.4	61.8	70.2	0	0	0	0
30	496712.56	3605733.43	3.Fl	41.28	65.5	62.6	59.0	67.4	65.5	62.6	59.0	67.4	0	0	0	0
31	496729.75	3605733.27	3.Fl	41.44	63.4	60.6	56.9	65.3	63.4	60.6	56.9	65.3	0	0	0	0
32	496749.80	3605733.19	3.Fl	41.54	61.1	58.2	54.6	63.0	61.1	58.2	54.6	63.0	0	0	0	0
33	496749.29	3605745.54	3.Fl	41.44	61.7	58.9	55.2	63.6	61.7	58.9	55.2	63.6	0	0	0	0
34	496729.34	3605744.75	3.Fl	41.40	63.6	60.8	57.2	65.5	63.6	60.8	57.2	65.5	0	0	0	0
35	496713.15	3605744.75	3.Fl	41.19	65.0	62.2	58.5	66.9	65.0	62.2	58.5	66.9	0	0	0	0
36	496693.99	3605744.07	3.Fl	40.93	68.6	65.7	62.1	70.5	68.6	65.7	62.1	70.5	0	0	0	0
37	496682.87	3605755.00	3.Fl	40.85	72.3	69.4	65.8	74.2	72.2	69.4	65.8	74.2	0	0	0	0
38	496698.67	3605763.73	3.Fl	40.78	66.8	63.9	60.3	68.7	66.7	63.8	60.2	68.6	-0.1	-0.1	-0.1	-0.1
39	496712.99	3605763.84	3.Fl	40.95	63.2	60.3	56.7	65.1	63.1	60.3	56.6	65.0	-0.1	-0.1	-0.1	-0.1
40	496725.69	3605763.93	3.Fl	41.03	61.6	58.8	55.2	63.5	61.6	58.8	55.1	63.5	0	0	0	0
41	496696.27	3605782.90	3.Fl	40.63	69.4	66.5	62.9	71.3	69.4	66.5	62.9	71.3	0	0	0	0
42	496714.87	3605783.27	3.Fl	40.70	68.3	65.4	61.8	70.2	68.3	65.4	61.8	70.2	0	0	0	0
43	496731.98	3605783.27	3.Fl	40.80	67.7	64.9	61.2	69.6	67.7	64.9	61.2	69.6	0	0	0	0
44	496748.72	3605784.02	3.Fl	41.00	66.9	64.1	60.5	68.8	66.9	64.1	60.4	68.8	0	0	0	0
45	496765.84	3605783.27	3.Fl	41.02	65.2	62.4	58.7	67.1	65.2	62.4	58.8	67.1	0	0	0	0
46	496782.58	3605784.02	3.Fl	41.21	62.2	59.4	55.7	64.1	62.2	59.4	55.7	64.1	0	0	0	0
47	496797.46	3605783.27	3.Fl	41.21	60.5	57.7	54.0	62.4	60.5	57.7	54.0	62.4	0	0	0	0
48	496795.60	3605795.18	3.Fl	41.22	60.8	57.9	54.3	62.7	60.8	57.9	54.3	62.7	0	0	0	0
49	496776.95	3605796.13	3.Fl	41.03	62.4	59.6	55.9	64.3	62.4	59.6	55.9	64.3	0	0	0	0
50	496760.09	3605796.83	3.Fl	40.89	64.7	61.9	58.2	66.6	64.7	61.9	58.2	66.6	0	0	0	0
51	496754.09	3605805.95	3.Fl	40.58	68.7	65.9	62.2	70.6	68.7	65.9	62.2	70.6	0	0	0	0
52	496761.13	3605813.91	3.Fl	40.63	66.9	64.1	60.4	68.8	66.9	64.1	60.5	68.8	0	0	0	0
53	496774.53	3605813.91	3.Fl	40.70	64.5	61.7	58.1	66.4	64.7	61.8	58.2	66.6	0.1	0.1	0.1	0.1
54	496788.38	3605814.15	3.Fl	40.75	63.0	60.1	56.5	64.9	62.8	59.9	56.3	64.7	-0.2	-0.2	-0.2	-0.2
55	496801.43	3605814.15	3.Fl	41.03	61.7	58.9	55.3	63.6	61.8	58.9	55.3	63.7	0	0	0	0
56	496805.93	3605828.23	3.Fl	40.78	61.4	58.6	55.0	63.3	61.2	58.3	54.7	63.1	-0.3	-0.3	-0.3	-0.3
57	496791.38	3605828.23	3.Fl	40.46	62.5	59.6	56.0	64.4	62.3	59.4	55.8	64.2	-0.2	-0.2	-0.2	-0.2
58	496776.84	3605827.77	3.Fl	40.55	63.6	60.7	57.1	65.5	63.7	60.9	57.2	65.6	0.1	0.1	0.1	0.1
59	496759.06	3605828.12	3.Fl	40.43	65.6	62.8	59.1	67.5	65.8	63.0	59.3	67.7	0.2	0.2	0.2	0.2
60	496744.51	3605838.16	3.Fl	40.09	68.9	66.1	62.4	70.8	68.9	66.1	62.4	70.8	0	0	0	0
61	496758.13	3605845.43	3.Fl	40.08	66.9	64.0	60.4	68.8	66.7	63.8	60.2	68.6	-0.2	-0.2	-0.2	-0.2
62	496772.45	3605845.55	3.Fl	40.08	66.1	63.3	59.6	68.0	66.2	63.3	59.7	68.1	0.1	0.1	0.1	0.1
63	496785.61	3605845.55	3.Fl	40.08	65.9	63.0	59.4	67.8	65.8	63.0	59.3	67.7	-0.1	-0.1	-0.1	-0.1
64	496799.47	3605845.78	3.Fl	40.08	65.4	62.6	58.9	67.3	65.4	62.6	59.0	67.3	0	0	0	0
65	496812.86	3605845.90	3.Fl	40.08	64.9	62.1	58.4	66.8	64.9	62.1	58.4	66.8	0	0	0	0
66	496826.02	3605841.28	3.Fl	40.4	60.6	57.7	54.1	62.5	60.7	57.9	54.2	62.6	0.1	0.1	0.1	0.1
67	496838.76	3605847.4	3.Fl	40.67	64.3	61.5	57.8	66.2	64.3	61.5	57.8	66.2	0	0	0	0
68	496853.3	3605849.94	3.Fl	41.28	63.9	61.1	57.5	65.9	64.0	61.2	57.5	65.9	0.1	0.1	0.1	0.1
69	496871.08	3605852.94	3.Fl	41.34	63.7	60.9	57.2	65.6	63.7	60.9	57.3	65.6	0	0	0	0
70	496894.41	3605856.87	3.Fl	41.34	62.9	60.1	56.4	64.8	63.1	60.2	56.6	65.0	0.2	0.2	0.2	0.2
71	496910.57	3605859.52	3.Fl	41.34	62.6	59.8	56.1	64.5	62.7	59.9	56.3	64.6	0.1	0.1	0.1	0.1
72	496934.93	3605863.56	3.Fl	41.34	62.1	59.2	55.6	64.0	62.1	59.3	55.7	64.1	0.1	0.1	0.1	0.1
73	496960.41	3605791.26	3.Fl	40.93	50.5	47.6	43.6	52.2	50.4	47.6	43.6	52.2	0	0	0	0
74	496947.84	3605734.28	3.Fl	41.33	51.3	48.5	44.4	53.0	51.3	48.5	44.4	53.0	0	0	0	0
75	496951.15	3605692.28	3.Fl	41.85	49.4	46.6	42.1	50.9	49.4	46.6	42.1	50.9	0	0	0	0