APPENDIX J NOISE AND VIBRATION TECHNICAL REPORT

BAYLANDS SPECIFIC PLAN

Noise Technical Report

Prepared for
City of Brisbane

February 2025

ESA

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City of Brisbane

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SECTION 1
Introduction

This technical report has been prepared to assess the potential noise and vibration impacts associated with implementation of the Baylands Specific Plan ("Specific Plan"). The 684.3-acre Specific Plan site lies within the nine-county San Francisco Bay Area region in the northeastern corner of San Mateo County, in the City of Brisbane, immediately south of the City and County of San Francisco. Under the Specific Plan, the site is proposed to accommodate residential, office, retail, industrial, and open space and recreational uses.

Data used to prepare this analysis were obtained from the Brisbane General Plan (City of Brisbane 2019); the City of Brisbane (City) Municipal Code; Brisbane Baylands Draft Environmental Impact Report (EIR) (ESA 2013); Baylands Specific Plan (Baylands Development, Incorporated 2023); *Transit Noise and Vibration Impact Assessment* by the Federal Transit Administration (FTA 2018); and the California Department of Transportation (Caltrans) *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (Caltrans 2013); as well as by measuring and modeling existing and future noise levels at the project site and the surrounding land uses.

1.1 Project Area

The project area is currently split between the Baylands and Beatty General Plan Subareas. **Figure 1** shows the project site generally bounded on the east by US Highway 101 (US 101, also called the Bayshore Freeway); on the west and south by Bayshore Boulevard; and on the north by the San Francisco County line and existing Recology waste management facilities within the City of Brisbane.



SOURCE: Mapbox, 2022; ESA, 2024

Brisbane Baylands Projects

Figure 1
Aerial Photo of Specific Plan Area

SECTION 2
Project Description

The proposed project consists of the Baylands Specific Plan and a General Plan Amendment to modify the General Plan Land Use Map to include the entirety of the Baylands Specific Plan within the Baylands Subarea. The project would allow phased development of 1,800 to 2,200 residential units, up to 6.5 million square feet of retail, commercial, office, conference, research and development (R&D), and campus uses; 500,000 square feet of hotel use; a middle school; and open space, parks, and trails. The City's existing fire station, located at Bayshore Boulevard, is proposed to be relocated to 140 Valley Drive with a second fire station to be developed in the northeastern portion of the Baylands. As required by the Brisbane General Plan, residential uses are clustered in the northwestern portion of the site in proximity to the Bayshore Caltrain station (Figure 1).

The Baylands Specific Plan organizes proposed development into five districts. The Bayshore District is located in the northwest corner of the Specific Plan area, bounded by Bayshore Boulevard, the Caltrain right of way, Sunnydale Avenue, and Geneva Avenue. A maximum of 730 dwelling units and 1.1 million square feet of commercial development are proposed.

The Roundhouse District is located in the western portion of the Specific Plan area, bounded by Bayshore Boulevard, Geneva Avenue, the Caltrain right-of-way, and Main Street. The focal point of this district is Roundhouse Park, which includes adaptive use of the historic roundhouse for an open-air theater with flexible seating and stage, community space, a café, and other community-oriented uses. A maximum of 1,470 dwelling units are proposed.

The Icehouse Hill District is located north of Icehouse Hill between Bayshore Boulevard and the Caltrain right-of-way. This district is proposed for 3.4 million square feet of commercial office development. The Icehouse Hill District would be comprised primarily of commercial office buildings up to 150 feet in height fronting onto the Ecological Park[5]. Baylands Boulevard south of Main Street is designed to function as a “shopping street” with ground floor shops, cafés, and restaurants fronting the street and plazas on the east side integrated into the office buildings and a residential amenity facility on the west side. The Icehouse Hill District includes several important open space resources. A parcel in the northwest corner of the district is proposed as a middle school.

The area east of the Caltrain right-of-way comprises the Campus East District which would be developed with a maximum 2.5 million square feet of low-density commercial office uses north of Visitacion Creek Park.[1] Buildings up to 100 feet height would be oriented along Sierra Point

[1] See Draft EIR Section 3.3.3 a for a description of this and other parks.

Parkway, This District would be constructed over a containment cap over the existing refuse layer of the former landfill that lies beneath the Campus East District. Landfill gas and leachate control systems would also be installed. Vapor intrusion mitigation systems would be integrated into the building design.

The Sustainability District includes the area between Tunnel Avenue and Caltrain right-of-way, the area north of Geneva Avenue, and the area between Visitacion Creek and Lagoon Park. This area is planned for a variety of sustainable infrastructure and open space uses including:

- Sustainable Infrastructure Uses
  - Solar farm
  - Battery storage
  - Substation
  - Water storage tanks
  - Water recycling facility
  - Stormwater detention
  - Fire station/training facilities
- Open Space/Open Area
  - Lagoon Park
  - Baylands Preserve
  - Brisbane Lagoon

2.1 Project Construction

Buildout of the Baylands Specific Plan is anticipated to occur in two distinct phases, as summarized below.

Phase 1: Area West of the Caltrain Right-of-Way (January 2025 to August 2033)

- Grading and infrastructure construction: January 2025 to June 2027
  - Approximately 2.5 million cubic yards of soil will be moved from atop the former landfill area in the eastern portion of the Baylands to be placed as engineered fill within the area west of the Caltrain right-of-way to achieve final grades and create building pads.
  - Following site preparation and demolition of existing buildings, grading will be undertaken from south to north, completing building pads and infrastructure improvements for each land use district starting with the Icehouse Hill District and progressing north until building pads for the Bayshore District are completed (estimated to be June 2027).

- Building Construction: October 2025 to August 2033
  - Once building pads are created and infrastructure improvements are installed within the Icehouse Hill District (October 2025), construction of commercial buildings would be initiated. Building construction within the Roundhouse District and then the Bayshore District will be initiated as grading and infrastructure improvements are completed with anticipated buildout of commercial buildings west of the Caltrain right-of-way anticipated August 2033.
  - Once building pads are created and infrastructure improvements are installed within the Roundhouse District, construction of residential buildings would be initiated. Building construction within the Bayshore District will be initiated as grading and infrastructure improvements within that District are completed with anticipated buildout of residential development anticipated at the end of 2031.

Phase 2: Area East of the Caltrain Right-of-Way (March 2025 to August 2035)

- Approximately two months after initiating the export of soil materials from the former landfill area within the eastern portion of the Baylands to the area west of the Caltrain right-of-way, grading of those portions of the Baylands east of the Caltrain right-of-way that are outside of the former landfill's footprint would commence (March 2025) to provide for the subsequent construction of infrastructure improvements within the Sustainable Infrastructure District (e.g., water storage tank, water recycling facility, battery storage).
- Once a sufficient amount of soil has been moved from atop the former landfill, the approximately 1,800,000 cubic yards of soil that is proposed to remain within the former landfill's footprint would be temporarily moved about to enable construction of an impermeable landfill cap[2], and then placed within the eastern portion of the site over the landfill cap as engineered fill to facilitate building construction within the former landfill's footprint. Completion of engineered fill is anticipated March 2033.
- Once engineered fill is in place over the former landfill, construction of buildings within the Campus East District will commence with anticipated completion anticipated in August 2035.

[2] Soils within the former landfill footprint will be removed down to the waste matrix to allow for construction of an impermeable cap. The phased removal of soils and impermeable landfill cap under the regulatory authority and oversight of the Regional Water Quality Control Board and the San Mateo County Health System will be followed by the placement of soil as engineered fill on top of the landfill cap.

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SECTION 3
Characteristics of Noise and Vibration

3.1 Noise Principles and Descriptors

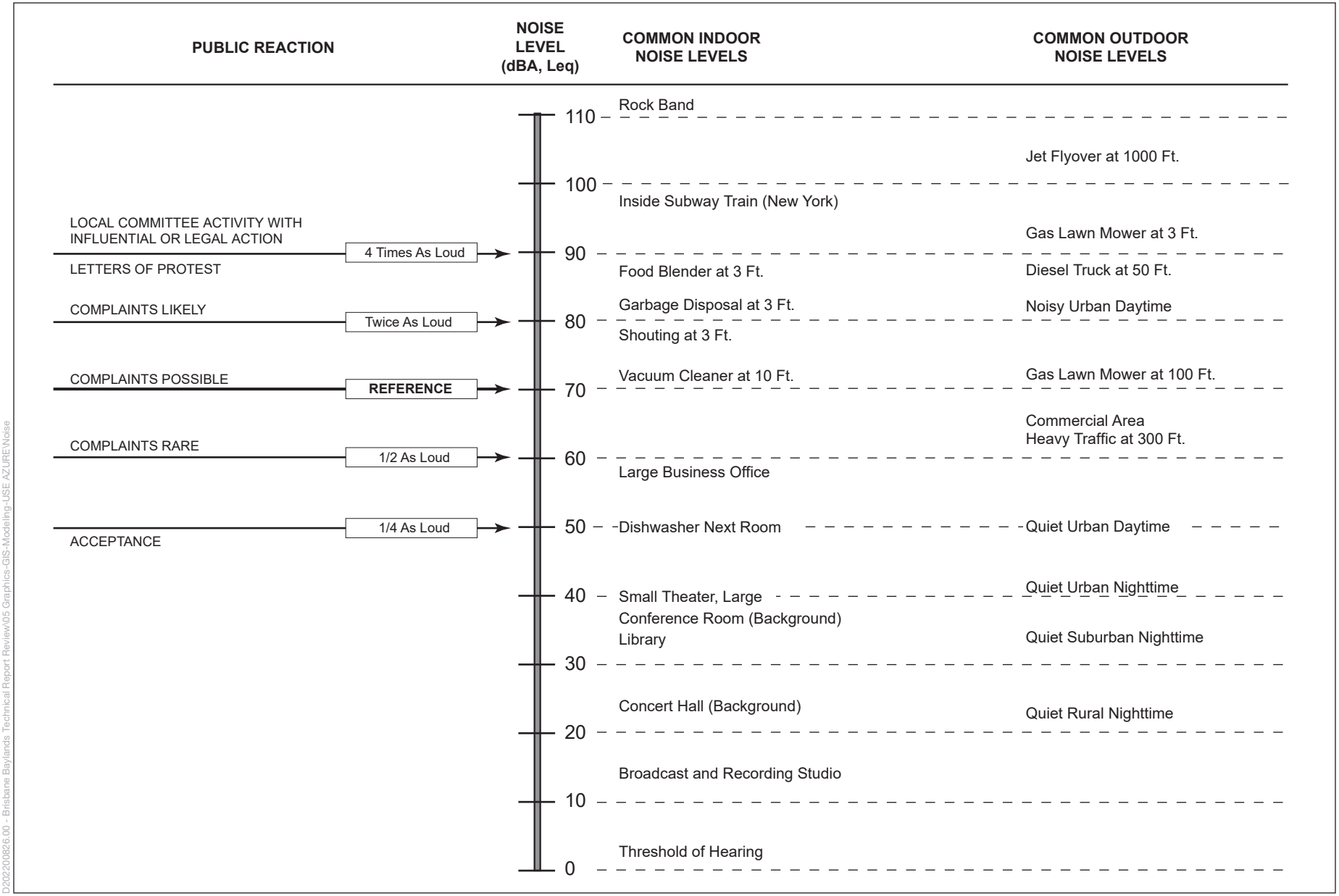
Sound is mechanical energy transmitted by pressure waves through a medium such as air. *Noise* is defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown on **Figure 2**. All noise levels presented in this report are A-weighted unless otherwise stated.

3.2 Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented on Figure 2 are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day but does so



SOURCE: Caltrans Transportation Laboratory Noise Manual, 1982, with modifications by ESA

Brisbane Baylands Specific Plan Technical Report

Figure 2
Effects of Noise on People

ESA

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gradually, corresponding with the addition and subtraction of distant noise sources such as traffic. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to characterize the community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The following are the most frequently used noise descriptors:

- **L_{eq}:** The equivalent-continuous sound level, used to describe noise over a specified period of time in terms of a single numerical value. The L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. May also be referred to as the "average sound level."
- **Lmax:** The maximum, instantaneous noise level experienced during a given period of time.
- **Lmin:** The minimum, instantaneous noise level experienced during a given period of time.
- **Ldn:** The average A-weighted noise level during a 24-hour day, obtained after 10 dB are added to noise levels measured between 10 p.m. and 7 a.m. to account for nighttime noise sensitivity. Also referred to as the "day-night average noise level" (DNL).
- **CNEL:** The community noise equivalent level. This is the average A-weighted noise level during a 24-hour day that is obtained after 5 dB are added to measured noise levels between 7 p.m. and 10 p.m. and 10 dB are added to noise levels between 10 p.m. and 7 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The CNEL is the metric generally used for assessment of aircraft noise. The result is normally about 0.5 dBA higher than Ldn using the same 24-hour data (Caltrans 2013).

3.3 Effects of Noise on People

The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance).
- Interference effects (e.g., interference with communication, sleep, and learning).
- Physiological effects (e.g., startle response).
- Physical effects (e.g., hearing loss).

Although exposure to high noise levels can cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep. With

regard to the subjective effects, the responses of individuals to similar noise events are diverse and are influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity.

There is no uniformly acceptable way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people because there is a wide variation in individual thresholds of annoyance, and different tolerances to noise develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur (Caltrans 2013):

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived.
- Outside of the laboratory environment, a 3 dB change in noise levels is considered to be a barely perceivable difference.
- A change in noise levels of 5 dB is considered to be a readily perceivable difference.
- A change in noise levels of 10 dB is subjectively heard as doubling of the perceived loudness.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Since the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dB, the combined sound level would be 53 dB, not 100 dB.

3.4 Noise Attenuation

Stationary "point" sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dB for hard sites and 7.5 dB for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water. No excess ground attenuation is assumed for hard sites attenuation (6 dBA per doubling of distance), and the change in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dB (per doubling distance) is normally assumed for soft site attenuation, resulting in the 7.5 dBA reduction per doubling of distance cited above. "Line" sources (such as traffic noise from vehicles) attenuate at a rate between 3 dB for hard sites and 4.5 dB for soft sites for each doubling of distance from the reference measurement (Caltrans 2013).

3.5 Fundamentals of Vibration

As described in the FTA's Transit Noise and Vibration Impact Assessment (FTA 2018), groundborne vibration can be a serious concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, groundborne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of groundborne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operation of heavy earth-moving equipment.

There are several different methods used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts on buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. Peak particle velocity is typically a factor of 1.7 to 6 times greater than RMS vibration velocity (FTA 2018). The decibel notation acts to compress the range of numbers required to describe vibration. Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment.

The effects of groundborne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can damage buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration levels exceed the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 inch/second (in/sec) PPV (FTA 2018).

In residential areas, the background vibration velocity level is usually around 50 VdB (approximately 0.0013 in/sec PPV). This level is well below the vibration velocity level threshold of perception for humans, which is approximately 65 VdB. A vibration velocity level of 75 VdB is considered to be the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA 2018).

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SECTION 4
Environmental Setting

4.1 Existing Ambient Noise Levels

4.1.1 Noise Sources Affecting the Baylands

Transportation sources are the predominant generator of noise within the Baylands. The project site is surrounded by a network of regional transportation facilities that influence the local noise environment. The Bayshore Caltrain station, located at the northwestern portion of the site, is served by Caltrain, and the Caltrain railroad tracks that run through the center of the site. This is the primary source of noise within the Baylands. Additionally, there are a number of transportation sources immediately surrounding the Baylands that also are primary contributors to noise that is experienced on the project site. The San Francisco Municipal Railway (Muni) operates its Light Rail K/T Line that terminates on Bayshore Boulevard on the eastern boundary of the Plan area. Additionally, both Muni and SamTrans bus services all operate along Bayshore Boulevard. US 101 is a dominant linear noise source of noise adjacent to the eastern edge of the of the Plan area. Bayshore Boulevard is another major linear noise source adjacent to the westernmost portion of the site and serves as a major regional arterial roadway.

Within the boundaries of the project site, the ambient noise environment is dominated by vehicular traffic on US 101 and Tunnel Avenue, and the intermittent rail activity of the Caltrain commuter train. Existing industrial uses on the western edge of the Plan area generate intermittent noise from off-road equipment operations and machine shop activities.

4.1.2 Noise Measurements

Long-term noise level measurements were conducted on the project site and within the project vicinity in February 2023 to establish existing ambient noise conditions. Six short-term (20-minute) measurements were collected on the project site to validate previous long-term measurements conducted for the 2013 Program EIR, as no changes in existing project site uses have occurred in the interim. A comparison of the 2013 measurements conducted for the 2013 EIR to the 2023 measurements demonstrate that there has been relatively little change to the existing noise levels within the Baylands Plan area. For off-site receptor locations, new long-term (48-hour) measurements were collected in February 2023. Additional noise measurements were taken in proximity of the closest residential uses located to the west, northwest, north, and southwest of the project site, which are further described below. The noise measurements were conducted using a Larson Davis Model LxT2 sound level meter that was calibrated before use and operated according to the manufacturer's written specifications.

The measured average noise level (L_{eq}) during different averaging periods are shown in **Table 1** (Long-term) and **Table 2** (Short-term). The measurement locations are identified on **Figure 3**. Additionally, long-term noise measurements were collected as part of the Draft EIR/Environmental Impact Statement (EIS) for the California High Speed Rail Project (CHSRA 2019), and these measurements have been included in Tables 1 and 2.

TABLE 1
EXISTING NOISE ENVIRONMENTS IN THE PROJECT VICINITY – LONG-TERM MONITORING

Long-Term (LT) Noise Monitoring Location	Noise Levels (dBA)				Primary Noise Sources
	Day-Night Noise Level (DNL)	24-Hour L_{eq}	Daytime [a] Hourly Average L_{eq}	Nighttime [b] Hourly Average L_{eq}	
On-Site Long-Term Noise Data					
LT-1: Northeastern Portion of Project Site [c]	75	69	69	69	Traffic on US 101
LT-2: Southeastern Portion of Project Site [c]	69	62	60	63	Traffic on US 101
LT-3: South-Central Portion of Project Site [c]	66	64	65	57	Traffic on Tunnel Avenue and Caltrain operations
LT-4: North-Central Portion of Project Site [c]	65	60	61	58	Traffic on Tunnel Avenue and Caltrain operations
LT-5: Northwestern Portion of Project Site [c]	60	56	57	52	Traffic on Tunnel Avenue and Caltrain operations
LT-6: Southwestern Portion of Project Site [c]	62	58	59	55	Traffic on Tunnel Avenue and Caltrain operations
Off-Site Long-Term Noise Data					
LT-7: Residence at Terminus of San Francisco Street, Brisbane [d]	66	60	61	59	Traffic on Bayshore Boulevard and Caltrain operations
LT-8: Residential Area at Mission Blue Drive, Brisbane [d]	64	59	60	57	Traffic on Guadalupe Canyon Parkway
LT-9: Church at 327 Tunnel Avenue, San Francisco	73	NA	67 [e]	NA	Traffic on Tunnel Avenue and Caltrain operations
LT-10: Residence at 18 MacDonald Avenue, Daly City	67	NA	69 [e]	NA	Traffic on Bayshore Boulevard and Caltrain operations
LT-11: Residence at 104 Main Street, Daly City	65	NA	67 [e]	NA	Traffic on Main Street
LT-12: Residence at 50 Joy Avenue, Brisbane	76	NA	64 [e]	NA	Traffic on Bayshore Boulevard and Caltrain operations
LT-13: Residence at 163 Mission Blue Drive, Brisbane (same as LT-8)	65	NA	68 [e]	NA	Traffic on Guadalupe Canyon Parkway
LT-14: Residence at 42 San Francisco Avenue, Brisbane (same as LT-7)	65	NA	64 [e]	NA	Traffic on Bayshore Boulevard and Caltrain operations

SOURCE: ESA (Appendix A) and CHSRA (2019).

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent-continuous sound level; NA = Not applicable.

a. Daytime hours are considered to be 7 a.m. to 10 p.m.
b. Nighttime hours are considered to be 10 p.m. to 7 a.m.
c. Original data points from 2007 and verified in 2023.
d. Original data point from 2007 updated in 2023.
e. Data points from CHSRP Draft EIR monitored in 2016.

TABLE 2
EXISTING NOISE ENVIRONMENTS IN THE PROJECT VICINITY – SHORT-TERM MONITORING

Short-Term (ST) Noise Monitoring Location	Daytime Noise Level (dBA, L_{eq})	Primary Noise Sources
Short-Term Updates to On-Site Long-Term Locations		
LT-1: Northeastern Portion of Project Site	71	Traffic on US 101
LT-2: Southeastern Portion of Project Site	74	Traffic on US 101
LT-3: South-Central Portion of Project Site	60	Traffic on Tunnel Avenue and Caltrain operations
LT-4: North-Central Portion of Project Site	56	Traffic on Tunnel Avenue and Caltrain operations
LT-5: Northwestern Portion of Project Site	55	Traffic on Tunnel Avenue and Caltrain operations
LT-6: Southwestern Portion of Project Site	51	Traffic on Tunnel Avenue and Caltrain operations
Short-Term Monitoring of Representative Off-Site Locations		
ST-1: Residential Area at Sunnydale Avenue and Desmond Street, San Francisco	60	Traffic on Sunnydale Avenue
ST-2: Residences at Main Street, Daly City	62	Traffic on Main Street
ST-3: Residences at Wheeler Avenue, San Francisco	58	Traffic on Lathrop Avenue and Caltrain operations
ST-4 Residential Area at San Bruno Avenue and Tulare Street, Brisbane	62	Traffic on San Bruno
ST-5 Residential Area at Solano Street, Brisbane	54	Traffic on Solano Street

SOURCE: ESA (Appendix A).

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent-continuous sound level.

4.1.3 Aircraft Noise

The San Francisco International Airport (SFO) is located approximately 3 miles south of the southern site boundary. Aircraft flights from SFO also contribute to the ambient noise environment. A 1992 survey conducted by the City for its General Plan Noise Element revealed that citizens consider Brisbane to be impacted by flyover activity from SFO, especially in the early morning and evening hours (City of Brisbane 2019). The City participates in the SFO Community Roundtable which provides a forum for the public to address local elected officials, airport management, FAA staff, and airline representatives, regarding aircraft noise issues. The committee monitors a performance-based aircraft noise mitigation program, as implemented by airport staff, interprets community concerns, and attempts to achieve additional noise mitigation through a cooperative sharing of authority brought forth by the airline industry, the FAA, airport management, and local government officials. A review of the most recent complaint summary in the 4th Quarter 2023 Brisbane Noise Monitoring Report for SFO indicates that 87 complaints were received from Brisbane residents during the October 2023 monitoring period (SFO 2024).



SOURCE: Mapbox, 2022; ESA, 2024

Brisbane Baylands Projects

Figure 3
Noise Monitoring Locations

ESA

As evidenced by the noise complaints received by SFO from Brisbane residents, single event noise levels from aircraft are a community concern. However, the Noise Exposure Map for SFO (SFO 2018) indicates that all portions of the City of Brisbane are outside the 65-CNEL noise contour relative to aircraft noise from the airport (i.e., aircraft operations from the airport contribute less than 65 dBA to ambient noise levels within Brisbane). The Directors Report for SFO indicates that its monitoring network of monthly CNEL values from aircraft operations ranged from 57 to 63 CNEL. **Figure 4** presents the existing 65-CNEL noise contour for 2019. As can be seen from the figure, the 65-CNEL contour lies over one mile away, far from the southern boundary of the project site.

4.1.4 Topography and Human Perception of Noise

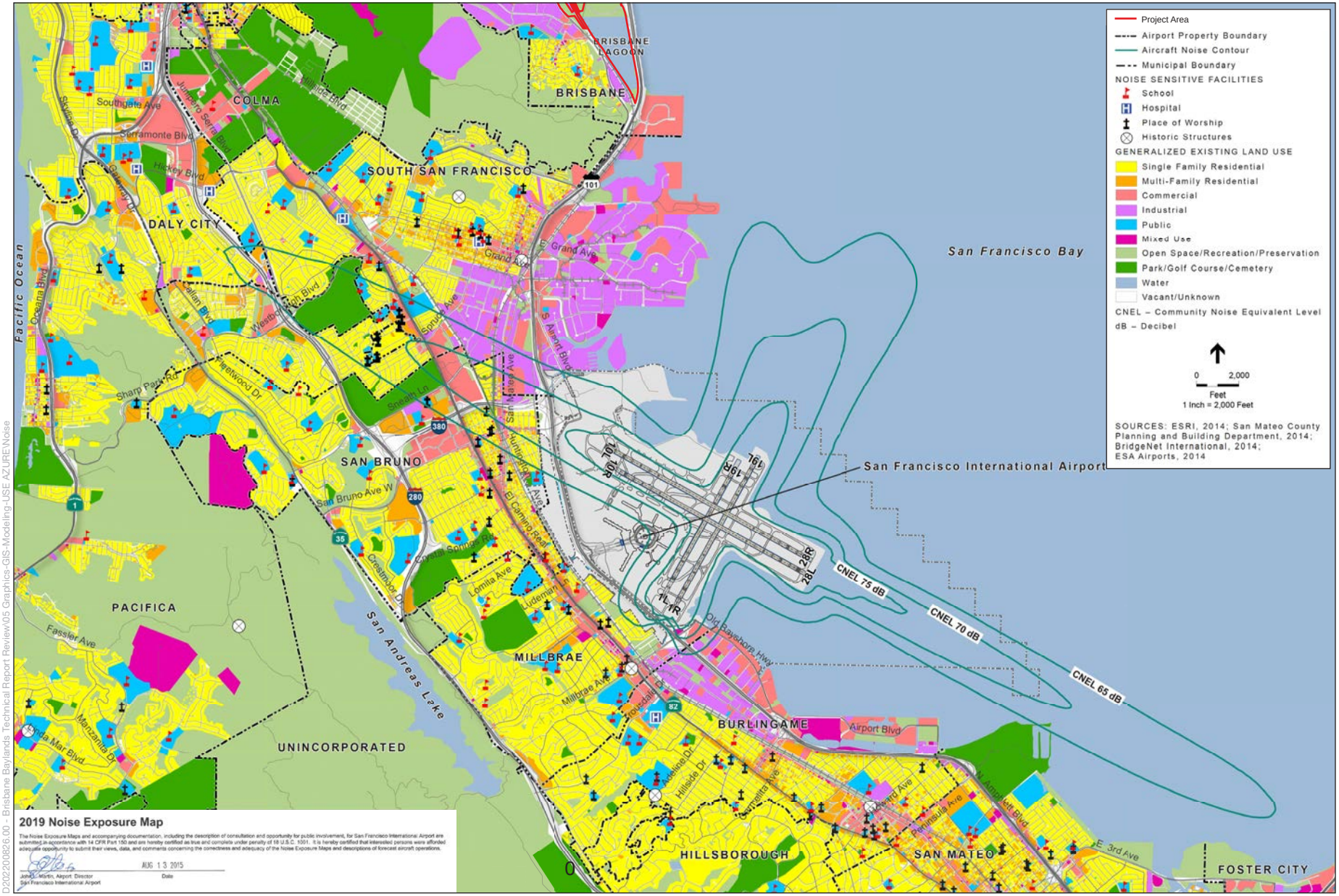
Topography plays a role in how noise is perceived within the City of Brisbane. Elevated receptors located on the hillsides of San Bruno Mountain have a clear receiving path to noise generated within the lower Baylands. There is sometimes a perception that sounds are louder because they are amplified due to the topography creating "amphitheater-like conditions." The perception of sounds being louder or amplified is best explained by the effect of the terrain on ambient noise and sound propagation rather than amplification.

First, the shape of the terrain tends to act as a noise barrier for ground-based noise sources in all directions except toward the mouth of the valley to the east. For example, the hillsides around Brisbane act as noise barriers, blocking noise from US 101 east and south of the city. This tends to reduce the background sound level and make other sounds more noticeable. Second, the slope of the valley means that homes, like seats in an amphitheater, have a "good view" of noise sources. This means that noise will propagate better than in a typical flat community because buildings are less likely to intercept the line-of-sight to a noise source (Rosen et al. 2015).

4.1.5 Modeling of Existing Traffic Noise Levels

Existing roadside noise levels along roadway segments near the project site were modeled to provide estimates of existing weekday noise levels for the roadway segments near the project site. The existing roadside noise levels are presented in **Table 3** during the weekday peak commute hour.[3] These modeled noise levels reflect only the noise generated by traffic on the identified roadway segments; they do not include other sources in the area, such as rail and highway noise where these other sources are nearby, which are included in the noise monitoring results in Tables 1 and 2, above.

[3] Existing and future traffic volumes provided by the transportation analysis were in the average daily trip metric for weekdays. These values were adjusted to reflect a peak-traffic-hour volume percentage of 5 percent.



SOURCE: ESRI, 2014; San Mateo County Planning and Building Department, 2014; BridgeNet International, 2014; ESA Airports, 2017

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Figure 4
2019 Noise Exposure Map

ESA

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TABLE 3
EXISTING TRAFFIC NOISE ALONG ROADS IN THE PROJECT VICINITY

Roadway Segment	Existing Hourly (dBA)
Weekday Peak-Hour Noise Levels	
Bayshore Boulevard from Blanken Road to Geneva Road	69.2
Bayshore Boulevard from Geneva Avenue to Old County Road/Tunnel Avenue	72.9
Bayshore Boulevard from Old County Road/Tunnel Avenue to Southern City Limits	73.9
Geneva Avenue from Carter Street to Bayshore Boulevard	68.1
Tunnel Avenue from Old County Road/Tunnel Avenue to South of Lagoon Road	65.1
Tunnel Avenue from Blanken Avenue to north of Beatty Road	64.7
Blanken Avenue from Executive Park Boulevard to Gillette Avenue	56.5
Blanken Avenue from Bayshore Boulevard to Tunnel Avenue	60.2
Visitacion Avenue from Bayshore Boulevard to Mansell Street	56.6
Sunnydale Avenue from Bayshore Boulevard to Santos Street	58.4
Main Street from Bayshore Boulevard to Linda Vista Drive	55.8
Guadalupe Canyon Parkway from North Hill Drive	68.7
Old County Road from Bayshore Boulevard to San Francisco Avenue	62.2
San Bruno Avenue from Bayshore Boulevard to Glen Park Way	56.2

SOURCE: Traffic data compiled by Fehr & Peers in 2023 and noise modeling performed by Environmental Science Associates in 2023.
NOTE: dBA = A-weighted decibels

4.2 Existing Groundborne Vibration Levels

Sources of vibration in the project vicinity include Caltrain, which bisects the Specific Plan area from south to north. FTA has published generalized ground-surface vibration curves for locomotive-powered passenger and freight trains, which are presented in **Table 4**. It should be noted that all local Caltrain operations stop at Bayshore Station, and hence, train speeds for these trains (44 percent of weekday trains and 100 percent of weekend trains) through the Plan area are generally in the range of 5 to 20 miles per hour (mph). The 58 daily express trains do not stop at Bayshore station during the weekdays and travel through the Plan area at speeds of up to 50 mph.

The only other sources of groundborne vibration in the project vicinity are heavy-duty vehicular travel (e.g., refuse trucks, haul trucks) on local roadways. Trucks traveling at a distance of 50 feet typically generate groundborne vibration velocity levels of around 63 VdB (approximately 0.006 in/sec PPV), and these levels could reach 72 VdB (approximately 0.016 in/sec PPV) where trucks pass over discontinuities in the roadway (FTA 2018).

TABLE 4
GENERALIZED VIBRATION LEVELS FROM LOCOMOTIVE-POWERED PASSENGER OR FREIGHT TRAINS (VIBRATION DECIBELS)

Train Speed	Distance from Tracks				
	30 Feet	50 Feet	100 Feet	150 Feet	200 Feet
10 mph	74 VdB	71 VdB	62 VdB	60 VdB	58 VdB
20 mph	80 VdB	77 VdB	68 VdB	66 VdB	64 VdB
30 mph	84 VdB	81 VdB	72 VdB	70 VdB	68 VdB
50 mph	88 VdB	85 VdB	76 VdB	74 VdB	72 VdB

SOURCE: FTA (2018).

NOTES: mph = miles per hour; VdB = vibration decibels.

These levels reflect generalized diesel locomotive activity and do not reflect potential future reductions from electrification of Caltrain or potential future increases from High-Speed Rail operations.

Vibration measurements are also available for two locations in the project vicinity collected for the CHSRP Draft EIR that were monitored in 2016, which are presented in **Table 5**. At each site, groundborne vibration levels were recorded at multiple distances, and the range of distances from the track centerline from where the vibration levels were measured are included in Table 5. The results include the range of maximum overall groundborne vibration levels for each type of train pass-by event based on the distance from the track. The dominant existing vibration sources are train traffic. Traffic on roadways can cause some vibration, but due to the rubber tires on the vehicles, those vibration levels are typically low and isolated to locations close to roadways.

TABLE 5
EXISTING VIBRATION LEVELS MONITORED IN THE PROJECT VICINITY

Roadway Segment	Distance from Track (feet)	Vibration Level (VdB)
Bayshore Boulevard and Old County Road, Brisbane	25–118	60–73
29 San Francisco Avenue, Brisbane	314–414	36–41

SOURCE: CHSRA (2019).

NOTE: VdB = Vibration decibels.

4.3 Sensitive Receptors

Some land uses are considered more sensitive to elevated noise levels than others due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, and auditoriums generally are more sensitive to noise than are commercial and industrial land uses. Sensitive receptors in the project area are described below and presented in **Table 6**, along with their approximate distance to the project site boundary.

TABLE 6
EXISTING NOISE-SENSITIVE RECEPTORS WITHIN 1,000 FEET OF THE PROJECT SITE

Type of Sensitive Receptor	Location	Minimum Distance from Project Site Boundaries	Representative Monitoring Location
North of the Project Site			
Single-family residences	221–257 block of Desmond Street, San Francisco	330 feet	LT-10; ST-1
Single-family residences	Sunnydale Avenue, San Francisco	350 feet	LT-10; ST-1
Single-family residences	426–625 block of Wheeler Avenue, San Francisco	900 feet	LT-9; ST-3
Symphony Church of San Francisco	333 Tunnel Avenue, San Francisco	900 feet	LT-9
West of the Project Site			
Single-family residences	MacDonald Avenue, Daly City	250 feet	LT-10
Single-family residences	100–104 block of Main Street, Daly City	900 feet	LT-11
Southwest of the Project Site			
Multi-family residential complex	111–163 block of Cliff Swallow Court, Brisbane	900 feet	LT-8
Multi-family residential complex	San Francisco Avenue/Santa Clara Street, Brisbane	500 feet	LT-7

SOURCE: Data compiled by Environmental Science Associates in 2023; Google Earth (imagery date May 2022) for parcel data (address and distance to the site).

Working from north to south along the project site, the northernmost sensitive receptors adjacent to the site consist of single-family residences along the east side of Desmond Street, the south side of Sunnydale Avenue, and along the east side of Wheeler Avenue. There is also a church (Symphony Church of San Francisco) on the west side of Wheeler Avenue. West of the project site, single-family residences are along the north side of MacDonald Avenue and Main Street. In the southwest corner of the project site, single-family residences are along Cliff Swallow Court, and San Francisco Avenue/Santa Clara Street.

Receptors sensitive to vibration include structures (especially older masonry structures), special buildings as defined by FTA (2018, page 124) (e.g., concert halls, TV and recording studios, and theaters), people (especially residents, the elderly, and the sick), and equipment (e.g., magnetic resonance imaging equipment, high-resolution lithographic, optical and electron microscopes). High levels of vibration can damage buildings. Depending on the age of the structure and type of vibration (transient, continuous, or frequent intermittent sources), vibration levels as low as 0.5 to 2.0 in/sec PPV can damage structures (FTA 2018, page 124). There are no special buildings as defined by FTA within 1,000 feet of the project site. While Caltrans has also published its Transportation and Construction Vibration Guidance Manual (2020), the vibration criteria in Caltrans' 2020 Manual relies on the FTA Guidance Manual for vibration criteria.

4.4 Regulatory Setting

4.4.1 City of Brisbane General Plan

The Community Health and Safety Chapter of the General Plan (City of Brisbane 2019) contains the following policies and actions regarding noise and vibration that are salient to the proposed mixed-use development project:

Policy 176: Minimize the intrusion of unwarranted and intrusive noise on community life.

Policy 177: Maintain ongoing communication with County, State and Federal agencies in an effort to reduce noise impacts from regional uses.

Policy 180: Establish and enforce truck routes and times of operation for haul routes to minimize impacts on residential areas.

Policy 182: Support efforts to reduce vehicle trips and keep smooth traffic flow to the extent that the number of trips and stop-and-start traffic contribute to traffic noise.

Policy 183: Coordinate land uses and construction conditions to minimize noise impacts of the Caltrain corridor and major highway arterials on adjacent land uses.

Policy 184: In conjunction with development applications and other land use decisions, consider the potential for noise generation from, as well as noise impacts on, the project or area.

Program 184a: Use the State Guidelines for land use compatibility to determine noise impacted uses.

Program 184b: Require acoustical studies for development applications in areas identified as noise impacted and potential noise generators.

Program 184c: For such projects, require a noise attenuation or a mitigation program to be submitted as a part of the project design.

Policy 187: Enforce noise standards.

Policy 189: In the Municipal Code, continue to restrict noise-producing construction activities to daytime hours of operation.

Program 189a: Continue to incorporate regulations in the Municipal Code to provide a framework to enforce noise standards and impose penalties for violations.

Program 189b: Periodically review the Municipal Code to update regulations based on new information and new technologies.

Program 189c: Periodically hold training sessions for City personnel to provide noise information and review enforcement procedures.

Program 189d: Provide information to citizens on how noise can be controlled and about City regulations and enforcement procedures.

4.4.2 City of Brisbane Municipal Code

Section 8.28.060 of the City of Brisbane Municipal Code establishes noise exposure limits for hours for site construction. The Municipal Code restricts construction hours between 7 a.m. and 7 p.m. Monday through Friday, and 9 a.m. to 7 p.m. on weekends and holidays; however, construction, alteration, or repair activities are permitted if authorized by a valid city permit by meeting one of the following noise limitations:

A. No individual piece. of equipment shall produce a noise level exceeding 83 dBA at a distance of 25 feet from the source thereof. If the device or other source is housed within a structure on the property, the measurement shall be made outside the structure, but at a distance as close to the equipment or source as possible.

B. The noise level at any point outside of the property plane of the project shall not exceed 86 dBA.

Municipal Code Section 8.28.030 establishes exterior noise standards shown in **Table 7**. Noise levels may not be more than 10 dBA above the existing ambient noise level for a cumulative period of more than 10 minutes in a given hour, or a noise level of more than 20 dBA above the ambient level for more than 3 minutes per hour for single-family and multi-family residential zoning districts. Section 8.28.040 establishes that noise levels may not be more than 10 dBA above the existing ambient level for a cumulative period of more than 10 minutes in a given hour, and may not be more than 20 dBA above the ambient level for more than 3 minutes per hour for commercial and industrial zoning districts.

TABLE 7
NOISE STANDARDS OF THE BRISBANE MUNICIPAL CODE

Land Use Type	Duration of Noise in Minutes within an Hour	Noise Standard as dBA increase Above Ambient
Single-Family Residential	Anytime	30
	3 minutes	20
	10 minutes	10
Multi-Family Residential	Anytime	30
	3 minutes	20
	10 minutes	10
Commercial / Industrial	Anytime	30
	3 minutes	20
	10 minutes	10

SOURCE: City of Brisbane (2012).

Municipal Code Section 8.28.070 establishes restrictions on amplified sound in Brisbane. Specifically, operation of loudspeakers or sound amplifiers in parks is under the provisions of Section 8.28.070 unless approved under applicable parks and recreation department guidelines and policies.

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SECTION 5
Noise and Vibration Effects

5.1 Methodology

Following is a description of the methodology used to evaluate the noise and vibration effects of project site development. The noise predictions in this technical analysis do not take into account any acoustical shielding unless specifically stated for a barrier or enclosure and, therefore, are appropriate for the topographical location of receptors in the vicinity and including hilltop receptors within the City of Brisbane.

5.1.1 Increase in Noise

The first analysis examines to what degree project construction and/or operations would generate noise. Evaluation of the project relative to this assessment under Assessment 1 focuses on operational increases in ambient noise level from stationary sources.

Assessment 2 focuses on the project's contribution to localized increases is traffic-generated noise along roadways, while Impact 3 focuses on construction-related noise generated by the project.

Stationary-Source Noise

Office, commercial, retail, event and conference space; on-site utility plants; or other noise-generating sources such as back-up generators or mechanical equipment for residential towers would be developed under the project. These uses and sources could substantially increase noise levels at noise-sensitive land uses.

Operations at proposed noise-producing land uses would be dependent on many variables. The following analysis considers the potential for noise from sources such as mechanical equipment, outdoor maintenance areas, truck loading docks and delivery activities, public address systems and amplified sound, fire stations, and parking lots by describing reference noise levels that are documented to be associated with these sources.

Project-Generated Traffic Noise

Traffic noise levels were modeled using the algorithms of the Federal Highway Administration's (FHWA) Traffic Noise Model for the existing and existing plus project and cumulative plus project scenarios. The resulting noise levels were then compared to existing modeled or monitored conditions, depending on the contribution of other noise sources in the local environment.

Construction Noise

According to the City of Brisbane General Plan Policy 189, noise-producing construction activities are restricted to daytime hour as directed in the City of Brisbane's Municipal Code, but significant construction noise impacts would occur if construction equipment operates at a noise level in excess of 83 dBA at a distance of 25 feet from the equipment or operates such that the noise level at any point beyond the property line of the project site exceeds 86 dBA.

Brisbane Municipal Code Section 8.28.060, Construction Activities, sets forth specific standards for construction hours, noise levels from individual pieces of equipment, and allowable noise levels at the property lines of a construction project. This section of the Municipal Code limits construction hours to between 7:00 a.m. and 7:00 p.m. on weekdays and 9:00 a.m. and 7:00 p.m. on weekends and holidays.

Construction noise levels were estimated for standard construction equipment and for high-impact construction equipment with consideration of the duration and intensity of construction activities. The FHWA Roadway Construction Noise Model (RCNM) was used to calculate construction noise (FHWA 2006). RCNM is used as the FHWA's national standard for predicting construction noise. The RCNM analysis includes the calculation of noise levels (L_{max} and L_{eq}) at incremental distances for a variety of construction equipment. Inputs for the model include acoustical use factors and L_{max} reference noise levels and estimated distances to the receptor location analyzed. This noise analysis determines whether construction would result in an increase of 10 dBA or more over existing noise levels at sensitive-receptor locations. Such an increase is a perceived doubling of loudness.

5.1.2 Groundborne Vibration

The effects of groundborne vibration during project site construction and operations are assessed in Assessment 2, by estimating resultant PPV levels. Equipment or activities that typically generate continuous vibration include but are not limited to: excavation equipment, static compaction equipment, vibratory pile drivers, impact pile drivers, and vibratory compaction equipment.

Vibration impacts were estimated using reference vibration levels for construction equipment in concert with vibration propagation equations published by FTA (2018).

5.1.3 Exposure of People to Excessive Noise Levels

As indicated on Figure 4, the site is not within the 65 CNEL noise contour of SFO Airport. CEQA requires the analysis of potential adverse effects of a project on the environment.

The project site is approximately 3.5 miles northwest of the SFO property boundary and approximately 4 miles from the nearest SFO runway. The City/County Association of Governments of San Mateo is the designated Airports Land Use Commission in San Mateo County, and develops and implements the *San Mateo County Comprehensive Airport Land Use Plan for the Environs of San Francisco International Airport* (ALUCP). This analysis uses the

future noise exposure estimates provided in the ALUCP for the SFO Airport to assess the potential for proposed land uses to be adversely affected by aircraft noise.

5.2 Project Effects

Stationary Noise Sources

Mechanical Equipment

Operation of the project would increase ambient noise levels in the immediate vicinity of the project site primarily through the use of on-site use of stationary equipment, such as heating, ventilation, and air conditioning (HVAC) systems and emergency generators that would be required by building code for emergency egress of high-rise buildings more than 75 feet in height or for utility facilities such as a water recycling facility. Because mechanical equipment is commonly available with noise-attenuating enclosures designed to meet local noise ordinances, the equipment's noise generation would not be expected to exceed the City of Brisbane's established standards in the Municipal Code or General Plan policies.

Emergency backup generators, if required for tower building with occupied space above 75 feet, would be tested regularly and operated occasionally. Typically, the Bay Area Air Quality Management District permits emergency backup generators to operate for up to 50 hours per year (BAAQMD 2024), or on average about 1 hour per week. The noise generated by generator testing would be akin to that of a diesel-powered truck engine, and this occasional testing would not result in a substantial permanent increase in noise levels over ambient conditions.

The Baylands Specific Plan does not depict or require specific building designs for buildings within the project and thus does not provide exact locations or specifications for mechanical equipment. Therefore, it is not possible to provide specific estimates of the noise levels at individual receptor locations that would result from operation of such stationary sources. It is reasonably expected that mechanical equipment of proposed buildings may be as close as 250 feet from existing receptors (refer to Table 6) and as close as 50 feet from proposed receptors. **Table 8** presents reference noise levels for many of these sources for informational purposes.

Given the data in Table 8 and the possibility that receptors could be as close as 50 feet away, the potential exists for unobstructed noise levels to be 70 dBA or higher at the nearest receptor locations. However, it is reasonably expected that, for tower buildings and commercial buildings, mechanical equipment would be roof-mounted and shielded by screens or parapets, which would generally reduce noise levels for receptors, except those in adjacent buildings with a greater number of stories. However, low density buildings such as residential structures could have set backs as limited as 5 feet. While screening is required for all building types under the specific plan, it cannot be assured that unspecified shielding, alone, would be sufficient to meet the standards of the noise ordinance.

TABLE 8
REFERENCE NOISE LEVELS FOR STATIONARY NOISE SOURCES ASSOCIATED WITH THE PROPOSED PROJECT

Stationary Noise Source	Documented Sound Levels (dBA)	Source
HVAC Equipment	72–78 dBA at 30 feet without acoustical treatments	Trane, *Sound Data and Application Guide*, 2002.
Standby Diesel Generator	75–90 dBA at 23 feet (size dependent) without acoustical enclosure	Cummins Power Generation, *Sound Attenuated and Weather Protective Enclosures*, 2008.
Parking Lot (four stories)	53–58 dBA, L_{max} at 75 feet	Illingworth and Rodkin, *Santana Row Parking Structure Project Noise Assessment, San José, California*, 2014.
Loading Dock	77 dBA, L_{eq} at 20 feet	Urban Crossroads, *Moreno Valley Walmart Noise Impact Analysis*, 2015.
Battery Storage Facility (3 GW with substation)	37 dBA at 3,300 feet	Dudek, *Key Energy Storage Project Noise and Vibration Study*, October 2022.
Solar Farm (200 MW)	40 dBA at 1,500 feet	ESA, *Luna Valley Solar Project Draft Environmental Impact Report,* May 2021.
Electrical Substation (2.9 acres w/ HVAC)	61 dBA at 40 feet	ESA, *Denny Substation Project, Noise Discipline Report, Seattle, WA*, March 2014.
School Yard	55 L_{eq} and 75 L_{max} at 50 feet	Bollard Acoustical Consultants, *Environmental Noise and Vibration Assessment for the Upper Westside Specific Plan*, December 2022.

SOURCE: Data compiled by Environmental Science Associates in 2024. (Additional sources noted above.)
NOTES: dBA = A-weighted decibels; ESA = Environmental Science Associates; HVAC = heating, ventilation and air conditioning.

Parking Lots and Structures

Commercial mixed-use parking noise activities of multiple vehicle types arriving and departing a parking area (of 300 vehicle stalls), including engines starting and stopping, car doors opening and closing, and persons conversing as they enter and exit vehicles, have been documented to result in an exposure of 58 dB Lmax at a reference distance of 75 feet inclusive of car horns (Illingworth and Rodkin 2014).

The Brisbane Municipal Code establishes exterior noise level standards of 10 dBA over existing ambient conditions. Given that monitored values within and around the project site are over 48 dBA, the predicted noise levels from the proposed commercial mixed-use parking meet the conditions of the Brisbane Municipal Code.

Loading Docks

Commercial heavy/medium-duty truck delivery truck noise activities are documented to generate an unshielded noise level of 77 dBA at a distance of 20 feet or about 69 dBA at 50 feet (Urban Crossroads 2915). Assuming loading movements of one semi-trailer delivery during any given hour, the predicted noise increase would be more than 10 dBA where the existing noise level is 59 dB L_{eq} or less at 50 feet away, which is a condition that could occur during early morning deliveries in nighttime hours (before 7 a.m.). Such noise levels could be mitigated by thoughtful siting of loading docks such that the building acts as a barrier from noise from adjacent noise-sensitive land uses or by provision of noise barriers or limits on delivery times and access routes.

Water Recycling Facility Impacts on Proposed and Existing Receptors

The project proposes a water recycling facility (WRF) that would be located on the west side of Tunnel Avenue north of Visitacion Creek Park. As such, this facility could be located as close as 150 feet from on-site high-density residential uses within the Roundhouse District.

The following types of operational noise are associated with treatment facilities and/or pump stations:

- Noise from the operation of mechanical equipment, including pumps, blowers, fans, centrifuges, and cogeneration engine or turbine generators.
- Noise from standby electrical generation equipment (e.g., backup generators for treatment facilities or pump stations during a power outage).
- Noise from water flowing over weirs.

The conceptual Planning Memorandum for the proposed WRF (Brown & Caldwell, 2022) states that, to control noise, buildings with interior acoustical treatment and noise-trapping louvers will house all mechanical equipment that generates noise (e.g., blowers). In lieu of the availability of noise-generating specifications for mechanical equipment associated with the proposed WRF, a quantitative analysis of the noise-generating potential of the WRF is not possible and, hence, the operational noise of the WRF should be addressed by application of a performance standard.

Methods of achieving these standards are provided below in **Table 9** and include locating mechanical equipment within a mechanical penthouse and using shields and parapets to reduce noise levels to nearby land uses.

TABLE 9
MAJOR WRF TREATMENT PROCESS EQUIPMENT AND AVAILABLE NOISE MITIGATION METHODS

Noise Source	Noise Reduction Method
Effluent Pumps	• Motor room absorptive surface treatments • Acoustic louvers • Ventilation duct silencers
Aeration Blowers	• Acoustic louvers • Ventilation duct silencers • Blower inlet silencers • Blower vent silencers
Influent and Bypass Pumps Stations	• Pump room absorptive surface treatments • Acoustic louvers • Ventilation duct silencers
Backup Generator	• Industrial-grade silencers
Odor Control Exhaust Fans	• Fan room absorptive surface treatments • Acoustic louvers • Ventilation duct silencers • Sound-rated fan selection and specification • Fan duct silencers

Battery Storage Facility Impact on Existing and Proposed Receptors

The proposed battery storage facility is expected to occupy an approximately 10-acre parcel along the west side of Tunnel Avenue north of Visitacion Creek Park. As such, it would have to be located on Parcel E4 as this is the only parcel with access to Tunnel Avenue that would be large enough to accommodate a 10-acre facility. This facility could be located as close as 150 feet from on-site high-density residential uses within the Roundhouse District.

A recent acoustical study for a 3-gigawatt (GW) storage facility in Fresno County (Dudek 2022) modeled noise from such a facility including an on-site substation to be 37 dBA at 3,300 feet. At a distance of 150 feet, this noise level would be 64 dBA. Additionally, noise impacts are typically greater when a battery storage facility has a consolidated rather than a distributed inverter design (Ecology 2024).

Caltrain tracks would separate the facility from proposed residential uses and the existing ambient noise levels in this location was recorded to be 58 dBA. Given the unknown specific design for the proposed battery storage facility and specifics with regard to locations of battery storage liquid cooling units as well as inverters, operational noise of the battery storage facility should be addressed by application of a performance standard.

Solar Farm Noise Impacts on Existing and Proposed Receptors

The proposed solar farm is expected to occupy an approximately 55-acre parcel to be located on Parcel E5. This facility would be located more than 1,500 feet from the nearest off-site receptor and 1,500 feet from the nearest on-site receptor within the Roundhouse District.

A recent acoustical study for a 200 megawatt (MW) solar farm in Fresno County (ESA 2021) modeled noise from such a facility including an on-site substation to be 40 dBA at 1,500 feet. This is a conservative estimate given that the proxy solar farm is much larger than that proposed for the Baylands. Based on this reference noise level, it is not expected that such noise would be 5 dBA over the existing ambient noise levels in the on-site or off-site locations.

New Electrical Substation

The project proposes a new electrical substation on a 2-acre site. The substation would be located north of Geneva Avenue east of the Caltrain right-of-way. As such, this substation could be located as close as 400 feet from on-site high-density residential uses within the Roundhouse District and approximately 1,700 feet from the nearest off-site noise-sensitive receptor.

An acoustical study for a regional substation serving a plan area (ESA 2014) modeled noise from such a facility 3 acres in size including an on-site HVAC equipment to be 61 dBA at 40 feet. At the 400-foot distance to the nearest on-site receptor, the resultant noise level would be expected to be 41 dBA. Given the proximity of the Caltrain tracks that would separate such uses, such noise would not be 5 dBA over the existing ambient nighttime noise levels in this location (52 dBA). The substantial distance of the substation from off-site receptors would preclude the potential for operational noise impacts on off-site receptors.

School Yard Noise

A 5-acre parcel in the northwest corner of the Ice House District (Parcel C2) is proposed as a middle school. Elementary school playgrounds, playing fields, and outdoor play areas (of 50 children) generate noise levels of approximately 55 dB L_{eq} at a reference distance of 50 feet (Bollard 2022).

The nearest existing noise-sensitive land uses to a proposed middle school site are residences located approximately 1,100 feet distant. At this distance, the exposure of noise generated by school yard use at these residences would be approximately 36 dB L_{eq}. The noise levels from a school use playground and playing field would meet the conditions of the City of Brisbane exterior noise level limits at the nearest existing noise-sensitive (residential) uses and are below the ambient noise level conditions at the nearest existing residential uses.

The nearest proposed sensitive uses (residential) are adjacent to school components in the southern end of the Roundhouse District. It is noted that Section 8.28.050 (C) of the Municipal Code specifically exempts activities conducted on parks, public playgrounds, and school grounds from the noise standards of the ordinance, provided such parks, playgrounds, and school grounds are owned and operated by a public entity or private school.

Relocated Fire Station Noise

The existing North County Fire Authority (Fire Authority) Brisbane Fire Station No. 81 at 3445 Bayshore Boulevard is proposed to be relocated to 140 Valley Drive. Until the new fire station is operational, an additional ladder company will operate out of the relocated fire station. The new location would be the same distance to the nearest existing receptor (1,000 feet) as the existing location, so this relocation would not result in a noise increase in consideration of its existing extent of operations. While the proposed Specific Plan would increase the level of demand of the fire station with a commensurate increase in the number of emergency calls using lights and sirens, this demand would be absorbed by the proposed new fire station addressed below.

New Fire Station Noise

A proposed new fire station would be constructed to serve the Baylands and Sierra Point. This station would be located in the northeastern corner of the Baylands adjacent to the US 101 freeway between Beatty Avenue and Geneva Avenue. This new fire station would serve the Baylands as well as Sierra Point and its location adjacent to US 101 is situated to allow rapid access to Sierra Point using the freeway.

The typical practice for emergency siren use is to use sirens to break traffic at intersections or warn drivers of the emergency vehicle approach when traffic is congested, or at intersections where sound is the only way the oncoming driver can be alerted to the emergency vehicle's presence. While the use of sirens in connection with emergency responses would generate a high level of sound along the response routes, Section 8.28.050 of the Brisbane municipal code specifically exempts emergencies from the noise level restrictions set out in Sections 8.28,030 and 8.28.040. Additionally, a siren on an ambiance would not constitute a stationary noise source. Therefore, the new fire station would not result in a stationary source that would generate noise in

excess of 5 dBA[4] L_{eq} above the ambient at any sensitive receptor nor would it generate noise in excess of any of the standards of Brisbane Municipal Code Section 8.28.030, as it would be exempt.

Noise Impacts of Public Gathering Spaces

The project site would include the following public gathering spaces:

- Community Fields (7.4 acres)
- Sunnydale Park (0.8 acre)
- Baylands Park (5.8 acres)
- Roundhouse Park (3.7 acres)
- Bayshore Caltrain Station Plaza (1.4 acres)

The proposed multi-purpose community gathering space at Sunnydale Park and Baylands Park, in the community event area, could be as close as 50 feet from the low-density residential units in the Bayshore District Development Plan. City of Brisbane Municipal Code Section 8.28.070 establishes restrictions on amplified sound in Brisbane and would apply to events at the outdoor performance space.

Operators of events at the outdoor performance space would be required to obtain a special event permit from the City to operate any loudspeaker or sound amplifier, as required by Municipal Code Section 8.28.070. Such a permit would require additional operational conditions such as hours of operation, direction of speakers, or sound level restrictions. Such events would not be regular occurrences, and would be restricted by permit conditions to certain hours. This would limit the noticeable increase in noise generated by occasional events at the outdoor performance space.

Aggregate Noise Level Increases from Multiple Stationary Sources throughout the Baylands

Application of the City's noise ordinance limits are generally enforced on single or multiple sources on a given site operated by a single operator under control of those sources. The above analysis assesses the potential for different noise source types within the Specific Plan to operate within the restrictions of the City of Brisbane's noise ordinance limits, in the manner in which they would be enforced by the City. However, the aggregate operation of all these sources together will increase noise levels generated within the Specific Plan area as a whole. Because the exact location of these sources is not currently available, it is not possible to provide a quantitative estimate of the aggregate increase in noise levels at specific off-site receptors locations.

[4] As stated in the Physical Environmental Setting section, a change in noise levels of 5 dB is considered to be a readily perceivable difference.

There are 39 identified blocks proposed to be developed within the Baylands and many of these blocks would accommodate multiple buildings. While noise generated by individual HVAC systems alone will comply with the City's noise ordinance, it is reasonable to acknowledge that the aggregate operation of dozens of HVAC systems across the Specific Plan area will result in an increase in ambient noise levels at existing off-site receptors. When combined with other stationary noise sources such as parking lots and loading docks, the potential for an operational increase over ambient noise levels of more than 10 dBA for a 10-minute period cannot be dismissed.

Project-Generated Traffic Noise

Vehicle trips generated by the development of the Baylands Specific Plan would generate roadway noise in the project area and surrounding environment. Increases in traffic noise gradually degrade the environment in areas sensitive to noise.

Traffic noise levels were determined based on the transportation analysis (Fehr & Peers 2023), and assessed in this section for the following scenarios:

1. Existing conditions during the weekday peak commute hour, as estimated based on average daily traffic (using data generated for the project's transportation analysis).
2. Existing plus Midterm Project plus buildout of Phase 1.
3. Existing plus full buildout of both phase 1 and Phase 2.

Additionally, the cumulative traffic noise analysis considers the following additional scenarios:

1. Midterm 2035 without the project.
2. Midterm 2035 plus buildout of Phase 1 of project mixed uses during the weekday peak commute hour.
3. Cumulative 2040 during the weekday peak commute hour, as estimated based on average daily traffic (using data generated for the project's transportation analysis).
4. Cumulative 2040 without the Geneva Interchange plus proposed full buildout (Phase 1 and Phase 2) of project mixed uses during the weekday peak commute hour.

All traffic volumes provided in the project's transportation analysis and used in this roadway noise analysis were provided by Fehr & Peers Transportation Consultants and reflect the proximity of Bayshore Caltrain Station and internal trip reduction resulting from the proposed mix of uses. The modeled with-project scenarios also account for implementation of required Transportation Demand Management (TDM) measures developed by Fehr & Peers Transportation Consultants. These TDM measures represent all feasible available measures for reducing vehicle miles traveled (Fehr & Peers 2023). Modeled weekday noise level estimates for the most highly affected roadway segments near the project site are presented in **Table 10** and **Table 11** for full buildout of the project's mixed uses during the weekday peak commute hour for Midterm with Phase 1 only (2035) and Cumulative with full project build out (2040), respectively.

TABLE 10
TRAFFIC NOISE INCREASES ALONG ROADS IN THE PROJECT VICINITY FOR EXISTING PLUS PROJECT (PHASE 1 ONLY) WITH IMPLEMENTATION OF TDM 16.4% REDUCTION TARGET

Roadway Segment	Existing	Applicable Increase Threshold (dB)	Existing plus Project (2035)	dBA Difference
Bayshore Boulevard from Blanken Road to Geneva Road	69.2	1.5	68.7	-0.5
Bayshore Boulevard from Geneva Avenue to Old County Road/Tunnel Avenue	72.9	1.5	74.1	1.2
Bayshore Boulevard from Old County Road/Tunnel Avenue to southern city limits	73.9	1.5	74.6	0.5
Geneva Avenue from Carter Street to Bayshore Boulevard	68.1	1.5	68.7	0.6
Geneva Avenue extension from Bayshore Boulevard to US 101 ramps	NA	NA	61.7	NA
Tunnel Avenue from Old County Road/Tunnel Avenue to south of Lagoon Road	65.1	1.5	67.9	2.8
Tunnel Avenue from Blanken Avenue to north of Beatty Road	64.7	3	66.2	1.5
Blanken Avenue from Executive Park Boulevard to Gillette Avenue	56.5	5	59.2	2.7
Blanken Avenue from Bayshore Boulevard to Tunnel Avenue	60.2	3	62.0	1.8
Visitacion Avenue from Bayshore Boulevard to Mansell Street	56.6	5	58.3	1.7
Sunnydale Avenue from Bayshore Boulevard to Santos Street	58.4	5	57.6	-0.8
Main Street from Bayshore Boulevard to Linda Vista Drive	55.8	5	57.1	1.3
Guadalupe Canyon Parkway west of North Hill Drive	68.7	1.5	70.9	2.2
Old County Road from Bayshore Boulevard to San Francisco Avenue	62.2	3	62.3	0.1
San Bruno Avenue from Bayshore Boulevard to Glen Park Way	56.2	5	56.7	0.5

Modeling of traffic noise increases along these roadway segments indicated that three segments of the 15 segments analyzed in Table 10 and Table 11 could experience roadside noise increases greater than 1.5 dBA:

- Geneva Avenue from Carter Street to Bayshore Boulevard.
- Tunnel Avenue from Blanken Avenue to north of Beatty Road.
- Guadalupe Canyon Parkway west of North Hill Drive.

These segments were then assessed to determine whether the presence of other noise sources, such as rail activity, would render these increases from traffic alone unnoticeable, or whether sensitive receptors are not present along these roadways to be affected by these increases.

All three of the above roadway segments have sensitive land uses along them that could be affected by roadway noise increases. None of these roadway segments are near freeways or other constant noise sources that would render the increase unnoticeable.

TABLE 11
TRAFFIC NOISE INCREASES ALONG ROADS IN THE PROJECT VICINITY FOR EXISTING PLUS PROJECT (2040) WITH IMPLEMENTATION OF TDM 16.4% REDUCTION TARGET

Roadway Segment	Existing	Applicable Increase Threshold (dB)	Existing plus Project (2040) with TDM	dBA Difference
Weekday Peak-Hour Noise Levels				
Bayshore Boulevard from Blanken Road to Geneva Road	69.2	1.5	67.1	-2.1
Bayshore Boulevard from Geneva Avenue to Old County Road/Tunnel Avenue	72.9	1.5	73.8	0.9
Bayshore Boulevard from Old County Road/Tunnel Avenue to southern city limits	73.9	1.5	74.7	0.8
Geneva Avenue from Carter Street to Bayshore Boulevard	68.1	1.5	70.4	2.3
Geneva Avenue extension from Bayshore Boulevard to US 101 ramps	NA	NA	70.1	NA
Tunnel Avenue from Old County Road/Tunnel Avenue to south of Lagoon Road	65.1	1.5	65.6	0.5
Tunnel Avenue from Blanken Avenue to north of Beatty Road	64.7	3	67.7	3.0
Blanken Avenue from Executive Park Boulevard to Gillette Avenue	56.5	5	57.6	1.1
Blanken Avenue from Bayshore Boulevard to Tunnel Avenue	60.2	3	59.5	-0.7
Visitacion Avenue from Bayshore Boulevard to Mansell Street	56.6	5	57.0	0.4
Sunnydale Avenue from Bayshore Boulevard to Santos Street	58.4	5	57.8	-0.6
Main Street from Bayshore Boulevard to Linda Vista Drive	55.8	5	56.5	0.7
Guadalupe Canyon Parkway west of North Hill Drive	68.7	1.5	70.9	2.2
Old County Road from Bayshore Boulevard to San Francisco Avenue	62.2	3	62.4	0.2
San Bruno Avenue from Bayshore Boulevard to Glen Park Way	56.2	5	56.3	0.1

SOURCE: Traffic data compiled by Fehr & Peers in 2022, and modeling performed by Environmental Science Associates in 2023.

NOTES: dB = decibels; dBA = A-weighted decibels; NA = not applicable as road does not currently exist.

a. This roadway does not currently exist nor are there any existing noise-sensitive land uses along it.

Construction Noise

Construction of the project's buildings, street network, and infrastructure would be sequenced over two primary phases. Phase 1 was assumed to occur in the area west of the Caltrain right-of-way over an approximately 8-year period from 2025 to 2033.

Phase 2 would occur in the area east of the Caltrain right-of-way over an approximately 10-year period and was assumed to occur from 2025 to 2035. However, while grading of the non-landfill areas would commence in 2025, once this activity is complete, construction of an impermeable landfill cap[5] that is part of the Landfill Closure Plan (and not the Baylands Specific Plan) would

[5] Soils within the former landfill footprint will be removed down to the waste matrix to allow for construction of an impermeable cap. The phased removal of soils and impermeable landfill cap under the regulatory authority and oversight of the Regional Water Quality Control Board and the San Mateo County Health Department will be followed by the placement of soil as engineered fill on top of the landfill cap.

interrupt Phase 2 construction until approximately 2033. Once the landfill cap is in place, construction of Phase 2 components would recommence with completion in approximately 2035. The Baylands development phase schedule is shown below in **Table 12**.

TABLE 12
BAYLANDS DEVELOPMENT CONSTRUCTION SCHEDULE

Year Construction Begins	Residential Building Permits	Year of Residential Construction Completion	Commercial Office Building Permits	Year of Commercial Construction Completion
Phase 1	**2,200 dwelling units**		**4,500,000 square feet**	
2027	166 dwelling units Blocks B10, B11	2028	1,424,325 square feet Blocks C2, C3	Dec. 2029
2028	686 dwelling units Blocks B5, B8, B12, B14	2029		
2029	337 dwelling units Blocks B6, B7, B9, B13	2030		
2030	281 dwelling units Blocks B1, B2, B3, B4	2031		
2031	333 dwelling units Blocks A1, A2, A3, A4, A5	2032	1,975,675 square feet Blocks C4, C5	Dec. 2033
2032	108 dwelling units Blocks A6, A7	2033		
2033	124 dwelling units Blocks A8, A9	2034		
2034	165 dwelling units Block A10	2035		
2035			1,100,000 square feet Blocks A11, A12, A13	Dec. 2037
Phase 2			**2,500,000 square feet**	
2038			1,120,000 square feet Block D1	Dec. 2040
2039				
2040			1,380,000 square feet Block D2	Dec. 2042
TOTAL	**2,200 dwelling units**		**7,000,000 square feet**	

Table 13 presents the noise levels generated by common pieces of construction equipment and by pile driving and compaction activities that will be required for Specific Plan development.

Brisbane General Plan Policy 189 restricts noise-producing construction activities to the same daytime hours as directed in the Municipal Code and provide a framework to enforce noise standards of the Municipal Code. Section 8.28.060 (A) of the Municipal Code requires one of the following two limitations be met: operation of construction equipment at a noise level in excess of 83 dBA at a distance of 25 feet from the equipment or operation such that the noise level at any point beyond the property line of the project site exceeds 86 dBA.

TABLE 13
TYPICAL MAXIMUM NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Reference Noise Level (dBA, L_{max} at 50 feet)	Noise Level (dBA, L_{max} at 25 feet)
Backhoe	78	**84**
Excavator	81	**87**
Compactor	83	**89**
Scraper	84	**90**
Air Compressor	78	**84**
Dozer	82	**88**
Crane	81	**87**
Grader	85	**91**
Paver	77	83
Roller	80	**86**
Front End Loader	79	**85**
Trucks	76	82
Concrete Crusher	79	**85**
Impact and Vibratory Pile Driver	101	**107**

SOURCE: FHWA (2006).

NOTE: These are maximum field measured values at 50 feet as reported from multiple samples. Concrete crusher processing noise level based on data from H.M. Pitt Labs, 2006.

Construction Hours

Per Section 8.28.060 of the Brisbane municipal code, construction activities are limited to the hours of 7 a.m. to 7 p.m. on Monday through Friday, and 9 a.m. to 7 p.m. on weekends and holidays. Construction activities for the Specific Plan development would generally adhere to these daytime hours of construction. However, some project elements may require nighttime concrete pours or other nighttime work to achieve satisfactory results or avoid traffic impacts, which could conflict with the City of Brisbane's ordinance limiting the hours and days allowed for construction work.

Section 8.28.080 of the municipal code provides for limited exceptions to the standards of Section 8.28, in general. Specifically, if an applicant can demonstrate to the satisfaction of the planning director immediate compliance with the requirements of this chapter would be impractical or unreasonable, the planning director may issue a permit to allow exception from any or all of the provisions contained in Chapter 28, with appropriate conditions to minimize the public detriment caused by such exceptions.

Such construction activities would be subject to review, permitting, and approval by the Director of the Community Development Department or the Director's designee for review and approval before the issuance of any building permit. Periods of nighttime construction noise, although permitted, may result in temporary noise level increases exceeding the quieter nighttime ambient

noise levels by more than 10 dBA, particularly for proposed on-site receptors occupied while construction of later phases is still ongoing.

Equipment Noise Levels

Section 8.28.060 (A) of the Municipal Code requires one of the following two limitations be met for construction activities to be permitted:

- No individual piece of equipment shall produce a noise level exceeding 83 dBA at a distance of 25 feet from the source thereof. If the device or other source is housed within a structure on the property, the measurement shall be made outside the structure, but at a distance as close to the equipment or source as possible; or
- The noise level at any point outside of the property plane of the project shall not exceed 86 dBA

As can be seen from Table 13, above, many pieces of standard construction equipment generate a noise level exceeding 83 dBA at a distance of 25 feet. Therefore, compliance of the project with Section 8.28.060 (A) of the noise ordinance in incumbent upon ensuring that construction noise does not exceed 86 dBA outside the property plane.

Phase 1 Construction Impacts on Existing Nearby Off-Site Receptors and Future On-site Receptors

Phase 1 Demolition

Preparation of the Baylands for development includes the demolition and deconstruction of non-historic buildings, site structures (retaining walls, utility structures), streets and pavement, existing utilities, and landscape elements that are incompatible with the proposed land development program and design. The historic Roundhouse structure will be dismantled for future restoration following site grading. Non-historic buildings and structures to be removed are primarily of wood, masonry, and concrete construction and were formerly used for administration, railyard maintenance, and industrial operations. For the Phase 1 area, these primarily consist of the industrial buildings along Bayshore Boulevard and Industrial Way. The nearest receptors to these buildings that will be demolished include residences on Linda Vista Drive in Daly City, approximately 950 feet away, and residences on Cliff Swallow Court in Brisbane, approximately 1,000 feet away.

Equipment involved with demolition of the existing structures in the Phase 1 area would include excavators, backhoes, loaders, tractors, and haul trucks. Noise levels from demolition activities at the nearest sensitive receptors are presented in **Table 14**. Noise levels from demolition activities would increase by 4.4 dBA at the nearest receptor and would be below this level at other receptors and would be less than 86 dBA.

TABLE 14
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 1 OF THE BRISBANE BAYLANDS - DEMOLITION

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Demolition								
Linda Vista Drive, Daly City	—	Dozer	81.7	950	40%	52.1	—	NA
Linda Vista Drive, Daly City	—	Tractor	84.0	950	40%	54.4	—	NA
Linda Vista Drive, Daly City	54	Combined Total	84.0	950	40/40 %	56.4	58.4	+4.4
Cliff Swallow Court in Brisbane	—	Dozer	81.7	1,000	40%	51.7	—	NA
Cliff Swallow Court in Brisbane	—	Tractor	84.0	1,000	40%	54.0	—	NA
Cliff Swallow Court in Brisbane	60	Combined Total	84.0	1,000	40/40 %	56.0	61.5	+1.5

NOTES:
a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value for equipment at 50 feet is an L_{max} as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Loading and Transport of Existing Soils from the Phase 2 Area for Grading and Compaction of Phase 1 Development and Concurrent Construction of the Solar Farm

Once demolition is complete, construction activities will consist of loading of soils unto trucks within the Phase 2 area, with simultaneous unloading, grading and compaction activities within the Phase 1 area. Once the southernmost portion of the Phase 2 area is cleared of overlying soils, the 55-acre portion that will comprise the solar farm will be fitted with the landfill cap and construction of the solar farm will commence while the remain soils to the north are moved, transported and graded on the phase 1 area. Each of these activities is assessed individually below, followed by an assessment of the aggregate construction noise from these activities occurring simultaneously.

The first step in construction would be the movement of 2.5 million cubic yards of soil from atop the former landfill area in the eastern portion of the Baylands to be placed as engineered fill within the area west of the Caltrain right-of-way to achieve final grades and create building pads. This soil movement would involve the use of loaders to fill haul trucks. Approximately 10 loaders would work to fill haul trucks with soil stockpiled in the Phase 2 area for transport to the Phase 1 area to establish grading for the Phase 1 development, starting from south to north.

Noise from loaders to fill the haul trucks in the Phase 2 area would generate noise. However, the Phase 2 area is relatively distant from off-site receptors. The northern portion of the Phase 2 area is 1,500 feet from the nearest receptors (ST-1) in the Little Hollywood neighborhood of San

Francisco, while the southern portion of the Phase 2 area is 1,800 feet from the nearest receptors on San Francisco Avenue in Brisbane (LT-7).

The FTA methodology for general assessment of construction noise entails a process for calculating the hourly dBA, L_{eq} for each stage of construction considering (1) the reference noise emissions level at 50 feet for equipment to be used for each stage of construction, (2) the usage factor for each piece of equipment, and (3) the distance between construction centerline and receptors. This methodology entails determining the resultant noise levels for the two noisiest pieces of equipment expected to be used in each stage of construction.

The FHWA Roadway Construction Noise Model (RCNM) was used to calculate construction noise (FHWA 2006). The RCNM is used as the FHWA's national standard for predicting construction noise. The RCNM analysis includes the calculation of noise levels (L_{max} and L_{eq}) at incremental distances for a variety of construction equipment. Inputs for the model include acoustical use factors, L_{eq} values at various distances depending on the receptor location analyzed.

Soil Loading. Construction noise levels were calculated for the loading of haul trucks in the Phase 2 area. The general assessment methodology for assessing construction noise impacts developed by the FTA assumes simultaneous operation of the two noisiest pieces of equipment, and this assumption is applied for subsequent construction phases. However, for this analysis of soil loading activities, it is assumed that 10 loaders would be engaged in loading of trucks simultaneously, as this effort to transport soil within the construction schedule would require such a scenario. Noise levels at the neatest receptors generated by soil-loading activities are presented in **Table 15**.

TABLE 15
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 1 OF THE BRISBANE BAYLANDS – SOIL LOADING

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Equipment: 10 Loaders	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level[d]	Increase over Existing Noise Level (dBA)
Soil Loading (10 Loaders)								
Lathrop Avenue, San Francisco	54	Combined Total	79.1	1,500	40%	55.6	57.9	+3.9
San Francisco Avenue in Brisbane	61	Combined Total	79.1	1,800	40%	54.0	61.8	+ 0.8

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is an L_{max} for a single loader.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

At the same time as loading of trucks would occur in the Phase 2 area, unloading, grading and compaction activities would be occurring in the Phase 1 area.

Grading. As soil is transported to the Phase 1 area, deposited soils would be graded across the entirety of the Phase 1 area. Equipment used for this rough grading would likely involve loaders, graders, and compaction rollers. Noise levels from grading activities at the nearest sensitive receptors are presented in **Table 16**. Noise levels from grading activities would increase by 7.0 dBA at the nearest receptor and would be below this level at other receptors.

TABLE 16
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 1 OF THE BRISBANE BAYLANDS - GRADING

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Grading								
Desmond Street, San Francisco	—	Compactor	83.2	470	20%	56.8	—	NA
Desmond Street, San Francisco	—	Excavator	80.7	470	40%	57.3	—	NA
Desmond Street, San Francisco	54	Combined Total	83.2	470	20/40%	60.0	61.0	+7
Cliff Swallow Court in Brisbane	—	Compactor	83.2	1,000	20%	50.2	—	NA
Cliff Swallow Court in Brisbane	—	Excavator	80.7	1,000	40%	50.7	—	NA
Cliff Swallow Court in Brisbane	60	Combined Total	83.2	1,000	20/40%	53.5	60.9	+0.9

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value for equipment at 50 feet is an L_{max} as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Soil Stabilization. Soil stabilization of the project site would involve consecutive weeks of deep dynamic compaction (DDC). DDC involves repeatedly dropping a large weight onto the soil using a crane. The weight is repeatedly dropped in a specific grid pattern at a defined drop height. At impact with the ground, the energy is transmitted at depth to densify loose material.

While DDC is considered an impact-type activity, the impact from weight drops results in noticeable levels of vibration but, to a much lesser degree, increases in noise. That is, weights generally land on soils that absorb the impact and sound of the weight drop (i.e., impact noise from dropping of a weight is a low-level “thud” sound). Steady noise from DDC is emitted at relatively low levels from mobile cranes that move and drop weights during DDC activities, and this activity is included in **Table 17**. Vibration emissions from DDC have been evaluated for the project under Impact 2. For Table 17 the closest off-site receptors on Desmond Street in San Francisco would be approximately 450 feet away.

TABLE 17
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 1 OF THE BRISBANE BAYLANDS – DDC

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Deep Dynamic Compaction								
Desmond Street, San Francisco	—	Crane	61.1	470	16%	53.1	—	NA
Desmond Street, San Francisco	—	Crane	61.1	470	16%	53.1	—	NA
Desmond Street, San Francisco	54	Combined Total	61.1	470	16/16%	56.1	58.2	+4.2

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value for equipment is an Lmax at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Noise levels from DDC activities at the nearest sensitive receptors are presented in Table 17. Noise levels from DDC activities would increase by 4.2 dBA at the nearest off-site and would be less than 86 dBA. On-site receptors would not be occupied while DDC is occurring.

Solar Farm. The proposed solar farm would be located on Block E5 between Tunnel Avenue and US 101 and between Visitacion Creek and Lagoon Road (see Figure 6). This parcel is approximately 1,800 feet from the nearest off-site receptor on San Francisco Avenue in Brisbane. These facilities would generally require standard construction methods. However, construction of a solar farm with a battery storage system may generally be organized into the following three broad work stages:

1. Mobilization, site preparation, fencing, laydown, and trenching.
2. Cable install, trench backfill, pile driving and racking install, inverter install, and module install.
3. Inverter, pile driving and racking install, module install, commissioning and testing.

Metal piers are typically driven into the ground by a pile-driving machine would support single-axis tracking systems, as installing solar panels would require driving steel piles about 6 to 10 feet into the ground. Because of the limited depth, pile driving intensity would be far less than that associated with building foundations. Noise levels from pile driving activities at the nearest sensitive receptors are presented in **Table 18**. Noise levels from pier installation activities would increase by 4.2 dBA at the nearest receptor and would be below this level at other receptors.

TABLE 18
DAYTIME NOISE LEVELS FROM CONSTRUCTION FOR SOLAR FARM

Representative Receptor	Existing Daytime Noise Level (dBA, Leq)a	Loudest Two Noise Sources	Reference Noise Level (dBA)b	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})c	Resultant Noise Level (dBA, L_{eq})d	Increase over Existing Noise Level (dBA)
Pile Driving for Solar Farm								
San Francisco Avenue, Brisbane	—	Crane	80.6	1,800	16%	41.5	—	NA
San Francisco Avenue, Brisbane	—	Pile Driving	101.3	1,800	20%	63.2	—	NA
San Francisco Avenue, Brisbane	61	Combined Total	101.3	1,800	16/20 %	63.2	65.2	+4.2

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA. This noise level
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Aggregate Impacts from Simultaneous Soil Loading, Unloading, Grading, and Compaction Activities, and Solar Farm Construction

Predicted noise levels from soil loading, grading and compaction and construction of the solar farm are logarithmically summed and compared to existing ambient noise levels at the nearest receptors surrounding the project site. At the time of these activities there would not yet be any occupied on-site receptors. **Table 19** presents the summarized noise levels from all of these simultaneous aggregate activities.

TABLE 19
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 1 OF THE BRISBANE BAYLANDS – AGGREGATE SOILS WORK AND SOLAR FARM CONSTRUCTION

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Noise from Loading (dBA)	Noise from Grading (dBA)	Noise from DDC (dBA)	Noise from Solar Farm (dBA)	Combined Noise Level (dBA, L_{eq})[b]	Increase over Existing Noise Level (dBA)
Aggregate							
Desmond Street, San Francisco	54	49.0	60.0	56.1	54.0	63.0	+9.0
Cliff Swallow Court in Brisbane	60	50.8	53.5	47.3	60.0	63.8	+3.8
Wheeler Avenue, San Francisco	54	55.6	52.8	50.2	54.0	60.6	+6.6
San Francisco Avenue in Brisbane	61	54.0	50.6	39.5	63.2	65.7	+4.7

NOTES:

a. Existing daytime noise level based on long- or short-term noise monitoring.
b. Combined noise level is the logarithmic sum of the existing noise level and the contributions from each of the three simultaneous soil work activities.

Roadside Noise Increase from Haul Trucks

Local jurisdictions do not have the authority to regulate transportation noise through their County or municipal codes.[6]Therefore, transportation noise increases are assessed separately from construction or operational noise which are generally assessed relative to standards in the local municipal code.

Soil materials to be moved from the east side of the Baylands to the west side will be hauled by trucks following a 3.8-mile route using a combination of off-road haul routes and public streets indicated in **Figure 5** over an approximately 34-month period. During peak times for site grading, approximately 640 daily round trip truck hauls would occur, including approximately 160 round trip truck hauls in the AM peak hour and 160 round trip truck hauls in the PM peak hour.

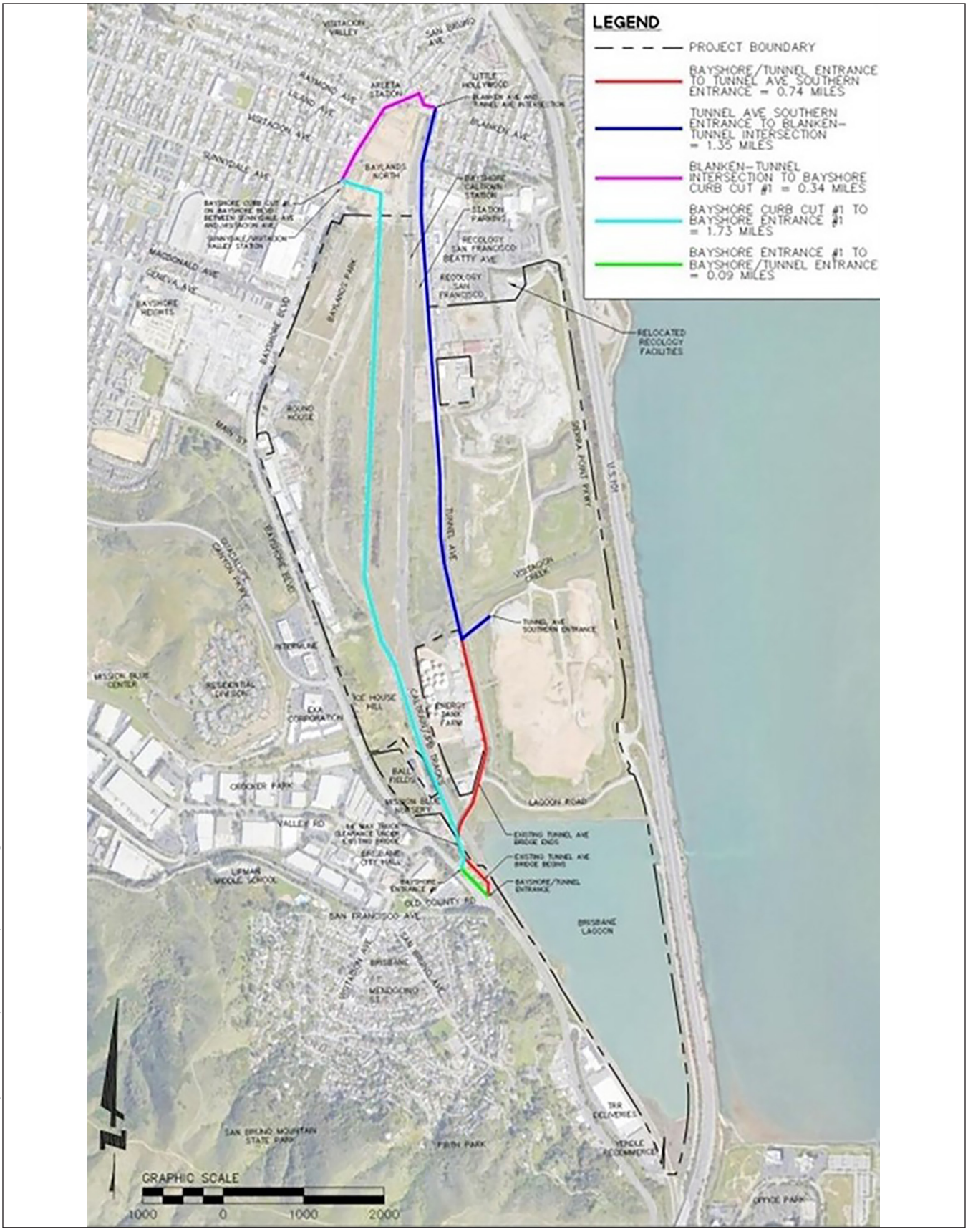
Transport to the southern Phase 1 areas would use Tunnel Avenue south to the Old County Road intersection where they would briefly proceed north on Bayshore Boulevard before accessing an internal roadway within the Phase 1 development area for deposition. This southerly route would be approximately 500 feet from existing residences on San Francisco Avenue in Brisbane and 1,200 feet from existing residences on Cliff Swallow Court in Brisbane.

Transport to the northern Phase 1 areas would use Tunnel Avenue north to Blanken Avenue and then proceed south on Bayshore Boulevard before accessing the internal roadway within the Phase 1 development area for deposition. This northerly route would be within 20 feet from existing residences on Blanken Avenue between Tunnel Avenue and Bayshore Boulevard and within 50 feet of residences on the 2400 block of Bayshore Boulevard.

Traffic noise modeling to analyze the effects of the traffic generated by hauling of soil along local roadways was completed using a spreadsheet based on the FHWA Traffic Noise Model. Traffic noise impacts may be determined by comparing the increase in noise levels (traffic contribution only). **Table 20** presents the results of the roadway hourly average noise modeling for construction haul trucks. As can be seen from this table, roadway noise levels would increase by 5 to 12 dBA along four roadway segments.

- Bayshore Boulevard between Tunnel Avenue and Southern Access Road;
- Tunnel Avenue between Beatty Avenue and Blanken Avenue;
- Blanken Avenue between Tunnel Avenue and Bayshore Boulevard; and
- Bayshore Boulevard between Blanken Avenue and Northern Access Road

[6] Local jurisdictions can establish noise exposure standards for proposed new uses relative to transportation in their General Plans. Additionally, some local jurisdictions can adopt General Plan Policies that establish CEQA criteria for transportation noise. However, this later condition is not the case for Brisbane or San Francisco.



SOURCE: Baylands Specific Plan

Brisbane Baylands Specific Plan Technical Report

Figure 5
Proposed Grading Haul Routes

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TABLE 20
HOURLY AVERAGE DAYTIME NOISE LEVELS FROM HAUL TRUCK NOISE INCREASES ALONG SOIL HAUL ROUTES (dBA, L_{EQ})

Roadway Segment	Nearest Sensitive Receptor Location	Distance from Roadway Centerline to nearest Receptor (feet)	(A) Existing Modeled or Monitored [a] Noise level	Applicable Significance Threshold	(B) Existing plus Haul Trucks	(B–A) Difference between Existing plus Haul Trucks and Existing
Bayshore Boulevard between Tunnel Avenue and Southern Access Road	San Francisco Avenue, Brisbane	375	64.7	>3 dBA increase in an area >60 dBA Ldn	70.1	5.4
Southern Access Road between Bayshore Boulevard and Ice House District Deposition Area	Cliff Swallow Court in Brisbane	1,200	62[a]	>3 dBA increase in an area >60 dBA Ldn	62	<1
Tunnel Avenue between Beatty Avenue and Blanken Avenue	Tunnel Avenue Residences, San Francisco	22	65.9	>3 dBA increase in an area >60 dBA Ldn	78.0	12.2
Blanken Avenue between Tunnel Avenue and Bayshore Boulevard	Blanken Avenue Residences, San Francisco	22	67.6	>3 dBA increase in an area >60 dBA Ldn	78.2	10.5
Bayshore Boulevard between Blanken Avenue and Northern Access Road	Bayshore Boulevard Residences, San Francisco	50	68.5	>3 dBA increase in an area >60 dBA Ldn	75.4	6.9
Northern Access Road between Bayshore Boulevard and Bayshore District Deposition Area	Desmond Street Residences, San Francisco	1,100	59.7[c]	>3 dBA increase in an area >60 dBA Ldn	62.2	2.5

SOURCES: Environmental Science Associates, 2024 (Appendix A).

NOTES:

a. Monitored noise values are used for the nearest sensitive receptors that are not located along haul routes. All other existing values are modeled values for the roadway.

Methods of avoiding these potential roadway noise increases from truck hauling are limited. Alternate routes to the deposition locations are restricted due to the presence of the Caltrain tracks, over which there are few other options south of the Plan area other than the Tunnel Avenue Bridge, which route impacts the residents on and around San Francisco Avenue in Brisbane. An alternate southerly route would be to use U.S. 101 to more southerly Bayshore Boulevard that would exacerbate air quality impacts by substantially increasing the miles travelled and would still impact the same receptors Tunnel Avenue/Blanken Avenue route.

Alternate northerly routes could involve using Beatty Avenue to northbound U.S. 101 that would exacerbate air quality impacts by substantially increasing the miles travelled and would still impact the same receptors on Bayshore Boulevard as the Tunnel Avenue bridge route. While this route would reduce impacts to receptors on Tunnel Avenue and some receptors on Blanken Avenue, it would impact an even greater number of additional receptors along Bayshore

Boulevard between U.S. 101 and Blanken Avenue. Therefore, alternate routes do not represent a method of reducing identified roadway noise increases from soil transport.

Mechanical transport of soils over the Caltrain tracks using a system of conveyor belts over the Caltrain right-of-way would require review and approval by Caltrain Joint Powers Board but could represent a feasible mitigation measure to avoid roadway noise impacts from haul trucks. However, because such an alternative transport option is under the control of the Caltrain Joint Powers Board such a mitigation measures would be outside of the jurisdiction of the City of Brisbane to implement.

Pile Driving

After grading and compaction of the Phase 1 area, excavation and foundation work for each individual structure would begin, with commercial uses in the Icehouse District commencing first followed by residential uses of the Roundhouse and Bayshore districts. Proposed buildings greater than 50 feet in height will likely be unable to use matt foundations and require pile installation. Pile driving is a construction technique that will likely be necessary for the foundations of proposed tower buildings such as multi-family mid- and high-density structures in the Roundhouse and Bayshore districts and the mid-density and high-density commercial areas of the Ice House District.

Pile driving would be the loudest construction activity but would occur over a fraction of the total construction period for the given plan component and, once the particular construction activity was completed, the associated noise would no longer be experienced by the affected receptors. However, given the phased sequence of construction, pile driving is expected to occur intermittently over the 10-year project construction period. Intermittent noise from pile driving over this period would affect not only the existing off-site sensitive receptors but also those residents who occupy buildings constructed during the initial increments of development.

The reference noise level for pile driving is 101 dBA, L_{max} at a distance of 50 feet, which equates to a noise level of 107 dBA L_{max} at a distance of 25 feet.

Noise levels from pile driving activities at the nearest sensitive receptors are presented in **Table 21**. Noise levels from pile driving activities would substantially increase existing noise levels at both on-site and off-site receptors. Off-site receptors as far as 1,500 feet or more away could experience significant noise increases of 10 dBA or more over existing daytime noise levels, potentially affecting receptors in Brisbane, Daly City, and San Francisco during activities for the westernmost portion of the Icehouse District, and northern portions of the Bayshore District. Additionally, if pile driving is conducted while new on-site noise-sensitive land uses are occupied, uses within 120 feet would experience noised levels exceeding the 86 dBA criterion of the noise ordinance and uses within 1,500 feet may experience noise levels exceeding 10 dBA over existing daytime ambient levels.

TABLE 21
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 1 OF THE BRISBANE BAYLANDS – PILE DRIVING

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Pile Driving								
Desmond Street, San Francisco	—	Crane	80.6	470	16%	53.1	—	NA
Desmond Street, San Francisco	—	Pile Driving	101.3	470	20%	74.8	—	NA
Desmond Street, San Francisco	54	Combined Total	101.3	470	16/20%	74.8	74.8	+21
Cliff Swallow Court, Brisbane	60	Combined Total	101.3	1,200	16/20%	66.7	67.5	+7.5
Wheeler Avenue, San Francisco	54	Combined Total	101.3	975	16/20%	68.5	68.7	+15
San Francisco Avenue, Brisbane	61	Combined Total	101.3	3,800	16/20%	56.7	62.4	+1.4
On-Site Receptor	51	Combined Total	101.3	50	16/20%	94.3	94.3	+43

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Installing cast-in-place concrete piles would reduce noise as noise from auger drilling is 17 dBA less than an impact pile driver but only where geologic conditions can support this option. Other "quiet" pile-installation technology such as pre-drilling of piles and the use of more than one pile driver to shorten the total pile installation duration are other measure that may be implemented. The geotechnical report for the Phase 1 area states that driven precast pre-stressed concrete piles or auger cast piles are generally used for similar structures within the vicinity of the project site. However, it also noted that driven concrete piles are economical but will create noise and vibration and that if neighboring properties are sensitive to noise and vibration during foundation construction, auger cast piles may be used but that recommendations for piles types should be provided in the design-level geotechnical reports for individual parcels.

More recently, newer technologies such as micro pile installation for foundations or use of the Giken Silent Pile Driver are becoming common. It has been have demonstrated that noise levels using such equipment can generate reduced noise levels of approximately 64 dBA at 16 meters.

However, because the geotechnical report acknowledges that piles types should be provided in the design-level geotechnical reports for individual parcels, the potential need for traditional impact pile driving and its associated noise levels remains a distinct possibility.

Phase 1 Vertical Construction

Once foundations are in place for a given structure, vertical construction would begin, which would involve a standard set of construction equipment.

Noise levels from building construction activities at the nearest sensitive receptors are presented in **Table 22**. Noise levels from building construction would increase by 9.8 dBA at the nearest off-site receptor. However, impacts of building construction activities on adjacent on-site receptors would be more than 30 dBA over existing levels. It should be noted that the existing monitored noise levels would likely increase over time once the earliest construction parcels are completed and occupied and their associated traffic added to the on-site roadway network.

TABLE 22
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 1 OF THE BRISBANE BAYLANDS – BUILDING CONSTRUCTION

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Vertical Building Construction								
Desmond Street, San Francisco	—	Forklift	83.4	470	40%	60.0	—	NA
Desmond Street, San Francisco	—	Tractor	84.0	470	40%	60.6	—	NA
Desmond Street, San Francisco	54	Combined Total	84.0	470	40/40%	63.3	63.8	+9.8
On-Site Receptor	—	Forklift	83.4	50	40%	79.4	—	NA
On Site Receptor	—	Tractor	84.0	50	40%	80.0	—	NA
On Site Receptor	51	Combined Total	84.0	50	40/40%	82.7	82.7	+32

NOTES:
a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Facility Construction

Several utilities and facilities would also be constructed during the Phase 1 construction period, which would occur in both the Phase 1 area and the Phase 2 area in order to serve the occupants of the Phase 1 development. These include construction of a new fire station, relocation of an existing fire station, a new electrical substation, a 3.16-million-gallon water tank with interconnecting water mains, a 250- MW battery storage facility, and an on-site water recycling facility.

Relocated Fire Station

The existing North County Fire Authority (Fire Authority) Brisbane Fire Station No. 81 at 3445 Bayshore Boulevard is proposed to be relocated to 140 Valley Drive. The new location would be approximately 1,000 feet from the nearest sensitive receptor on San Francisco Avenue

in Brisbane. Noise levels from building construction activities at the nearest sensitive receptors are presented in **Table 23**. Noise levels from building construction activities would increase by 1.4 dBA at the nearest receptor and would be below this level at other receptors.

TABLE 23
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF THE RELOCATED FIRE STATION – BUILDING CONSTRUCTION

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Construction of the Relocated Fire Station								
San Francisco Avenue, Brisbane	—	Forklift	83.4	1,000	40%	53.4	—	NA
San Francisco Avenue, Brisbane	—	Tractor	84.0	1,000	40%	54.0	—	NA
San Francisco Avenue, Brisbane	61	Combined Total	84.0	1,000	40/40%	56.7	62.4	+1.4

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

New Fire Station

The proposed new fire station would be located adjacent to US 101, between Beatty Avenue and the Geneva Avenue Extension and would serve the Baylands and Sierra Point. This station would be located in the northeastern corner of the Phase 2 area (Block D1) and could be constructed sometime during Phase 1. The new station would be approximately 1,080 feet from the nearest sensitive receptor on Lathrop Avenue in San Francisco. Noise levels from building construction activities at the nearest sensitive receptors are presented in **Table 24**.

TABLE 24
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF THE NEW FIRE STATION – BUILDING CONSTRUCTION

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Construction of the New Fire Station								
Lathrop Avenue, San Francisco	—	Forklift	83.4	1,000	40%	52.7	—	NA
Lathrop Avenue, San Francisco	—	Tractor	84.0	1,000	40%	53.3	—	NA
Lathrop Avenue, San Francisco	58	Combined Total	84.0	1,000	40/40%	56.1	60.2	+2.2

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Noise levels from building construction activities would increase by 2.2 dBA at the nearest sensitive receptor and would be below this level at other receptors. However, it should be noted that construction of the new fire station could occur during soil loading, transport and grading. If this condition were to occur, noise levels at the Lathrop Avenue receptor could experience combined construction noise of approximately 61.9 dBA which would be 3.9 dBA over existing noise level.

New Substation

A new 2-acre substation would be constructed to serve the Baylands. The substation is proposed along the north side of Geneva Avenue east of the Caltrain right-of-way (see **Figure 6**). These parcels would be approximately 1,200 feet from the nearest off-site noise-sensitive receptor in the Little Hollywood neighborhood in San Francisco.

Construction activities for the substation would involve equipment similar to that considered above for construction of the fire station but at a farther distance from receptors.

Water Recycling Facility and Water Tank and Battery Storage Facility

Both the on-site water recycling facility (WRF) with the 3.16-million-gallon water tank with interconnecting water mains and the battery storage facility would be constructed in an approximately 2-acre site east of the Caltrain tracks and west of Tunnel Avenue, north of the Kinder Morgan Tank Farm and south of the satellite parking area across from Golden State Lumber. This parcel is approximately 2,000 feet from the nearest off-site receptor on Cliff Swallow Court in Brisbane. Activities for construction of the WRF and water tank would involve equipment similar to that considered above for construction of the fire station but at a farther distance from receptors. The Battery Storage Facility construction would be modest with slabs for battery container sheds.

The water recycling facility would also serve off-site users in Sierra Point and Oyster Point in the future and would, therefore, require construction of pipeline for conveyance of treated wastewater along Tunnel Avenue and Bayshore Boulevard. Trenching work for pipeline installations would generally consist of cut-and-cover methods except where crossing of Caltrain tracks and U.S.101 may require use of trenchless methods, such as jack-and-bore techniques. The total length of pipeline to be constructed would depend on the number and location of end users but is conservatively estimated to be up to 5.5 miles (including 0.5 mile of pipeline within the project site to connect to the off-site recycled water pipeline). The receptors nearest to the pipeline trenching activity would be the Sierra Point Trailer Park, approximately 90 feet west of the eastern right-of-way of Bayshore Boulevard.

Noise levels from pipeline trenching activity at the nearest sensitive receptor are presented in **Table 25**. Noise levels from pipeline trenching activity would increase by 14.7 dBA at the nearest receptor and would drop below 10 dBA over ambient levels at receptors located further than 160 feet. Pipeline construction would progress at a rate of approximately 100 feet per day. The nearest receptor would experience construction noise for approximately 3 days as construction approached then receded.

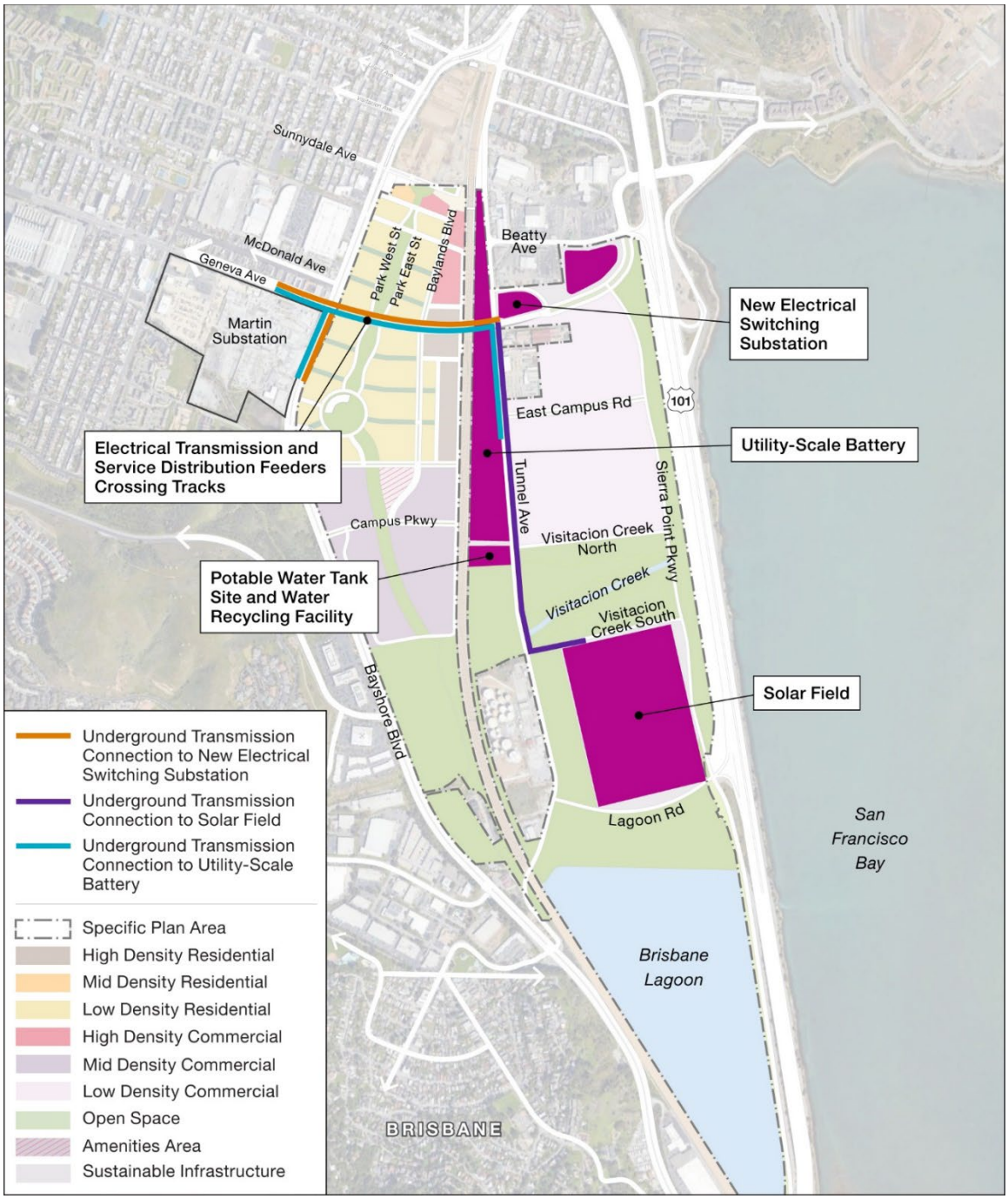


Figure 6
Proposed Electrical and Water Facilities

TABLE 25
DAYTIME NOISE FROM WRF PIPELINE TRENCHING ACTIVITY

Representative Sensitive Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Sierra Point Mobile Home Park, Brisbane	—	Tractors/ Loaders/ Backhoes	84.0	90	40%	74.9	—	NA
	—	Graders	85.0	90	40%	75.9	—	NA
	64	Combined Total	85.0	90	40%	78.5	78.7	+14.7

NOTES: NA = not applicable

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by the FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Trenchless construction methods require pits at both the launching and receiving ends of the bore. These pits would have to be shored with interlocking sheet piles that would likely require use of a vibratory pile driver. The exact locations of pits are currently unknown but the initial crossing from Tunnel Avenue towards Bayshore Boulevard would likely be the location closest to receptors (residences on San Francisco Avenue). At a conservatively estimated distance of 400 feet, vibratory pile driving would generate a noise level of 76 dBA which would be 15 dBA over the existing ambient level at these receptors. The duration of pile driving activity would be approximately two weeks.

Road Building

Phase 1 of the project would involve construction of internal roadways, including the extension of Geneva Avenue west of the Caltrain right-of-way. Noise levels from road building and paving activities at the nearest sensitive receptors are presented in **Table 26**. Noise levels from road building activities would increase by 6.3 dBA at the nearest receptor and would be below this level at other receptors.

Underground Utility Installations

Phase 1 of the project would involve underground utility installation, which would require cut and fill trenching activities. In-ground utility installations would occur throughout the Phase 1 area but would be closest to off-site receptors where it occurs in the right-of-way along Bayshore Boulevard, Geneva Avenue, and along a short portion of Guadalupe Canyon Parkway. Noise levels from trenching activities at the nearest sensitive receptors are presented in **Table 27**. Noise levels from trenching activities would increase existing levels by 9.7 dBA at the nearest receptor and would be below this level at other receptors.

TABLE 26
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF ROADWAYS

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Road Building								
MacDonald Avenue, San Francisco	—	Tractors/ Loaders/ Backhoes	84.0	420	40%	61.5	—	NA
MacDonald Avenue, San Francisco	—	Graders	85.0	420	40%	62.5	—	NA
MacDonald Avenue, San Francisco	60	Combined Total	85.0	420	40/40%	65.1	66.3	+6.3

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

TABLE 27
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PROJECT UTILITIES – TRENCHING

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Trenching								
Cliff Swallow Court, Brisbane	—	Tractors/ Loaders/ Backhoes	84.0	845	40%	55.5	—	NA
Cliff Swallow Court, Brisbane	—	Graders	85.0	845	40%	56.5	—	NA
Cliff Swallow Court, Brisbane	60	Combined Total	85.0	845	40/40%	59.0	62.5	+2.5
MacDonald Avenue, San Francisco	—	Tractors/ Loaders/ Backhoes	84.0	260	40%	65.7	—	NA
MacDonald Avenue, San Francisco	—	Graders	85.0	260	40%	66.7	—	NA
MacDonald Avenue, San Francisco	60	Combined Total	85.0	260	40/40%	69.2	69.7	+9.7

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Phase 2 Construction Impacts on Existing Nearby Off-Site Receptors and future On-site Receptors

Soil Stabilization

Soil stabilization of each individual development site would involve consecutive weeks of DDC. Steady noise from DDC is emitted at relatively low levels from mobile cranes that move and drop weights during DDC activities, and this activity is included in **Table 28**. For this table, the closest off-site receptors on Lathrop Avenue in San Francisco would be approximately 1,100 feet away, while the closest on-site receptors could be residential uses of the Roundhouse or Bayshore districts, which could be as close as 500 feet.

TABLE 28
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 2 OF THE BRISBANE BAYLANDS – DDC

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Deep Dynamic Compaction								
Lathrop Avenue, San Francisco	—	Crane	61.1	1,100	16%	45.7	—	NA
Lathrop Avenue, San Francisco	—	Crane	61.1	1,100	16%	45.7	—	NA
Lathrop Avenue, San Francisco	58	Combined Total	61.1	1,100	16/16%	48.8	58.5	+0.5
On-Site Receptor	—	Crane	80.6	500	16%	52.6	—	NA
On-Site Receptor	—	Crane	80.6	500	16%	52.6	—	NA
On-Site Receptor	57	Combined Total	80.6	500	16/16%	55.6	59.4	+2.4

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment is an L_{max} at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Noise levels from DDC activities at the nearest sensitive receptors are presented in Table 28. Noise levels from DDC activities would increase by 0.5 dBA at the nearest off-site receptor. Noise impacts of DDC activities on the nearest Phase 1 on-site receptors would increase by 2.4 dBA and would be less than 10 dBA increase over ambient levels.

Pile Driving

After compaction, foundation work for each individual structure would commence in the Phase 2 area. Because of the presence of the landfill below the landfill cap, it is conservatively assumed that all structures in the Phase 2 area would require pile driving for installation of foundations. Piles would also likely be required for the proposed Geneva Avenue bridge over the Caltrain right-of-way.

Pile driving would be the loudest construction activity but would occur over a fraction of the total construction period for the given plan component, and once the particular construction activity was completed, the associated noise would no longer be experienced by the affected receptors. However, given the phased sequence of construction, pile driving can be expected to occur intermittently over the 2-year Phase 2 construction period that would occur after placement of the landfill cap. Intermittent noise from pile driving over this period would affect not only the existing off-site sensitive receptors but also those residents who would occupy buildings constructed during the initial phases of development.

The reference noise level for pile driving is 101 dBA, L_{max} at a distance of 50 feet, which equates to a noise level of 107 dBA L_{max} at a distance of 25 feet.

Noise levels from pile driving activities at the nearest sensitive receptors are presented in **Table 29**. Noise levels from pile driving activities would substantially increase existing noise levels at both on-site and off-site receptors. Off-site receptors as far as 1,100 feet or more away could experience significant noise increases of 10 dBA or more over existing daytime noise levels, potentially impacting dozens of receptors in Brisbane, and San Francisco during activities for westernmost portion of the Ice House District, and northern portions of the Bayshore District.

TABLE 29
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 2 OF THE BRISBANE BAYLANDS – PILE DRIVING

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Pile Driving								
Lathrop Avenue, San Francisco	—	Crane	80.6	1,100	16%	45.7	—	NA
Lathrop Avenue, San Francisco	—	Pile Driving	101.3	1,100	20%	67.4	—	NA
Lathrop Avenue, San Francisco	58	Combined Total	101.3	1,100	16/20%	67.5	68	+10
On-Site Receptor	—	Crane	80.6	500	16%	52.6	—	NA
On-Site Receptor	—	Pile Driving	101.3	500	20%	74.3	—	NA
On-Site Receptor	57	Combined Total	101.3	500	16/20%	74.3	74.4	+17.4

NOTES:
a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Vertical Construction

Once foundations are in place for a given structure, vertical construction would begin, which would involve a standard set of construction equipment. Vertical construction would also be required for the proposed Geneva Avenue extension bridge over the Caltrain right-of-way. Noise

levels from building construction activities at the nearest sensitive receptors are presented in **Table 30**. Noise levels from building construction would increase by 2.2 dBA at the nearest off-site receptor. Noise increases of building construction activities on adjacent on-site receptors would be 7.0 dBA over existing levels.

TABLE 30
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 2 BRISBANE BAYLANDS – BUILDING CONSTRUCTION

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Vertical Building Construction								
Lathrop Avenue, San Francisco	—	Tractors/ Loaders/ Backhoes	84.0	1,100	40%	53.2	—	NA
Lathrop Avenue, San Francisco	—	Tractors/ Loaders/ Backhoes	84.0	1,100	40%	53.2	—	NA
Lathrop Avenue, San Francisco	58	Combined Total	84.0	1,100	40/40%	56.2	60.2	+2.2
On-Site Receptor	—	Tractors/ Loaders/ Backhoes	84.0	500	40%	60.0	—	NA
On-Site Receptor	—	Tractors/ Loaders/ Backhoes	84.0	500	40%	60.0	—	NA
On-Site Receptor	57	Combined Total	84.0	500	40/40%	63.0	64.0	+7.0

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Road Building

Phase 2 of the project would involve construction of internal roadways, including the Geneva Avenue bridge over the Caltrain right-of-way. Noise levels from road building and paving activities at the nearest sensitive receptors are presented in **Table 31**. Noise levels from road building activities would increase by 2.1 dBA at the nearest receptor and would be below this level at other receptors.

TABLE 31
DAYTIME NOISE LEVELS FROM CONSTRUCTION OF PHASE 2 ROADWAYS

Representative Receptor	Existing Daytime Noise Level (dBA, L_{eq})[a]	Loudest Two Noise Sources	Reference Noise Level (dBA)[b]	Distance to Receptor (feet)	Usage Factor	Adjusted L_{eq} Level (dBA, L_{eq})[c]	Resultant Noise Level (dBA, L_{eq})[d]	Increase over Existing Noise Level (dBA)
Road Building								
Lathrop Avenue, San Francisco	—	Tractors/ Loaders/ Backhoes	84.0	1,200	40%	52.4	—	NA
Lathrop Avenue, San Francisco	—	Graders	85.0	1,200	40%	53.4	—	NA
Lathrop Avenue, San Francisco	58	Combined Total	85.0	1,200	40/40%	56.0	60.1	+2.1

NOTES:

a. Existing noise level based on long- or short-term noise monitoring.
b. Reference value is for equipment at 50 feet as published by FHWA.
c. Noise level is adjusted for number of equipment, distance to receptors, and usage factor.
d. Resultant noise level is the logarithmic sum of the existing noise level and the adjusted noise level.

Construction Vibration

This analysis addresses vibration generated by construction activities at existing off-site buildings and at buildings constructed during earlier phases of construction. Equipment or activities that typically generate continuous vibration include but are not limited to: excavation equipment, impact pile drivers, static compaction equipment, vibratory pile drivers, and vibratory compaction equipment.

For historic structures, Caltrans identifies a continuous vibration limit of 0.25 in/sec PPV as the standard applied to minimize the potential for cosmetic damage to a building (Caltrans 2020). A continuous vibration limit of 0.50 in/sec PPV is applied to minimize the potential for cosmetic damage at buildings of normal conventional construction. For annoyance from construction vibration, a threshold of 72 VdB (0.016 in/sec PPV) is applied for residential uses, consistent with FTA criteria for conditions where there are an frequent (more than 70) number of events per day for Category 2 (residential) land uses.

Construction activities during Phase 1 commence with demolition of existing industrial buildings in Industrial Way in early 2025. Later in 2025 loading of trucks would occur in the Phase 2 area, as would unloading, grading and compaction activities within the Phase 1 area. Once grading and compaction are complete, vertical construction activities would begin.

Phase 1 Icehouse Hill District

Phase 1 construction for development in the Icehouse Hill District starts with Blocks C2 and C3 in 2027 with completion at the end of 2029 while construction of Blocks C34 and C5 would commence in 2031 with completion at the end of 2033. While the Specific Plan would establish zoning and development standards for Baylands development and describes the general order in which development is intended to proceed, the precise location, design, and timing for construction

of individual buildings are not yet known. Based on the geotechnical reports prepared for the western and eastern portions of the site, it is likely that buildings that are four stories or more in height could require pile driving. A matrix of vibration from construction activities with distance to receptors was, therefore, used to conduct the analysis. This matrix, presented in **Table 32**, uses dark-shaded areas to indicate the distances at which vibration levels would exceed the significance criterion for conventional structures. The lighter shaded areas indicate the distances at which the criterion for historic structures or buildings that are documented to be structurally weakened would be exceeded. As shown in Table 32, cosmetic damage to a conventionally constructed building could result from pile driving at a distance of 30 feet or closer and to a historic building at a distance of 100 feet or closer.

TABLE 32
VIBRATION LEVELS FOR CONSTRUCTION ACTIVITY

Equipment	Estimated Peak Particle Velocity (inches per second)							
	At 25 Feet (reference)	At 30 Feet	At 40 Feet	At 75 Feet	At 135 Feet	At 145 Feet	At 170 Feet	At 340 Feet
Loader	0.0263	0.020	0.013	0.005	0.002	0.002	0.001	0.001
Backhoe	0.028	0.021	0.014	0.005	0.002	0.002	0.002	0.001
Jackhammer	0.035	0.027	0.017	0.007	0.003	0.003	0.002	0.001
Loaded Trucks	0.076	0.058	0.038	0.015	0.006	0.005	0.004	0.002
Large Bulldozer	0.089	0.068	0.044	0.017	0.007	0.006	0.005	0.002
Excavators	0.175	0.133	0.086	0.034	0.014	0.013	0.010	0.003
Impact Pile Driver	0.65	0.494	0.321	0.125	0.052	0.047	0.037	0.013
Vibratory Pile Driver	0.65	0.494	0.321	0.125	0.052	0.047	0.037	0.013

SOURCE: Caltrans (2020); FTA (2018); New Hampshire Department of Transportation (2012).

NOTE: Dark-shaded areas indicate distances where vibration levels would exceed the criterion for conventional structures. Lighter shaded areas indicate the distances at which the criterion for historic structures or buildings that are documented to be structurally weakened would be exceeded.

There are no historic structures within 200 feet of the proposed Icehouse Hill District. The nearest off-site structure, 3240 Bayshore Boulevard, is approximately 340 feet from the nearest construction area for the Icehouse Hill District. The potential use of an impact pile driver during construction of the project would be expected to generate the highest vibration levels during construction. According to the Caltrans Transportation and Construction Vibration Manual, both impact pile driving and vibratory pile driving typically generate vibration levels of 0.65 in/sec PPV at a distance of 25 feet (Caltrans 2020). The 3240 Bayshore Boulevard off-site structure would be exposed to a vibration level of 0.013 in/sec PPV, below the applied human annoyance and building damage threshold.

However, with on-site construction development starting with blocks C2 and C3, these buildings, once construction is complete at the end of 2029, could be subject to vibration from construction proposed for Blocks C4 and C5 to commence in 2031. Buildings on Blocks C2 and C3 would be approximately 40 feet north of the construction of the proposed Blocks C4 and C5 mid density

commercial buildings, where pile driving could occur. The structures would be exposed to a vibration level of 0.321 in/sec PPV (98 VdB).

Phase 1 Roundhouse District

The construction schedule for the Roundhouse District shows groups of blocks commencing construction at yearly intervals starting in 2027 and completing in 2031. Proposed project plans are currently conceptual and the specific locations of pile driving activities, among other construction activities, are not yet known; therefore, a matrix of vibration from construction activities with distance to receptors was used to conduct the analysis. This matrix is presented in Table 32, above. Blocks B1 through B12 would be low-density residential uses with a maximum building height of 50 feet, which would likely preclude then need for pile installation for foundations. Blocks B13 and B14 would be high-density residential towers with a maximum height of 270 feet. Pile driving in the Roundhouse District would likely be required to support these proposed towers on the eastern blocks.

Because the historic Roundhouse structure will be dismantled for future restoration following site grading, there will be no historic structures within 200 feet of the proposed Roundhouse District during construction of foundations. The nearest off-site structure, 2850 Bayshore Boulevard, is approximately 145 feet from the nearest construction area for the Roundhouse District. An excavator typically generates vibration levels of 0.047 in/sec PPV at a distance of 145 feet (see Table 32 above). The structure at 2850 Bayshore Boulevard is an industrial use and would not be considered vibration-sensitive for the purposes of annoyance. The nearest off-site residential use to the Roundhouse District would be residences on McDonald Avenue approximately 530 feet to the northwest. At this distance, vibrations from earth-moving equipment would be reduced to 0.0009 in/sec PPV (64 VdB).

However, with on-site development starting occupancy in 2030 for the earlier Blocks (B5, B8, B12, and B14), residential buildings on Blocks B5 and B14 would be approximately 30 feet south of the construction of the proposed B13 high-density residential tower, where pile driving could occur. These on-site structures would be exposed to a vibration level of 0.494 in/sec PPV (102 VdB).

Phase 1 Bayshore District

The construction schedule for the Bayshore District shows groups of blocks commencing construction at yearly intervals starting in 2031 and completing in 2037. There are no historic structures within 200 feet of the proposed Bayshore District. The nearest off-site structure, 2650 Bayshore Boulevard, is approximately 135 feet from the nearest construction area for the Bayshore District in an area that would not require pile driving. An excavator typically generates vibration levels of 0.014 in/sec PPV (71 VdB) at a distance of 135 feet.

Blocks A2 through A9 would be low-density residential uses with a maximum building height of 50 feet, which would likely preclude then need for pile installation for foundations. Blocks A1, A10 through A13 would be residential and commercial towers with a maximum height of between 110 feet and 270 feet and pile driving would likely be required for supporting foundations on these

Blocks. The residential tower on Block A10 would commence construction in 2034 when the adjacent residential tower on Blocks B13 (in the Roundhouse District) would already be occupied. The proposed commercial tower buildings on Blocks A11, A12, and A13 would commence construction in 2035 residential uses on Blocks A3, A5, and A7 would be occupied and these low-density residential buildings would be approximately 30 feet south of the commercial tower construction, where pile driving could occur. The structure would be exposed to a vibration level of 0.494 in/sec PPV (102 VdB).

Underground Utility Installations

Phase 1 of the project would involve underground utility installation, which would require cut and fill trenching activities. In-ground utility installations would occur throughout the Phase 1 and along Bayshore Boulevard. In-ground utility installations would occur throughout the Phase 1 area but would be closest to off-site receptors where it occurs in the right-of-way along Bayshore Boulevard. Trenching along Bayshore Boulevard would be 150 feet from the nearest off-site structures on the other side of the roadway. This distance would be sufficient to ensure that vibration levels from excavation equipment would be reduced to well below building damage thresholds (refer to Table 32).

Additionally, there are a number of underground utilities that currently exist beneath both the Phase 1 and Phase 2 area. These include subsurface pipelines for the Kinder Morgan tank farm. Vibration from construction equipment may impact underground structures and pipelines. The 2004 American Association of State Highway and Transportation Officials guidelines include references for underground utility criteria, citing studies that indicate vibration under the ground surface is lower than that measured at the ground surface. One major utility has adopted a criterion of 4.0 in/sec for underground optical-fiber cables (AASHTO 2004). Underground or restrained concrete structures can withstand vibration of 10.0 in/sec before the appearance of threshold cracks. Vibrations from construction equipment, including pile driving could impact existing utility installations within the Phase 1 area if they were to occur in very close proximity. Pile driving within eight feet of an optical fiber cable could exceed the 4.0 in/sec PPV.

Phase 2 Campus East District

No historic structures are within 200 feet of the proposed Campus East District. The nearest off-site structures would be the Recology and Golden State Lumber buildings, approximately 100 feet from developable areas of Block D1. Because of the presence of the capped landfill, it is conservatively assumed that all building development in the Campus East District will require pile driving. The Recology and Golden State Lumber buildings would be exposed to a vibration level of less than 0.013 in/sec PPV. These industrial uses are not considered vibration-sensitive for the purposes of annoyance.

However, on-site construction development of the proposed D2 low-density commercial buildings would be less than approximately 25 feet south of the construction of the proposed D1 low-density commercial building, where pile driving would occur. The structure would be exposed to a vibration level of more than 0.65 in/sec PPV (81 VdB), well above both the applied human annoyance and building damage thresholds.

Operational Vibration

Land use development under the Brisbane Baylands Specific Plan would not be expected to result in new sources of operational vibration. Operational sources of vibration are generally associated with projects that would implement new rail transit operations, mining, or blasting, and these types of operations are not proposed as part of the Specific Plan.

City of Brisbane Municipal Code 17.30.030 (B)(1) states that all permanent mechanical equipment, such as motors, compressors, pumps, and compactors that could be a source of structural vibration or structure-borne noise, shall be shock-mounted with inertia blocks or bases and/or vibration isolators for newly constructed residential condominiums and residential condominium conversions (including residential units in mixed-use developments).

Exposure to Airport Noise

The project site is approximately 3.5 miles northwest of the SFO property boundary, and approximately 4 miles from the nearest SFO runway. The project site is located inside SFO AIA Area A. The FAA considers all land uses to be compatible when aircraft noise effects are less than 65 dB CNEL. The project site is located outside the 65 dB CNEL noise contour of airport operations (SFO 2018). As such, no exceedances of FAA criteria within the project site would occur.

SECTION 6
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Appendix A
Noise Monitoring Data and Noise Level Calculations

RCNM Outputs for Construction Noise

Traffic Noise Model

Construction Traffic Noise Model

2007 Noise Monitoring

2023 Noise Monitoring

RCNM Outputs for Construction Noise

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/06/2023
Case Description: Brisbane Baylands Phase 1 - Demolition

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Linda Vista Drive, Daly City	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	950.0	0.0
Tractor	No	40	84.0		950.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Dozer	56.1	52.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.4	54.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.4	56.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Cliff Swallow Court in Brisbane	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	1000.0	0.0
Tractor	No	40	84.0		1000.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	55.6	51.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	58.0	54.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	58.0	56.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/09/2023
Case Description: Brisbane Baylands Phase 1 - Soil Loading

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Wheeler Avenue, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0
Front End Loader	No	40		79.1	1500.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	49.6	45.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A
Front End Loader 49.6 45.6 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Front End Loader 49.6 45.6 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Total 49.6 55.6 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
San Francisco Avenue in Brisbane	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0
Front End Loader	No	40		79.1	1800.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Front End Loader	48.0	44.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	48.0	44.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	48.0	44.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	48.0	44.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	48.0	44.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	48.0	44.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	48.0	44.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A
Front End Loader 48.0 44.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Front End Loader 48.0 44.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Front End Loader 48.0 44.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Total 48.0 54.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A

**** Receptor #3 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Desmond Street SF	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0
Front End Loader	No	40		79.1	3200.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Front End Loader	43.0	39.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	43.0	39.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	43.0	39.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	43.0	39.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	43.0	39.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	43.0	39.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A
Front End Loader 43.0 39.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Front End Loader 43.0 39.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Front End Loader 43.0 39.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Front End Loader 43.0 39.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A
Total 43.0 49.0 N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A
N/A

**** Receptor #4 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Cliff Swallow Court Brisbane	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0
Front End Loader	No	40		79.1	2600.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A														
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Front End Loader	44.8	40.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														
Total	44.8	50.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A														

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/09/2023
Case Description: Brisbane Baylands Phase 1 - Grading

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Desmond Street, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	470.0	0.0
Excavator	No	40		80.7	470.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	63.8	56.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	61.2	57.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.8	60.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Cliff Swallow Court in Brisbane	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	1000.0	0.0
Excavator	No	40		80.7	1000.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Calculated (dBA)	Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	57.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	54.7	50.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.2	53.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Wheeler Avenue	Residential	54.0	54.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Compactor (ground)	No	20		83.2	1080.0	0.0
Excavator	No	40		80.7	1080.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Calculated (dBA)	Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compactor (ground)	56.5	49.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	54.0	50.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	56.5	52.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
San Francisco Street	Residential	61.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compactor (ground)	No	20		83.2	1400.0	0.0
Excavator	No	40		80.7	1400.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Compactor (ground)	54.3	47.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	51.8	47.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	54.3	50.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/09/2023
Case Description: Brisbane Baylands Phase 1 - DDC

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Desmond Street, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	470.0	0.0
Crane	No	16		80.6	470.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Crane	61.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	61.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	61.1	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Cliff Swallow Court Bisbane	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1300.0	0.0
Crane	No	16		80.6	1300.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	52.3	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	52.3	44.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	52.3	47.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Wheeler Avenue SF	Residential	54.0	54.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16		80.6	930.0	0.0
Crane	No	16		80.6	930.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	55.2	47.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	55.2	47.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	55.2	50.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
San Francisco Ave Brisbane	Residential	61.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16		80.6	3200.0	0.0
Crane	No	16		80.6	3200.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	44.4	36.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	44.4	36.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	44.4	39.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/13/2023
Case Description: Brisbane Baylands Pase 1 - Solar Piles

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Desmond Street, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	5200.0	0.0
Impact Pile Driver	Yes	20		101.3	5200.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	40.2	32.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	60.9	53.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.9	54.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Cliff Swallow Court	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	2600.0	0.0
Impact Pile Driver	Yes	20		101.3	2600.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	46.2	38.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	66.9	60.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.9	60.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Wheeler Avenue SF	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16		80.6	5200.0	0.0
Impact Pile Driver	Yes	20		101.3	5200.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	40.2	32.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	60.9	53.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.9	54.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
San Francisco Avenue Brisbane	Residential	61.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16	80.6	1800.0	0.0	
Impact Pile Driver	Yes	20	101.3	1800.0	0.0	

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	49.4	41.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	70.1	63.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.1	63.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/15/2023
Case Description: Brisbane Baylands Pase 1 - Pile Driving

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Desmond Street, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	470.0	0.0
Impact Pile Driver	Yes	20		101.3	470.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	61.1	53.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	81.8	74.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.8	74.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
On Site Receptor	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	50.0	0.0
Impact Pile Driver	Yes	20		101.3	50.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Calculated (dBA)	Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	101.3	94.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	101.3	94.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
San Francisco Avenue Brisbane	Residential	61.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16		80.6	3800.0	0.0
Impact Pile Driver	Yes	20		101.3	3800.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
Calculated (dBA)	Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	42.9	35.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	63.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.7	56.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #4 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
CliffSwallow Court Brisbane	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16	80.6	1200.0	0.0	
Impact Pile Driver	Yes	20	101.3	1200.0	0.0	

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	52.9	45.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	73.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	73.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #5 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Wheeler Avenue SF	Residential	54.0	54.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16	80.6	975.0	0.0	
Impact Pile Driver	Yes	20	101.3	975.0	0.0	

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Crane	54.7	46.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A															
	Total	75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A															

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/06/2023
Case Description: Brisbane Baylands Phase 1 - Building Construction

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Desmond Street, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Gradall	No	40		83.4	470.0	0.0
Tractor	No	40	84.0		470.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Gradall	63.9	60.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.5	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.5	63.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Noise Limits (dBA) / Noise Limit Exceedance (dBA)

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
On Site Receptor	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Gradall	No	40		83.4	50.0	0.0
Tractor	No	40	84.0		50.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Gradall	83.4	79.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	84.0	82.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/28/2023
Case Description: Brisbane Baylands Phase 2 - Building Construction Fire Station

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Lathrop Avenue	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Gradall	No	40	83.4	1080.0	0.0	
Tractor	No	40	84.0	1080.0	0.0	

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Gradall	56.7	52.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.3	53.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.3	56.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/06/2023
Case Description: Construction of Roadways

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
MacDonald Avenue, Daly City	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0		420.0	0.0
Grader	No	40	85.0		420.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	65.5	61.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	66.5	62.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	66.5	65.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/06/2023
Case Description: Construction of Project Utilities - Trenching

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Cliff Swallow Court, Brisbane	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		845.0	0.0
Grader	No	40	85.0		845.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	59.4	55.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	60.4	56.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.4	59.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
MacDonald Avenue, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		260.0	0.0
Grader	No	40	85.0		260.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	69.7	65.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	70.7	66.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.7	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2023
Case Description: Brisbane Baylands Phase 2 - DDC

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Lathrop Avenue, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1100.0	0.0
Crane	No	16		80.6	1100.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	53.7	45.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	53.7	45.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	53.7	48.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
On Site Receptor	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	500.0	0.0
Crane	No	16		80.6	500.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	60.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane	60.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	60.6	55.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 03/28/2023
Case Description: Brisbane Baylands Phase 2 - Pile Driving

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Lathrop Avenue, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	1100.0	0.0
Impact Pile Driver	Yes	20		101.3	1100.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Crane	53.7	45.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	74.4	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.4	67.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
On Site Receptor	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	500.0	0.0
Impact Pile Driver	Yes	20		101.3	500.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	60.6	52.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	81.3	74.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.3	74.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #3 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Solar Receptor	Residential	61.0	57.0	55.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Crane	No	16		80.6	50.0	0.0
Impact Pile Driver	Yes	20		101.3	50.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Impact Pile Driver	101.3	94.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	101.3	94.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/05/2023
Case Description: Brisbane Baylands Phase 2 - Building Construction

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Desmond Street, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		1100.0	0.0
Tractor	No	40	84.0		1100.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	57.2	53.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.2	56.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**** Receptor #2 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
On Site Receptor	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		500.0	0.0
Tractor	No	40	84.0		500.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Tractor	64.0	60.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	64.0	60.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	64.0	63.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/28/2023
Case Description: Construction of Roadways

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Lathrop Avenue, San Francisco	Residential	55.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		1200.0	0.0
Grader	No	40	85.0		1200.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Tractor	56.4	52.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	57.4	53.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	57.4	56.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 06/11/2024
Case Description: Pipeline Trenching for WRF

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Sierra Point Mobile Home Park	Residential	64.0	64.0	60.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84.0		90.0	0.0
Grader	No	40	85.0		90.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Tractor	78.9	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	79.9	75.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	79.9	78.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Traffic Noise Model

Existing

Existing

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT	k/h	HT	k/h	NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Peak																							
	from:	to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Bayshore Boulevard	Blanken Ave	Geneva Ave	1401	94	1316.9	4	56.04	2	28.02	35	56	35	56	35	56	65.5	61.5	65.2	69.2	40	64.9	39.4	129.1
Bayshore Boulevard	Geneva Ave	Old County Rd / Tunnel Ave	1528	94	1436.3	4	61.12	4	61.12	45	72	45	72	45	72	69.0	63.6	69.6	72.9	40	68.6	92.1	302.2
Bayshore Boulevard	Old County Rd / Tunnel Ave	Southern City Limits	1953	94	1835.8	4	78.12	4	78.12	45	72	45	72	45	72	70.1	64.7	70.7	73.9	40	69.7	117.7	386.3
Geneva Avenue	Carter Street	Bayshore Blvd	1501	97	1456	2	30.02	1	15.01	35	56	35	56	35	56	65.9	58.8	62.5	68.1	40	63.8	30.7	100.7
Geneva Avenue Extension / Existing Beatty Avenue		Beatty Avenue east of Tunnel Ave	167	97	161.99	2	3.34	1	1.67	35	56	35	56	35	56	56.4	49.3	53.0	58.6	40	54.3	3.4	11.2
Geneva Avenue Extension / Existing Beatty Avenue		Harney Way east of Thomas Mellor	171	97	165.87	2	3.42	1	1.71	35	56	35	56	35	56	56.5	49.4	53.1	58.7	40	54.4	3.5	11.5
Tunnel Avenue	Old County Rd / Tunnel Ave	South of Lagoon Road	357	88	314.16	8	28.56	4	14.28	35	56	35	56	35	56	59.3	58.6	62.3	65.1	40	60.9	15.5	50.8
Tunnel Avenue	Blanken Ave	North of Beatty Rd	322	88	283.36	8	25.76	4	12.88	35	56	35	56	35	56	58.8	58.1	61.8	64.7	40	60.4	14.0	45.8
Blanken Avenue	Executive Park Boulevard	Gillete Avenue	207	97	200.79	2	4.14	1	2.07	25	40	25	40	25	40	53.1	47.9	52.6	56.5	40	52.3	2.1	7.0
Blanken Avenue	Bayshore Boulevard	Tunnel Avenue	486	97	471.42	2	9.72	1	4.86	25	40	25	40	25	40	56.8	51.6	56.3	60.2	40	56.0	5.0	16.4
Visitacion Avenue	Bayshore Boulevard	Mansell Street	211	97	204.67	2	4.22	1	2.11	25	40	25	40	25	40	53.2	48.0	52.6	56.6	40	52.3	2.2	7.1
Sunnydale Avenue	Bayshore Boulevard	Santos Street	318	97	308.46	2	6.36	1	3.18	25	40	25	40	25	40	55.0	49.8	54.4	58.4	40	54.1	3.3	10.7
Main Street	Bayshore Boulevard	Linda Vista Drive	177	97	171.69	2	3.54	1	1.77	25	40	25	40	25	40	52.4	47.2	51.9	55.8	40	51.6	1.8	6.0
Guadalupe Canyon Parkway	North Hill Drive	Mission Blue Drive	761	97	738.17	2	15.22	1	7.61	50	80	50	80	50	80	67.5	58.3	61.0	68.7	40	64.5	35.5	116.5
Old County Road	Bayshore Boulevard	San Fransico Avenue	487	93	452.91	5	24.35	2	9.74	25	40	25	40	25	40	56.7	55.6	59.3	62.2	40	58.0	8.0	26.1
San Bruno Avenue	Bayshore Boulevard	Glen Park Way	309	98	302.82	1	3.09	1	3.09	20	32	20	32	20	32	52.1	45.1	53.4	56.2	40	51.9	2.0	6.5

Assumptions: PM peak hour traffic data from Fehr & Peers

Midterm 2035

Midterm 2035 No Project

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT	k/h	HT	k/h	NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Peak																							
	from:			%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Bayshore Boulevard	Blanken Ave	Geneva Ave	2880	94	2707.2	4	115.2	2	57.6	35	56	35	56	35	56	68.6	64.6	68.3	72.3	40	68.1	80.9	265.4
Bayshore Boulevard	Geneva Ave	Old County Rd / Tunnel Ave	2710	94	2547.4	4	108.4	4	108.4	45	72	45	72	45	72	71.5	66.1	72.1	75.4	40	71.1	163.4	536.0
Bayshore Boulevard	Old County Rd / Tunnel Ave	Southern City Limits	2780	94	2613.2	4	111.2	4	111.2	45	72	45	72	45	72	71.6	66.2	72.2	75.5	40	71.2	167.6	549.9
Geneva Avenue	Carter Street	Bayshore Blvd	1840	97	1784.8	2	36.8	1	18.4	35	56	35	56	35	56	66.8	59.7	63.4	69.0	40	64.7	37.6	123.4
Geneva Avenue Extension / Existing Beatty Avenue		Beatty Avenue east of Tunnel Ave	470	97	455.9	2	9.4	1	4.7	35	56	35	56	35	56	60.9	53.8	57.5	63.1	40	58.8	9.6	31.5
Geneva Avenue Extension / Existing Beatty Avenue		Harney Way east of Thomas Mellor	1960	97	1901.2	2	39.2	1	19.6	35	56	35	56	35	56	67.1	60.0	63.7	69.3	40	65.0	40.1	131.4
Tunnel Avenue	Old County Rd / Tunnel Ave	South of Lagoon Road	1360	88	1196.8	8	108.8	4	54.4	35	56	35	56	35	56	65.1	64.4	68.1	70.9	40	66.7	59.0	193.6
Tunnel Avenue	Blanken Ave	North of Beatty Rd	820	88	721.6	8	65.6	4	32.8	35	56	35	56	35	56	62.9	62.2	65.9	68.8	40	64.5	35.6	116.7
Blanken Avenue	Executive Park Boulevard	Gillete Avenue	760	97	737.2	2	15.2	1	7.6	25	40	25	40	25	40	58.8	53.6	58.2	62.2	40	57.9	7.8	25.6
Blanken Avenue	Bayshore Boulevard	Tunnel Avenue	680	97	659.6	2	13.6	1	6.8	25	40	25	40	25	40	58.3	53.1	57.7	61.7	40	57.4	7.0	22.9
Visitacion Avenue	Bayshore Boulevard	Mansell Street	240	97	232.8	2	4.8	1	2.4	25	40	25	40	25	40	53.8	48.6	53.2	57.2	40	52.9	2.5	8.1
Sunnydale Avenue	Bayshore Boulevard	Santos Street	580	97	562.6	2	11.6	1	5.8	25	40	25	40	25	40	57.6	52.4	57.0	61.0	40	56.7	6.0	19.5
Main Street	Bayshore Boulevard	Linda Vista Drive	170	97	164.9	2	3.4	1	1.7	25	40	25	40	25	40	52.3	47.1	51.7	55.7	40	51.4	1.7	5.7
Guadalupe Canyon Parkway	North Hill Drive	Mission Blue Drive	1540	97	1493.8	2	30.8	1	15.4	50	80	50	80	50	80	70.5	61.3	64.0	71.8	40	67.5	71.9	235.8
Old County Road	Bayshore Boulevard	San Fransico Avenue	890	93	827.7	5	44.5	2	17.8	25	40	25	40	25	40	59.3	58.2	61.9	64.9	40	60.6	14.5	47.7
San Bruno Avenue	Bayshore Boulevard	Glen Park Way	420	98	411.6	1	4.2	1	4.2	20	32	20	32	20	32	53.5	46.5	54.7	57.5	40	53.3	2.7	8.8

Assumptions: PM peak hour traffic data from Fehr & Peers

Cumulative 2040

Cumulative 2040 No Project

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT	k/h	HT	k/h	NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA
Peak																							
	from:			%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)
Bayshore Boulevard	Blanken Ave	Geneva Ave	3020	94	2838.8	4	120.8	2	60.4	35	56	35	56	35	56	68.8	64.9	68.6	72.5	40	68.3	84.8	278.3
Bayshore Boulevard	Geneva Ave	Old County Rd / Tunnel Ave	2940	94	2763.6	4	117.6	4	117.6	45	72	45	72	45	72	71.9	66.4	72.5	75.7	40	71.5	177.2	581.5
Bayshore Boulevard	Old County Rd / Tunnel Ave	Southern City Limits	2990	94	2810.6	4	119.6	4	119.6	45	72	45	72	45	72	71.9	66.5	72.5	75.8	40	71.5	180.2	591.4
Geneva Avenue	Carter Street	Bayshore Blvd	1880	97	1823.6	2	37.6	1	18.8	35	56	35	56	35	56	66.9	59.8	63.5	69.1	40	64.8	38.4	126.1
Geneva Avenue Extension / Existing Beatty Avenue		Beatty Avenue east of Tunnel Ave	540	97	523.8	2	10.8	1	5.4	35	56	35	56	35	56	61.5	54.4	58.1	63.7	40	59.4	11.0	36.2
Geneva Avenue Extension / Existing Beatty Avenue		Harney Way east of Thomas Mellor	2370	97	2298.9	2	47.4	1	23.7	35	56	35	56	35	56	67.9	60.8	64.5	70.1	40	65.8	48.4	158.9
Tunnel Avenue	Old County Rd / Tunnel Ave	South of Lagoon Road	1540	88	1355.2	8	123.2	4	61.6	35	56	35	56	35	56	65.6	64.9	68.6	71.5	40	67.2	66.8	219.2
Tunnel Avenue	Blanken Ave	North of Beatty Rd	960	88	844.8	8	76.8	4	38.4	35	56	35	56	35	56	63.6	62.9	66.6	69.4	40	65.2	41.6	136.6

Brisbane Baylands Specific Plan Roadway Noise Analysis

Blanken Avenue	Executive Park Boulevard	Gillete Avenue	800	97	776	2	16	1	8	25	40	25	40	25	40	59.0	53.8	58.4	62.4	40	58.1	8.2	26.9
Blanken Avenue	Bayshore Boulevard	Tunnel Avenue	730	97	708.1	2	14.6	1	7.3	25	40	25	40	25	40	58.6	53.4	58.0	62.0	40	57.7	7.5	24.6
Visitacion Avenue	Bayshore Boulevard	Mansell Street	250	97	242.5	2	5	1	2.5	25	40	25	40	25	40	53.9	48.7	53.4	57.3	40	53.1	2.6	8.4
Sunnydale Avenue	Bayshore Boulevard	Santos Street	600	97	582	2	12	1	6	25	40	25	40	25	40	57.7	52.5	57.2	61.1	40	56.9	6.2	20.2
Main Street	Bayshore Boulevard	Linda Vista Drive	190	97	184.3	2	3.8	1	1.9	25	40	25	40	25	40	52.8	47.6	52.2	56.1	40	51.9	1.9	6.4
Guadalupe Canyon Parkway	North Hill Drive	Mission Blue Drive	1710	97	1658.7	2	34.2	1	17.1	50	80	50	80	50	80	71.0	61.8	64.5	72.3	40	68.0	79.8	261.8
Old County Road	Bayshore Boulevard	San Fransico Avenue	900	93	837	5	45	2	18	25	40	25	40	25	40	59.3	58.3	62.0	64.9	40	60.7	14.7	48.2
San Bruno Avenue	Bayshore Boulevard	Glen Park Way	450	98	441	1	4.5	1	4.5	20	32	20	32	20	32	53.8	46.8	55.0	57.8	40	53.6	2.9	9.4

Assumptions: PM peak hour traffic data from idax

Midterm 2035 + Project (with TDM)

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT k/h		HT k/h		NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA	Difference from Existing
Peak from:		to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)	
Bayshore Boulevard	Blanken Ave	Geneva Ave	2,730	94	2566.2	4	109.2	2	54.6	35	56	35	56	35	56	68.4	64.4	68.1	72.1	40	67.8	76.7	251.6	2.9
Bayshore Boulevard	Geneva Ave	Old County Rd / Tunnel Ave	3,200	94	3008	4	128	4	128	45	72	45	72	45	72	72.2	66.8	72.8	76.1	40	71.8	192.9	632.9	3.2
Bayshore Boulevard	Old County Rd /Tunnel Ave	Southern City Limits	3,090	94	2904.6	4	123.6	4	123.6	45	72	45	72	45	72	72.1	66.7	72.7	75.9	40	71.7	186.3	611.2	2.0
Geneva Avenue	Carter Street	Bayshore Blvd	2,070	97	2007.9	2	41.4	1	20.7	35	56	35	56	35	56	67.3	60.2	63.9	69.5	40	65.2	42.3	138.8	1.4
Geneva Avenue Extension / Existing Beatty Avenue		Beatty Avenue east of Tunnel Ave	650	97	630.5	2	13	1	6.5	35	56	35	56	35	56	62.3	55.2	58.9	64.5	40	60.2	13.3	43.6	5.9
Geneva Avenue Extension / Existing Beatty Avenue		Harney Way east of Thomas Mellon	2,940	97	2851.8	2	58.8	1	29.4	35	56	35	56	35	56	68.9	61.7	65.4	71.0	40	66.8	60.1	197.2	12.4
Tunnel Avenue	Old County Rd / Tunnel Ave	South of Lagoon Road	1,670	88	1469.6	8	133.6	4	66.8	35	56	35	56	35	56	66.0	65.3	69.0	71.8	40	67.6	72.4	237.7	6.7
Tunnel Avenue	Blanken Ave	North of Beatty Rd	950	88	836	8	76	4	38	35	56	35	56	35	56	63.5	62.8	66.5	69.4	40	65.1	41.2	135.2	4.7
Blanken Avenue	Executive Park Boulevard	Gillete Avenue	940	97	911.8	2	18.8	1	9.4	25	40	25	40	25	40	59.7	54.5	59.1	63.1	40	58.8	9.6	31.6	6.6
Blanken Avenue	Bayshore Boulevard	Tunnel Avenue	920	97	892.4	2	18.4	1	9.2	25	40	25	40	25	40	59.6	54.4	59.0	63.0	40	58.7	9.4	31.0	2.8
Visitacion Avenue	Bayshore Boulevard	Mansell Street	340	97	329.8	2	6.8	1	3.4	25	40	25	40	25	40	55.3	50.1	54.7	58.7	40	54.4	3.5	11.4	2.1
Sunnydale Avenue	Bayshore Boulevard	Santos Street	530	97	514.1	2	10.6	1	5.3	25	40	25	40	25	40	57.2	52.0	56.6	60.6	40	56.3	5.4	17.8	2.2
Main Street	Bayshore Boulevard	Linda Vista Drive	230	97	223.1	2	4.6	1	2.3	25	40	25	40	25	40	53.6	48.4	53.0	57.0	40	52.7	2.4	7.7	1.1
Guadalupe Canyon Parkway	North Hill Drive	Mission Blue Drive	2,040	97	1978.8	2	40.8	1	20.4	50	80	50	80	50	80	71.7	62.6	65.3	73.0	40	68.8	95.2	312.4	4.3
Old County Road	Bayshore Boulevard	San Fransico Avenue	900	93	837	5	45	2	18	25	40	25	40	25	40	59.3	58.3	62.0	64.9	40	60.7	14.7	48.2	2.7
San Bruno Avenue	Bayshore Boulevard	Glen Park Way	460	98	450.8	1	4.6	1	4.6	20	32	20	32	20	32	53.8	46.9	55.1	57.9	40	53.6	2.9	9.6	1.7

Assumptions: PM peak hour traffic data from Fehr & Peers

Cumulative 2040 without CPHPS Interchange + Proejct (with TDM)

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto k/h		MT k/h		HT k/h		NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA	Difference from Existing	Difference from 2040 NP
Peak from:				%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)		
Bayshore Boulevard	Blanken Ave	Geneva Ave	2,480	94	2331.2	4	99.2	2	49.6	35	56	35	56	35	56	68.0	64.0	67.7	71.7	40	67.4	69.7	228.5	2.5	-0.9
Bayshore Boulevard	Geneva Ave	Old County Rd / Tunnel Ave	3,320	94	3120.8	4	132.8	4	132.8	45	72	45	72	45	72	72.4	67.0	73.0	76.3	40	72.0	200.1	656.7	3.4	0.5
Bayshore Boulevard	Old County Rd / Tunnel Ave	Southern City Limits	3,370	94	3167.8	4	134.8	4	134.8	45	72	45	72	45	72	72.5	67.0	73.0	76.3	40	72.1	203.2	666.6	2.4	0.5
Geneva Avenue	Carter Street	Bayshore Blvd	2,920	97	2832.4	2	58.4	1	29.2	35	56	35	56	35	56	68.8	61.7	65.4	71.0	40	66.7	59.7	195.8	2.9	1.9
Geneva Avenue Extension / Existing Beatty Avenue		Beatty Avenue east of Tunnel Ave	2,760	97	2677.2	2	55.2	1	27.6	35	56	35	56	35	56	68.6	61.5	65.2	70.8	40	66.5	56.4	185.1	12.2	7.1
Geneva Avenue Extension / Existing Beatty Avenue		Harney Way east of Thomas Mellon	3,530	97	3424.1	2	70.6	1	35.3	35	56	35	56	35	56	69.7	62.5	66.2	71.8	40	67.6	72.2	236.7	13.1	1.7
Tunnel Avenue	Old County Rd / Tunnel Ave	South of Lagoon Road	1,580	88	1390.4	8	126.4	4	63.2	35	56	35	56	35	56	65.7	65.1	68.8	71.6	40	67.3	68.5	224.9	6.5	0.1
Tunnel Avenue	Blanken Ave	North of Beatty Rd	1,280	88	1126.4	8	102.4	4	51.2	35	56	35	56	35	56	64.8	64.1	67.8	70.7	40	66.4	55.5	182.2	6.0	1.2
Blanken Avenue	Executive Park Boulevard	Gillete Avenue	860	97	834.2	2	17.2	1	8.6	25	40	25	40	25	40	59.3	54.1	58.7	62.7	40	58.4	8.8	29.0	6.2	0.3
Blanken Avenue	Bayshore Boulevard	Tunnel Avenue	660	97	640.2	2	13.2	1	6.6	25	40	25	40	25	40	58.2	53.0	57.6	61.5	40	57.3	6.8	22.2	1.3	-0.4
Visitacion Avenue	Bayshore Boulevard	Mansell Street	270	97	261.9	2	5.4	1	2.7	25	40	25	40	25	40	54.3	49.1	53.7	57.7	40	53.4	2.8	9.1	1.1	0.3
Sunnydale Avenue	Bayshore Boulevard	Santos Street	560	97	543.2	2	11.2	1	5.6	25	40	25	40	25	40	57.4	52.2	56.9	60.8	40	56.6	5.7	18.9	2.5	-0.3
Main Street	Bayshore Boulevard	Linda Vista Drive	220	97	213.4	2	4.4	1	2.2	25	40	25	40	25	40	53.4	48.2	52.8	56.8	40	52.5	2.3	7.4	0.9	0.6
Guadalupe Canyon Parkway	North Hill Drive	Mission Blue Drive	2,200	97	2134	2	44	1	22	50	80	50	80	50	80	72.1	62.9	65.6	73.4	40	69.1	102.7	336.9	4.6	1.1
Old County Road	Bayshore Boulevard	San Fransico Avenue	920	93	855.6	5	46	2	18.4	25	40	25	40	25	40	59.4	58.4	62.0	65.0	40	60.7	15.0	49.3	2.8	0.1
San Bruno Avenue	Bayshore Boulevard	Glen Park Way	460	98	450.8	1	4.6	1	4.6	20	32	20	32	20	32	53.8	46.9	55.1	57.9	40	53.6	2.9	9.6	1.7	0.1

Assumptions: PM peak hour traffic data from Fehr & Peers

Existing + Project (2035 with TDM)

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						NOISE LEVEL (dBA)			CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA	Difference from Existing
Peak				Auto		MT		HT		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
	from:	to:		%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)	
Bayshore Boulevard	Blanken Ave	Geneva Ave	1,251	94	1175.9	4	50.04	2	25.02	35	56	35	56	35	56	65.0	61.0	64.7	68.7	40	64.4	35.1	115.3	-0.5
Bayshore Boulevard	Geneva Ave	Old County Rd / Tunnel Ave	2,018	94	1896.9	4	80.72	4	80.72	45	72	45	72	45	72	70.2	64.8	70.8	74.1	40	69.8	121.7	399.1	1.2
Bayshore Boulevard	Old County Rd /Tunnel Ave	Southern City Limits	2,263	94	2127.2	4	90.52	4	90.52	45	72	45	72	45	72	70.7	65.3	71.3	74.6	40	70.3	136.4	447.6	0.6
Geneva Avenue	Carter Street	Bayshore Blvd	1,731	97	1679.1	2	34.62	1	17.31	35	56	35	56	35	56	66.6	59.4	63.1	68.7	40	64.5	35.4	116.1	0.6
Geneva Avenue Extension / Existing Beatty Avenue		Beatty Avenue east of Tunnel Ave	347	97	336.59	2	6.94	1	3.47	35	56	35	56	35	56	59.6	52.4	56.1	61.7	40	57.5	7.1	23.3	3.2
Geneva Avenue Extension / Existing Beatty Avenue		Harney Way east of Thomas Mellon	1,151	97	1116.5	2	23.02	1	11.51	35	56	35	56	35	56	64.8	57.7	61.4	67.0	40	62.7	23.5	77.2	8.3
Tunnel Avenue	Old County Rd / Tunnel Ave	South of Lagoon Road	667	88	586.96	8	53.36	4	26.68	35	56	35	56	35	56	62.0	61.3	65.0	67.9	40	63.6	28.9	94.9	2.7
Tunnel Avenue	Blanken Ave	North of Beatty Rd	452	88	397.76	8	36.16	4	18.08	35	56	35	56	35	56	60.3	59.6	63.3	66.2	40	61.9	19.6	64.3	1.5
Blanken Avenue	Executive Park Boulevard	Gillete Avenue	387	97	375.39	2	7.74	1	3.87	25	40	25	40	25	40	55.8	50.6	55.3	59.2	40	55.0	4.0	13.0	2.7
Blanken Avenue	Bayshore Boulevard	Tunnel Avenue	726	97	704.22	2	14.52	1	7.26	25	40	25	40	25	40	58.6	53.4	58.0	62.0	40	57.7	7.4	24.4	1.7
Visitacion Avenue	Bayshore Boulevard	Mansell Street	311	97	301.67	2	6.22	1	3.11	25	40	25	40	25	40	54.9	49.7	54.3	58.3	40	54.0	3.2	10.5	1.7
Sunnydale Avenue	Bayshore Boulevard	Santos Street	268	97	259.96	2	5.36	1	2.68	25	40	25	40	25	40	54.2	49.0	53.7	57.6	40	53.4	2.7	9.0	-0.7
Main Street	Bayshore Boulevard	Linda Vista Drive	237	97	229.89	2	4.74	1	2.37	25	40	25	40	25	40	53.7	48.5	53.1	57.1	40	52.8	2.4	8.0	1.3
Guadalupe Canyon Parkway	North Hill Drive	Mission Blue Drive	1,261	97	1223.2	2	25.22	1	12.61	50	80	50	80	50	80	69.6	60.5	63.2	70.9	40	66.7	58.8	193.1	2.2
Old County Road	Bayshore Boulevard	San Fransico Avenue	497	93	462.21	5	24.85	2	9.94	25	40	25	40	25	40	56.7	55.7	59.4	62.3	40	58.1	8.1	26.6	0.1
San Bruno Avenue	Bayshore Boulevard	Glen Park Way	349	98	342.02	1	3.49	1	3.49	20	32	20	32	20	32	52.6	45.7	53.9	56.7	40	52.4	2.2	7.3	0.5

Assumptions: PM peak hour traffic data from Fehr & Peers

Existing + Project (2040 with TDM)

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						NOISE LEVEL (dBA)			CALCULATED NOISE LEVEL 15 meters from	Receptor Dist. from Roadway	Adjusted Noise Level	Distance from Roadway to 65 dBA	Distance from Roadway to 65 dBA	Difference from Existing	Difference from 2040 NP
Peak				Auto		MT		HT		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT							
	from:			%	Auto	%	MT	%	HT										roadway center)	Center (m.)	(dBA)	(m.)	(ft)		
Bayshore Boulevard	Blanken Ave	Geneva Ave	861	94	809.34	4	34.44	2	17.22	35	56	35	56	35	56	63.4	59.4	63.1	67.1	40	62.8	24.2	79.3	-2.1	-5.5
Bayshore Boulevard	Geneva Ave	Old County Rd / Tunnel Ave	1,908	94	1793.5	4	76.32	4	76.32	45	72	45	72	45	72	70.0	64.6	70.6	73.8	40	69.6	115.0	377.4	1.0	-1.9
Bayshore Boulevard	Old County Rd / Tunnel Ave	Southern City Limits	2,333	94	2193	4	93.32	4	93.32	45	72	45	72	45	72	70.9	65.4	71.4	74.7	40	70.5	140.6	461.4	0.8	-1.1
Geneva Avenue	Carter Street	Bayshore Blvd	2,541	97	2464.8	2	50.82	1	25.41	35	56	35	56	35	56	68.2	61.1	64.8	70.4	40	66.1	51.9	170.4	2.3	1.3
Geneva Avenue Extension / Existing Beatty Avenue		Beatty Avenue east of Tunnel Ave	2,387	97	2315.4	2	47.74	1	23.87	35	56	35	56	35	56	68.0	60.8	64.5	70.1	40	65.9	48.8	160.1	11.6	6.5
Geneva Avenue Extension / Existing Beatty Avenue		Harney Way east of Thomas Mellon	1,331	97	1291.1	2	26.62	1	13.31	35	56	35	56	35	56	65.4	58.3	62.0	67.6	40	63.3	27.2	89.3	8.9	-2.5
Tunnel Avenue	Old County Rd / Tunnel Ave	South of Lagoon Road	397	88	349.36	8	31.76	4	15.88	35	56	35	56	35	56	59.7	59.1	62.8	65.6	40	61.3	17.2	56.5	0.5	-5.9
Tunnel Avenue	Blanken Ave	North of Beatty Rd	642	88	564.96	8	51.36	4	25.68	35	56	35	56	35	56	61.8	61.1	64.8	67.7	40	63.4	27.9	91.4	3.0	-1.7
Blanken Avenue	Executive Park Boulevard	Gillete Avenue	267	97	258.99	2	5.34	1	2.67	25	40	25	40	25	40	54.2	49.0	53.7	57.6	40	53.4	2.7	9.0	1.1	-4.8
Blanken Avenue	Bayshore Boulevard	Tunnel Avenue	416	97	403.52	2	8.32	1	4.16	25	40	25	40	25	40	56.2	51.0	55.6	59.5	40	55.3	4.3	14.0	-0.7	-2.4
Visitacion Avenue	Bayshore Boulevard	Mansell Street	231	97	224.07	2	4.62	1	2.31	25	40	25	40	25	40	53.6	48.4	53.0	57.0	40	52.7	2.4	7.8	0.4	-0.3
Sunnydale Avenue	Bayshore Boulevard	Santos Street	278	97	269.66	2	5.56	1	2.78	25	40	25	40	25	40	54.4	49.2	53.8	57.8	40	53.5	2.9	9.4	-0.6	-3.3
Main Street	Bayshore Boulevard	Linda Vista Drive	207	97	200.79	2	4.14	1	2.07	25	40	25	40	25	40	53.1	47.9	52.6	56.5	40	52.3	2.1	7.0	0.7	0.4
Guadalupe Canyon Parkway	North Hill Drive	Mission Blue Drive	1,251	97	1213.5	2	25.02	1	12.51	50	80	50	80	50	80	69.6	60.4	63.1	70.9	40	66.6	58.4	191.5	2.2	-1.4
Old County Road	Bayshore Boulevard	San Fransico Avenue	507	93	471.51	5	25.35	2	10.14	25	40	25	40	25	40	56.8	55.8	59.5	62.4	40	58.2	8.3	27.2	0.2	-2.5
San Bruno Avenue	Bayshore Boulevard	Glen Park Way	319	98	312.62	1	3.19	1	3.19	20	32	20	32	20	32	52.3	45.3	53.5	56.3	40	52.1	2.0	6.7	0.1	-1.5

Assumptions: PM peak hour traffic data from Fehr & Peers

Construction Traffic Noise Model

Existing

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL (15 meters from roadway center)	Receptor Dist. from Roadway Center (m.)	Adjusted Noise Level (dBA)	Monitored Noise Level (dBA)
Calveno Peak	from:	to:		%	Auto	%	MT	%	HT													
Bayshore	Tunnel	Access rd.	2,020	94	1898.8	4	80.8	2	40.4	45	72	45	72	45	72	70.2	64.8	67.8	72.9	100	64.7	62
Access Rd	Bayshore	Ice House	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	374	0.0	62
Tunnel	Beatty	Blanken	322	88	283.36	8	25.76	4	12.88	25	40	25	40	25	40	54.6	55.9	60.5	62.5	7	65.9	
Blanken	Tunnel	Bayshore	486	88	427.68	8	38.88	4	19.44	25	40	25	40	25	40	56.4	57.7	62.3	64.3	7	67.6	
Bayshore	Blanken	Site	1401	94	1316.9	4	56.04	4	56.04	25	40	25	40	25	40	61.3	59.2	66.9	68.5	NA	NA	
Access Rd	Bayshore	Deposition																				

Assumptions: AM peak hour traffic data from Fehr & Peers

Existing + Project

ROAD SEGMENT			TOTAL # VEHICLES	VEHICLE TYPE % Auto		MT		HT		VEHICLE SPEED Auto	k/h	MT	k/h	HT	k/h	NOISE LEVEL (dBA) Auto	MT	HT	CALCULATED NOISE LEVEL (15 meters from roadway center)	Receptor Dist. from Roadway Center (m.)	Adjusted Noise Level (dBA)
Calveno Peak	from:	to:		%	Auto	%	MT	%	HT												
Bayshore	Tunnel	Access rd.	2340	81.1	1898.8	3	80.8	15	360.4	45	72	45	72	45	72	70.2	64.8	77.3	78.3	100	70.1
Access Rd	Bayshore	Ice House	320	0.1	0.32	0	0.32	100	319.4	15	24	15	24	15	24	18.8	33.3	72.4	72.4	374	58.4
Tunnel	Beatty	Blanken	642	44.1	283.36	4	25.76	52	332.9	25	40	25	40	25	40	54.6	55.9	74.6	74.7	7	78.0
Blanken	Tunnel	Bayshore	806	53.1	427.68	5	38.88	42	339.4	25	40	25	40	25	40	56.4	57.7	74.7	74.9	7	78.2
Bayshore	Blanken	Site	1749	75.3	1316.9	3	56.04	22	376	25	40	25	40	25	40	61.3	59.2	75.2	75.4	NA	NA
Access Rd	Bayshore	Deposition	320	0.1	0.32	0	0.32	100	319.4	15	24	15	24	15	24	18.8	33.3	72.4	72.4	350	58.7

Assumptic 6th

Assumptions: AM peak hour traffic data from Fehr & Peers

2007 Noise Monitoring

METROSONICS db-308 SN 2673 V2.3 3/87

CURRENT DATE: 7/02/07
CURRENT TIME: 10:01:46

_____

_____

_____

_____

CALIBRATED: 6/18/07 @ 11:41:26

DISPLAY RANGE: 43.2dB TO 139.2dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

  START DATE: 6/27/07
  START TIME:11:00:00
  LENGTH: 48:00:00

** OVERALL REPORT **

TEST STARTING DATE: 6/27/07
TEST STARTING TIME: 11:00:19
TEST LENGTH: 2DAYS 0:00:00

Lav = 68.9dB
Lav 80= 44.4dB
Lav 90= 43.2dB
SEL =121.1dB

Lmax = 84.5dB ON 6/27/07 @ 16:41:58
Lpk = 122dB ON 6/27/07 @ 16:03:51

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.01%
 8 HR DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 1:00:00
TIME HISTORY CUTOFF: NONE
Ln(1): 1.6% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2
1	6/27/07	65.3	75.2	<118
0	11:00:19	1:00:00	69	62
2	6/27/07	65.8	73.7	<118
0	12:00:19	1:00:00	69	63
3	6/27/07	66.5	74.7	<118
0	13:00:19	1:00:00	71	63
4	6/27/07	68.1	77.2	<118
0	14:00:19	1:00:00	72	65
5	6/27/07	69.6	82.4	121
0	15:00:19	1:00:00	76	65
6	6/27/07	69.4	84.5	122
0	16:00:19	1:00:00	77	62
7	6/27/07	68.8	78.4	118
0	17:00:19	1:00:00	72	66
8	6/27/07	69.4	77.0	119
0	18:00:19	1:00:00	72	67
9	6/27/07	69.3	78.6	<118
0	19:00:19	1:00:00	72	67
10	6/27/07	68.6	77.0	<118
0	20:00:19	1:00:00	71	66
11	6/27/07	67.4	77.3	<118
0	21:00:19	1:00:00	70	65
12	6/27/07	67.2	76.9	<118
0	22:00:19	1:00:00	70	64
13	6/27/07	67.9	82.3	121
0	23:00:19	1:00:00	74	63
14	6/28/07	65.1	79.6	119
0	0:00:19	1:00:00	71	60
15	6/28/07	63.0	69.7	<118

0 1:00:19 1:00:00 67 58

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

16 6/28/07 62.6 71.5 <118 * +
0 2:00:19 1:00:00 67 57

17 6/28/07 63.3 75.2 <118 * +
0 3:00:19 1:00:00 68 57

18 6/28/07 67.6 73.3 <118 * +
0 4:00:19 1:00:00 71 62

19 6/28/07 70.9 75.5 <118 * +
0 5:00:19 1:00:00 74 67

20 6/28/07 72.8 78.6 <118 * +
0 6:00:19 1:00:00 75 70

21 6/28/07 71.6 75.4 <118 * +
0 7:00:19 1:00:00 74 68

22 6/28/07 68.8 75.2 <118 * +
0 8:00:19 1:00:00 72 65

23 6/28/07 68.8 81.5 <118 * +
0 9:00:19 1:00:00 72 66

24 6/28/07 68.1 76.0 <118 * +
0 10:00:19 1:00:00 71 66

25 6/28/07 66.8 77.5 <118 * +
0 11:00:19 1:00:00 70 64

26 6/28/07 66.4 74.4 <118 * +
0 12:00:19 1:00:00 69 64

27 6/28/07 68.2 76.0 120 * +
0 13:00:19 1:00:00 71 65

28 6/28/07 68.4 78.4 <118 * +
0 14:00:19 1:00:00 71 66

29 6/28/07 68.2 72.9 <118 * +
0 15:00:19 1:00:00 71 66

30 6/28/07 67.5 76.6 <118 * +
0 16:00:19 1:00:00 70 65

31 6/28/07 69.3 83.1 119 * +
0 17:00:19 1:00:00 75 66

32 6/28/07 69.3 76.0 <118 * +
0 18:00:19 1:00:00 72 66

33 6/28/07 70.0 74.5 <118 * +
0 19:00:19 1:00:00 73 67

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

34 6/28/07 68.1 73.0 <118 * +
0 20:00:19 1:00:00 71 65

35 6/28/07 69.4 76.5 <118 * +
0 21:00:19 1:00:00 73 66

36 6/28/07 70.7 75.1 <118 * +
0 22:00:19 1:00:00 73 68

37 6/28/07 70.0 74.5 <118 * +
0 23:00:19 1:00:00 72 67

38 6/29/07 68.5 74.5 <118 * +
0 0:00:19 1:00:00 72 64

39 6/29/07 65.7 72.9 <118 * +
0 1:00:19 1:00:00 70 59

40 6/29/07 65.3 71.3 <118 * +
0 2:00:19 1:00:00 70 59

41 6/29/07 64.3 72.4 <118 * +
0 3:00:19 1:00:00 69 57

42 6/29/07 67.2 72.1 <118 * +
0 4:00:19 1:00:00 71 62

43 6/29/07 69.5 73.9 <118 * +
0 5:00:19 1:00:00 73 65

44 6/29/07 72.1 75.2 <118 * +
0 6:00:19 1:00:00 74 70

45 6/29/07 73.0 77.3 <118 * +
0 7:00:19 1:00:00 74 71

46 6/29/07 70.5 80.6 <118 * +
0 8:00:19 1:00:00 72 69

47 6/29/07 71.8 75.3 <118 * +
0 9:00:19 1:00:00 74 69

48 6/29/07 71.1 80.5 <118 * +
0 10:00:19 PARTIAL 74 68

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 1382400

dB	SAMPLES	% OF TOTAL
49	32	.00
50	131	.00
51	354 .	.02
52	612 .	.04
53	1091 .	.07
54	1700 +	.12
55	2515 +	.18
56	4092 +	.29
57	6420 +	.46
58	8083 *	.58
59	12533 *	.90
60	17772 *	1.28
61	25059 **	1.81
62	36756 ***	2.65
63	50806 ****	3.67
64	78826 ******	5.70
65	115641 ********	8.36
66	156072 **********	11.28
67	170788 **********	12.35
68	174850 **********	12.64
69	171169 **********	12.38
70	114334 ********	8.27
71	96431 *******	6.97
72	70879 *****	5.12
73	46280 ***	3.34
74	13706 *	.99
75	2767 +	.20
76	1122 .	.08
77	611 .	.04
78	422 .	.03
79	255 .	.01
80	184 .	.01
81	71	.00
82	23	.00
83	11	.00
84	2	.00

Ln(0.0) = 84dB
Ln(10.0) = 71dB
Ln(50.0) = 68dB
Ln(99.9) = 53dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	68.2dB	43.8dB	43.0dB
Losha	68.0dB	43.2dB	43.0dB

Leq(6)	67.9dB	43.1dB	43.0dB

Calculated Ldn from long-term noise monitoring data northeast perimeter

		TIME	dBA	Numbers... 10 dBA	More Numbers... 5 dBA	
6/28/2007	Midnight	0 / 24	65.1	3235937	32359366	10232930
	am 1:00	100	63.0	1995262	19952623	6309573
	2:00	200	62.6	1819701	18197009	5754399
	3:00	300	63.3	2137962	21379621	6760830
	4:00	400	67.6	5754399	57543994	18197009
	5:00	500	70.9	12302688	123026877	38904514
	6:00	600	72.8	19054607	190546072	60255959
	7:00	700	71.6	14454398	144543977	45708819
	8:00	800	68.8	7585776	75857758	23988329
	9:00	900	68.8	7585776	75857758	23988329
	10:00	1000	68.1	6456542	64565423	20417379
	11:00	1100	66.8	4786301	47863009	15135612
	12:00	1200	66.4	4365158	43651583	13803843
	pm 1:00	1300	68.2	6606934	66069345	20892961
	2:00	1400	68.4	6918310	69183097	21877616
	3:00	1500	68.2	6606934	66069345	20892961
	4:00	1600	67.5	5623413	56234133	17782794
	5:00	1700	69.3	8511380	85113804	26915348
	6:00	1800	69.3	8511380	85113804	26915348
	7:00	1900	70.0	10000000	100000000	31622777
	8:00	2000	68.1	6456542	64565423	20417379
	9:00	2100	69.4	8709636	87096359	27542287
	10:00	2200	70.7	11748976	117489755	37153523
	pm 11:00	2300	70.0	10000000	100000000	31622777

Leq Morning Peak Hour 7:00-10:00 a.m.
70 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
69 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
69 dBA

Leq Daytime 7:00 am-10:00 p.m.
69 dBA

Leq 24-Hour
69 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
75 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
75 dBA

CNEL - Ldn 0.28799932

APPX 300 feet from centerline of US101

METROSONICS db-308 SN 2668 V2.3 3/87

CURRENT DATE: 7/02/07
CURRENT TIME: 10:21:12

_____

_____

_____

_____

CALIBRATED: 6/26/07 @ 10:18:12

DISPLAY RANGE: 43.0dB TO 139.0dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

  START DATE: 6/27/07
  START TIME:11:00:00
  LENGTH: 48:00:00

** OVERALL REPORT **

TEST STARTING DATE: 6/27/07
TEST STARTING TIME: 11:00:19
TEST LENGTH: 2DAYS 0:00:00

Lav = 62.1dB
Lav 80= 43.9dB
Lav 90= 43.0dB
SEL =114.3dB

Lmax = 83.7dB ON 6/27/07 @ 18:30:06
Lpk = 121dB ON 6/27/07 @ 15:06:50

TIME OVER 115dB 0D 0:00:00.00

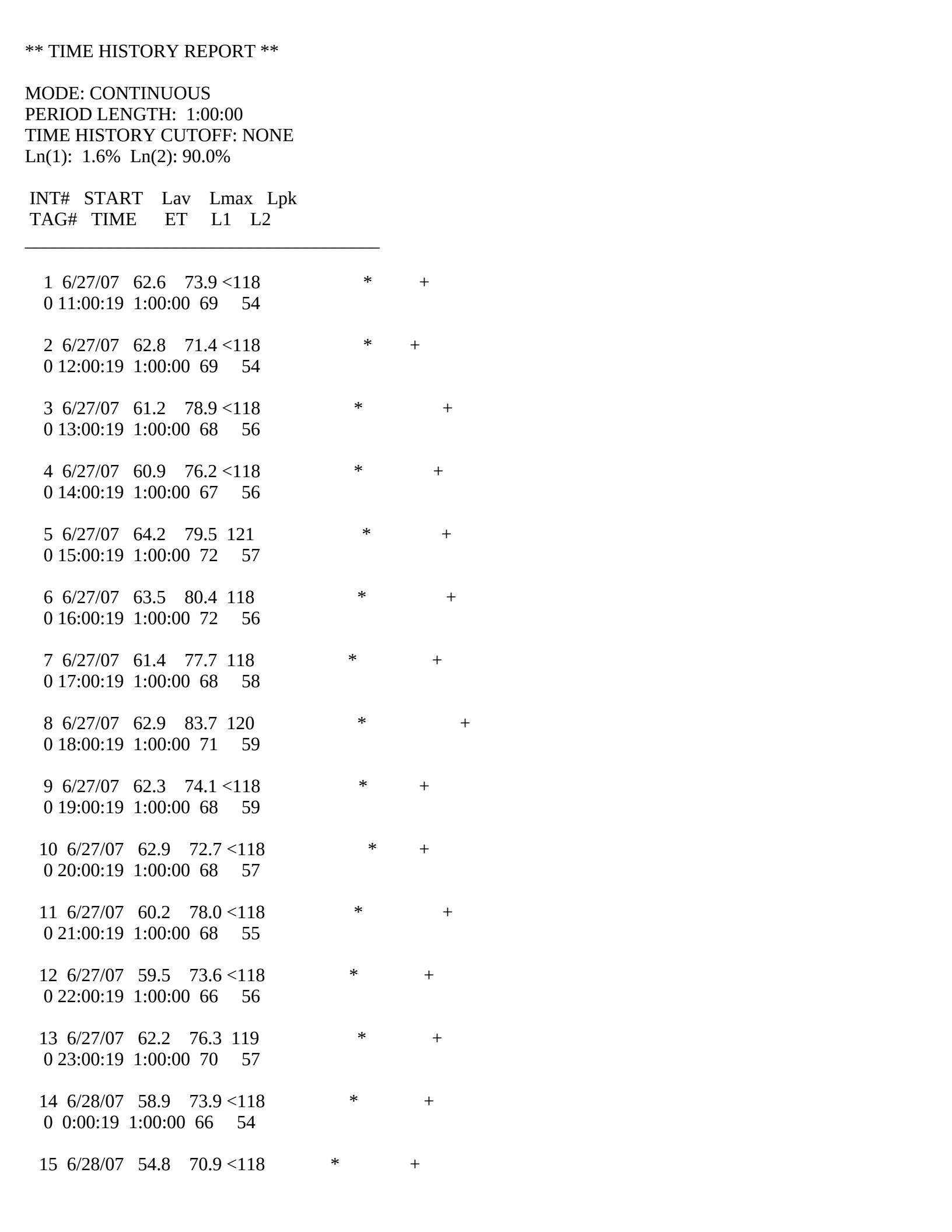
DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.00%
 8 HR DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 1:00:00
TIME HISTORY CUTOFF: NONE
Ln(1): 1.6% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2
1	6/27/07	62.6	73.9	<118
0	11:00:19	1:00:00	69	54
2	6/27/07	62.8	71.4	<118
0	12:00:19	1:00:00	69	54
3	6/27/07	61.2	78.9	<118
0	13:00:19	1:00:00	68	56
4	6/27/07	60.9	76.2	<118
0	14:00:19	1:00:00	67	56
5	6/27/07	64.2	79.5	121
0	15:00:19	1:00:00	72	57
6	6/27/07	63.5	80.4	118
0	16:00:19	1:00:00	72	56
7	6/27/07	61.4	77.7	118
0	17:00:19	1:00:00	68	58
8	6/27/07	62.9	83.7	120
0	18:00:19	1:00:00	71	59
9	6/27/07	62.3	74.1	<118
0	19:00:19	1:00:00	68	59
10	6/27/07	62.9	72.7	<118
0	20:00:19	1:00:00	68	57
11	6/27/07	60.2	78.0	<118
0	21:00:19	1:00:00	68	55
12	6/27/07	59.5	73.6	<118
0	22:00:19	1:00:00	66	56
13	6/27/07	62.2	76.3	119
0	23:00:19	1:00:00	70	57
14	6/28/07	58.9	73.9	<118
0	0:00:19	1:00:00	66	54
15	6/28/07	54.8	70.9	<118



0 1:00:19 1:00:00 60 51

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

16 6/28/07 56.0 66.1 <118 * +
0 2:00:19 1:00:00 61 51

17 6/28/07 56.5 68.6 <118 * +
0 3:00:19 1:00:00 62 52

18 6/28/07 62.7 70.0 <118 * +
0 4:00:19 1:00:00 67 55

19 6/28/07 66.9 73.1 <118 * +
0 5:00:19 1:00:00 70 63

20 6/28/07 68.6 75.8 <118 * +
0 6:00:19 1:00:00 71 66

21 6/28/07 61.3 73.9 <118 * +
0 7:00:19 1:00:00 66 57

22 6/28/07 59.8 73.2 <118 * +
0 8:00:19 1:00:00 65 55

23 6/28/07 60.7 78.4 <118 * +
0 9:00:19 1:00:00 68 55

24 6/28/07 60.4 76.6 <118 * +
0 10:00:19 1:00:00 68 55

25 6/28/07 61.0 74.6 <118 * +
0 11:00:19 1:00:00 69 54

26 6/28/07 59.4 73.7 <118 * +
0 12:00:19 1:00:00 67 54

27 6/28/07 59.8 77.6 <118 * +
0 13:00:19 1:00:00 68 55

28 6/28/07 60.7 80.6 <118 * +
0 14:00:19 1:00:00 67 56

29 6/28/07 59.0 69.4 <118 * +
0 15:00:19 1:00:00 63 56

30 6/28/07 60.5 73.9 <118 * +
0 16:00:19 1:00:00 67 56

31 6/28/07 60.8 78.4 <118 * +
0 17:00:19 1:00:00 68 57

32 6/28/07 62.4 76.7 <118 * +
0 18:00:19 1:00:00 67 57

33 6/28/07 59.5 72.0 <118 * +
0 19:00:19 1:00:00 65 54

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

34 6/28/07 57.7 72.4 <118 * +
0 20:00:19 1:00:00 65 54

35 6/28/07 59.9 76.4 <118 * +
0 21:00:19 1:00:00 66 55

36 6/28/07 62.9 71.0 <118 * +
0 22:00:19 1:00:00 68 58

37 6/28/07 61.6 70.5 <118 * +
0 23:00:19 1:00:00 67 57

38 6/29/07 64.8 70.3 <118 * +
0 0:00:19 1:00:00 68 59

39 6/29/07 57.9 66.9 <118 * +
0 1:00:19 1:00:00 65 49

40 6/29/07 57.8 66.5 <118 * +
0 2:00:19 1:00:00 63 52

41 6/29/07 55.0 66.0 <118 * +
0 3:00:19 1:00:00 61 49

42 6/29/07 55.1 61.4 <118 * +
0 4:00:19 1:00:00 59 51

43 6/29/07 61.6 68.8 <118 * +
0 5:00:19 1:00:00 66 53

44 6/29/07 66.1 70.4 <118 * +
0 6:00:19 1:00:00 68 63

45 6/29/07 65.3 71.7 <118 * +
0 7:00:19 1:00:00 69 60

46 6/29/07 58.8 75.0 <118 * +
0 8:00:19 1:00:00 65 54

47 6/29/07 63.8 74.0 <118 * +
0 9:00:19 1:00:00 70 55

48 6/29/07 66.1 82.7 <118 * +
0 10:00:19 PARTIAL 71 57

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 1382400

dB	SAMPLES	% OF TOTAL
45	47	.00
46	355 .	.02
47	1147 .	.08
48	2966 +	.21
49	5033 +	.36
50	10358 *	.74
51	16364 *	1.18
52	26740 **	1.93
53	41970 ***	3.03
54	68726 *****	4.97
55	101347 *******	7.33
56	124499 *********	9.00
57	158375 **********	11.45
58	132660 **********	9.59
59	128436 *********	9.29
60	103586 *******	7.49
61	85554 ******	6.18
62	67661 *****	4.89
63	57929 ****	4.19
64	51227 ****	3.70
65	46775 ***	3.38
66	47189 ***	3.41
67	39106 ***	2.82
68	29900 **	2.16
69	19803 *	1.43
70	7497 *	.54
71	2973 +	.21
72	1718 +	.12
73	1032 .	.07
74	539 .	.03
75	409 .	.02
76	231 .	.01
77	116	.00
78	65	.00
79	22	.00
80	21	.00
81	14	.00
82	6	.00
83	4	.00

Ln(0.0) = 83dB
Ln(10.0) = 66dB
Ln(50.0) = 59dB
Ln(99.9) = 47dB

NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF

Ldod	61.0dB	43.1dB	43.0dB
Losha	60.6dB	43.0dB	43.0dB
Leq(6)	60.3dB	43.0dB	

Calculated Ldn from long-term noise monitoring data southeast perimeter

					10 dBA	5 dBA	
		TIME		dBA	Numbers...	More Numbers...	
6/28/2007	Midnight	0 / 24		58.9	776247	7762471	2454709
	am 1:00	100		54.8	301995	3019952	954993
	2:00	200		56.0	398107	3981072	1258925
	3:00	300		56.5	446684	4466836	1412538
	4:00	400		62.7	1862087	18620871	5888437
	5:00	500		66.9	4897788	48977882	15488166
	6:00	600		68.6	7244360	72443596	22908677
	7:00	700		61.3	1348963	13489629	4265795
	8:00	800		59.8	954993	9549926	3019952
	9:00	900		60.7	1174898	11748976	3715352
	10:00	1000		60.4	1096478	10964782	3467369
	11:00	1100		61.0	1258925	12589254	3981072
	12:00	1200		59.4	870964	8709636	2754229
	pm 1:00	1300		59.8	954993	9549926	3019952
	2:00	1400		60.7	1174898	11748976	3715352
	3:00	1500		59.0	794328	7943282	2511886
	4:00	1600		60.5	1122018	11220185	3548134
	5:00	1700		60.8	1202264	12022644	3801894
	6:00	1800		62.4	1737801	17378008	5495409
	7:00	1900		59.5	891251	8912509	2818383
	8:00	2000		57.7	588844	5888437	1862087
	9:00	2100		59.9	977237	9772372	3090295
	10:00	2200		62.9	1949845	19498446	6165950
	pm 11:00	2300		61.6	1445440	14454398	4570882

Leq Morning Peak Hour 7:00-10:00 a.m.
61 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
61 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
63 dBA

Leq Daytime 7:00 am-10:00 p.m.
60 dBA

Leq 24-Hour
62 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
69 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
70 dBA **and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.**

CNEL - Ldn 0.10883855

APPX 500 feet from centerline of US101
Spike at 5 and 6 am may not be traffic. Similar spike the following day

METROSONICS db-308 SN 3402 V3.0 4/88
REPORT PRINTED 7/05/07 @ 11:26:20

DOUBLING RATE: 3dB FILTER: A WGHT
DOSE CRITERION: 90dB RESPONSE: SLOW
PRE-CALIBRATION TIME: 6/26/07 @ 10:30:33
PRE-CALIBRATION RANGE: 40.5dB TO 140.5dB
NO POST-CALIBRATION

CALIBRATOR TYPE & SERIAL # : _____

CALIBRATOR CALIBRATION DATE: _____

TEST BEGAN 7/02/07 @ 13:00:03
TEST LENGTH: 2DAYS 0:00:00
TEST ENDED 7/04/07 @ 13:00:03
TEST INTERRUPTIONS: 1

Lav = 66.5dB Lav (80)= 57.5dB
SEL =118.7dB Lav (90)= 40.5dB
Lmax = 89.5dB ON 7/02/07 @ 17:28:55
 Lpk =135.5dB ON 7/02/07 @ 14:57:58
TIME OVER 115dB 0D 0:00:00.00

 8 HR DOSE (80dB CUTOFF)= 0.32%
 8 HR DOSE (90dB CUTOFF)= 0.00%
  "TIME HISTORY REPORT

"# OF PERIODS: 48 MODE: CONTINUOUS
"PERIOD LENGTH: 1:00:00
"TIME HISTORY CUTOFF: NONE
"Ln(1): 1.6% Ln(2): 90.0%

"DATE: 7/02/07 TAG #: 0

"INT"	"TIME"	"Lav"	"Lmx"	"Lpk"	"L1"	"L2"
1	"13:00:03"	66.6	83.3	128.3	75	53
2	"14:00:03"	70.9	85.4	135.5	78	61
3	"15:00:03"	71.9	84.9	133.6	79	62
4	"16:00:03"	74.7	88.1	133.5	81	65
5	"17:00:03"	75.5	89.5	134.3	82	67
6	"18:00:03"	72.0	86.5	131.6	79	62
7	"19:00:03"	69.3	81.7	132.7	77	52
8	"20:00:03"	69.7	86.2	130.2	77	54
9	"21:00:03"	66.1	86.4	131.0	76	50
10	"22:00:03"	71.7	86.5	128.9	78	57
11	"23:00:03"	67.5	83.2	127.9	76	52
12	" 0:00:03"	56.1	80.1	116.1	64	44
13	" 1:00:03"	62.3	80.4	128.4	72	44
14	" 2:00:03"	57.3	79.8	121.9	68	41
15	" 3:00:03"	48.5	73.6	"UNR"	54	41
16	" 4:00:03"	49.6	68.7	112.5	59	43
17	" 5:00:03"	59.1	80.9	125.4	68	47

18	" 6:00:03"	57.5	77.6	116.1	67	48
19	" 7:00:03"	60.8	83.0	114.5	72	49
20	" 8:00:03"	63.1	85.3	126.8	73	49
21	" 9:00:03"	62.2	81.4	117.1	73	48
22	"10:00:03"	59.8	79.7	117.9	68	48
23	"11:00:03"	59.4	82.2	114.2	68	48
24	"12:00:03"	62.1	77.9	122.4	71	49
25	"13:00:03"	64.1	79.2	125.8	72	51
26	"14:00:03"	68.0	82.5	130.2	75	57
27	"15:00:03"	67.8	81.0	129.8	75	54
28	"16:00:03"	70.0	86.9	133.9	78	57
29	"17:00:03"	63.9	85.1	132.7	74	50
30	"18:00:03"	68.2	83.7	132.9	77	54
31	"19:00:03"	68.6	83.6	131.1	77	52
32	"20:00:03"	59.4	79.6	122.6	69	49
33	"21:00:03"	57.3	78.1	"UNR"	68	47
34	"22:00:03"	56.1	80.0	"UNR"	63	47
35	"23:00:03"	52.5	77.9	"UNR"	57	45
36	" 0:00:03"	53.0	79.2	"UNR"	53	43
37	" 1:00:03"	46.0	56.3	"UNR"	49	42
38	" 2:00:03"	42.9	53.2	"UNR"	45	41
39	" 3:00:03"	42.7	60.2	"UNR"	46	41
40	" 4:00:03"	44.6	59.4	"UNR"	51	41
41	" 5:00:03"	47.9	64.2	"UNR"	53	43
42	" 6:00:03"	49.5	68.2	"UNR"	57	45
43	" 7:00:03"	54.7	77.3	"UNR"	63	43
44	" 8:00:03"	56.2	80.8	"UNR"	64	45
45	" 9:00:03"	57.1	77.9	"UNR"	67	46
46	"10:00:03"	56.2	78.6	"UNR"	64	46
47	"11:00:03"	56.3	80.2	"UNR"	62	46
48	"12:00:03"	57.7	80.3	"UNR"	65	49

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 2764800

dB	SAMPLES	% OF TOTAL
40	4718 +	.17
41	54336 **	1.97
42	111800 ****	4.04
43	106278 ****	3.84
44	103714 ****	3.75
45	135222 *****	4.89
46	139842 *****	5.06
47	144173 *****	5.21
48	146372 *****	5.29
49	139207 *****	5.03
50	139489 *****	5.05
51	111894 ****	4.05
52	92242 ***	3.34
53	87277 ***	3.16
54	74505 ***	2.69
55	69801 ***	2.52
56	60833 **	2.20

57	59736	**	2.16
58	56940	**	2.06
59	54949	**	1.99
60	49115	**	1.78
61	53765	**	1.94
62	54465	**	1.97
63	53668	**	1.94
64	55208	**	2.00
65	54457	**	1.97
66	56612	**	2.05
67	57496	**	2.08
68	57401	**	2.08
69	56651	**	2.05
70	53993	**	1.95
71	51976	**	1.88
72	45818	**	1.66
73	41588	**	1.50
74	34488	*	1.25
75	27952	*	1.01
76	21496	*	.78
77	16126	*	.58
78	11645	+	.42
79	7509	+	.27
80	4467	+	.16
81	2585	.	.09
82	1488	.	.05
83	816	.	.03
84	366	.	.01
85	189	.	.01
86	93		.00
87	29		.00
88	7		.00
89	3		.00

Ln(0.0) = 89dB
Ln(10.0) = 70dB
Ln(50.0) = 52dB
Ln(99.9) = 40dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	63.9dB	48.9dB	40.0dB
Losha	62.4dB	40.7dB	40.0dB
Leq(6)	61.2dB	43.0dB	40.0dB

Calculated Ldn from long-term noise monitoring data southern future phases area

			TIME	dBA	Numbers... 10 dBA	More Numbers... 5 dBA	
7/3/2007	Midnight		0 / 24	56.1	407380	4073803	1288250
	am	1:00	100	62.3	1698244	16982437	5370318
		2:00	200	57.3	537032	5370318	1698244
		3:00	300	48.5	70795	707946	223872
		4:00	400	49.6	91201	912011	288403
		5:00	500	59.1	812831	8128305	2570396
		6:00	600	57.5	562341	5623413	1778279
		7:00	700	60.8	1202264	12022644	3801894
		8:00	800	63.1	2041738	20417379	6456542
		9:00	900	62.2	1659587	16595869	5248075
		10:00	1000	59.8	954993	9549926	3019952
		11:00	1100	59.4	870964	8709636	2754229
		12:00	1200	62.1	1621810	16218101	5128614
	pm	1:00	1300	64.1	2570396	25703958	8128305
		2:00	1400	68.0	6309573	63095734	19952623
		3:00	1500	67.8	6025596	60255959	19054607
		4:00	1600	70.0	10000000	100000000	31622777
		5:00	1700	63.9	2454709	24547089	7762471
		6:00	1800	68.2	6606934	66069345	20892961
		7:00	1900	68.6	7244360	72443596	22908677
		8:00	2000	59.4	870964	8709636	2754229
		9:00	2100	57.3	537032	5370318	1698244
		10:00	2200	56.1	407380	4073803	1288250
	pm	11:00	2300	52.5	177828	1778279	562341

Leq Morning Peak Hour 7:00-10:00 a.m.
62 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
68 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
57 dBA

Leq Daytime 7:00 am-10:00 p.m.
65 dBA

Leq 24-Hour
64 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
66 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
67 dBA **and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.**

CNEL - Ldr 0.75438742

Notes:

APPX 150 feet from edge of the closestCaltrain rail

Hill on western edge provides shieding from traffic on Bayshore Road but adds reflective noise from train passby events

METROSONICS db-308 SN 2671 V2.3 3/87

CURRENT DATE: 7/05/07
CURRENT TIME: 11:20:35

_____

_____

_____

_____

CALIBRATED: 6/26/07 @ 10:23:18

DISPLAY RANGE: 43.4dB TO 139.4dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

  START DATE: 7/02/07
  START TIME:12:00:00
  LENGTH: 48:00:00

** OVERALL REPORT **

TEST STARTING DATE: 7/02/07
TEST STARTING TIME: 12:00:19
TEST LENGTH: 2DAYS 0:00:00

Lav = 62.4dB
Lav 80= 45.4dB
Lav 90= 43.4dB
SEL =114.6dB

Lmax = 86.1dB ON 7/04/07 @ 11:24:42
Lpk = 122dB ON 7/02/07 @ 16:49:31

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.02%
 8 HR DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 1:00:00
TIME HISTORY CUTOFF: NONE
Ln(1): 1.6% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2
1	7/02/07	62.1	81.0	<118
0	12:00:19	1:00:00	70	53
2	7/02/07	66.3	79.1	118
0	13:00:19	1:00:00	73	58
3	7/02/07	65.5	79.0	<118
0	14:00:19	1:00:00	72	56
4	7/02/07	67.8	80.8	118
0	15:00:19	1:00:00	74	59
5	7/02/07	69.3	80.7	122
0	16:00:19	1:00:00	76	61
6	7/02/07	69.0	81.1	119
0	17:00:19	1:00:00	76	60
7	7/02/07	67.2	84.2	<118
0	18:00:19	1:00:00	74	58
8	7/02/07	65.4	81.1	120
0	19:00:19	1:00:00	72	56
9	7/02/07	64.1	78.4	<118
0	20:00:19	1:00:00	71	56
10	7/02/07	67.4	80.8	119
0	21:00:19	1:00:00	74	58
11	7/02/07	65.3	77.0	<118
0	22:00:19	1:00:00	72	56
12	7/02/07	65.0	78.7	118
0	23:00:19	1:00:00	72	56
13	7/03/07	58.4	77.3	<118
0	0:00:19	1:00:00	66	48
14	7/03/07	51.9	68.8	<118
0	1:00:19	1:00:00	60	45
15	7/03/07	58.4	76.2	<118

0 2:00:19 1:00:00 67 47

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

16 7/03/07 59.8 73.9 <118 * +
0 3:00:19 1:00:00 68 50

17 7/03/07 58.3 71.6 <118 * +
0 4:00:19 1:00:00 66 49

18 7/03/07 59.7 81.7 <118 * +
0 5:00:19 1:00:00 68 48

19 7/03/07 58.1 77.8 <118 * +
0 6:00:19 1:00:00 68 51

20 7/03/07 60.6 81.2 <118 * +
0 7:00:19 1:00:00 71 52

21 7/03/07 61.5 84.8 <118 * +
0 8:00:19 1:00:00 71 51

22 7/03/07 60.3 78.9 <118 * +
0 9:00:19 1:00:00 71 50

23 7/03/07 57.2 79.4 <118 * +
0 10:00:19 1:00:00 63 50

24 7/03/07 60.2 81.7 <118 * +
0 11:00:19 1:00:00 68 52

25 7/03/07 60.9 76.4 <118 * +
0 12:00:19 1:00:00 69 53

26 7/03/07 64.1 79.9 <118 * +
0 13:00:19 1:00:00 71 56

27 7/03/07 64.6 79.2 <118 * +
0 14:00:19 1:00:00 71 57

28 7/03/07 62.9 79.3 <118 * +
0 15:00:19 1:00:00 71 54

29 7/03/07 62.5 78.8 <118 * +
0 16:00:19 1:00:00 70 55

30 7/03/07 59.1 79.7 <118 * +
0 17:00:19 1:00:00 67 53

31 7/03/07 61.1 79.0 <118 * +
0 18:00:19 1:00:00 70 53

32 7/03/07 59.2 77.8 <118 * +
0 19:00:19 1:00:00 67 53

33 7/03/07 56.8 77.9 <118 * +
0 20:00:19 1:00:00 63 51

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

34 7/03/07 56.8 74.9 <118 * +
0 21:00:19 1:00:00 67 50

35 7/03/07 56.1 78.5 <118 * +
0 22:00:19 1:00:00 61 50

36 7/03/07 54.2 73.2 <118 * +
0 23:00:19 1:00:00 59 50

37 7/04/07 55.1 76.9 <118 * +
0 0:00:19 1:00:00 58 49

38 7/04/07 49.5 62.5 <118 * +
0 1:00:19 1:00:00 54 46

39 7/04/07 49.3 64.0 <118 * +
0 2:00:19 1:00:00 53 47

40 7/04/07 47.2 54.0 <118 * +
0 3:00:19 1:00:00 51 45

41 7/04/07 48.0 57.6 <118 * +
0 4:00:19 1:00:00 53 44

42 7/04/07 48.0 57.5 <118 * +
0 5:00:19 1:00:00 51 45

43 7/04/07 50.1 65.8 <118 * +
0 6:00:19 1:00:00 58 46

44 7/04/07 54.4 76.3 <118 * +
0 7:00:19 1:00:00 63 46

45 7/04/07 56.8 80.8 <118 * +
0 8:00:19 1:00:00 65 46

46 7/04/07 57.2 78.8 <118 * +
0 9:00:19 1:00:00 67 47

47 7/04/07 55.6 77.9 <118 * +
0 10:00:19 1:00:00 63 48

48 7/04/07 60.0 86.1 <118 * +
0 11:00:19 PARTIAL 68 52

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 1382400

dB	SAMPLES	% OF TOTAL
43	59	.00
44	5856 +	.42
45	23176 **	1.67
46	48921 ****	3.53
47	73471 *****	5.31
48	70191 *****	5.07
49	59430 ****	4.29
50	74146 *****	5.36
51	81873 ******	5.92
52	90500 *******	6.54
53	89028 ******	6.44
54	82593 ******	5.97
55	62795 *****	4.54
56	55149 ****	3.98
57	61465 ****	4.44
58	54049 ****	3.90
59	52547 ****	3.80
60	46101 ***	3.33
61	44558 ***	3.22
62	44044 ***	3.18
63	39648 ***	2.86
64	37530 ***	2.71
65	33792 **	2.44
66	30234 **	2.18
67	24339 **	1.76
68	23362 **	1.68
69	21802 **	1.57
70	16000 *	1.15
71	12288 *	.88
72	8428 *	.60
73	5595 +	.40
74	3647 +	.26
75	2239 +	.16
76	1447 +	.10
77	940 .	.06
78	560 .	.04
79	271 .	.01
80	170 .	.01
81	82	.00
82	20	.00
83	25	.00
84	27	.00
85	1	.00
86	1	.00

Ln(0.0) = 86dB
Ln(10.0) = 66dB

Ln(50.0) = 54dB
Ln(99.9) = 44dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	60.5dB	43.9dB	43.0dB
Losha	59.5dB	43.3dB	43.0dB
Leq(6)	58.8dB	43.1dB	43.0dB

Calculated Ldn from long-term noise monitoring data northern future phases area

					10 dBA	5 dBA	
		TIME		dBA	Numbers...	More Numbers...	
7/3/2007	Midnight	0 / 24		58.4	691831	6918310	2187762
	am	1:00	100	51.9	154882	1548817	489779
		2:00	200	58.4	691831	6918310	2187762
		3:00	300	59.8	954993	9549926	3019952
		4:00	400	58.3	676083	6760830	2137962
		5:00	500	59.7	933254	9332543	2951209
		6:00	600	58.1	645654	6456542	2041738
		7:00	700	60.6	1148154	11481536	3630781
		8:00	800	61.5	1412538	14125375	4466836
		9:00	900	60.3	1071519	10715193	3388442
		10:00	1000	57.2	524807	5248075	1659587
		11:00	1100	60.2	1047129	10471285	3311311
		12:00	1200	60.9	1230269	12302688	3890451
	pm	1:00	1300	64.1	2570396	25703958	8128305
		2:00	1400	64.6	2884032	28840315	9120108
		3:00	1500	62.9	1949845	19498446	6165950
		4:00	1600	62.5	1778279	17782794	5623413
		5:00	1700	59.1	812831	8128305	2570396
		6:00	1800	61.1	1288250	12882496	4073803
		7:00	1900	59.2	831764	8317638	2630268
		8:00	2000	56.8	478630	4786301	1513561
		9:00	2100	56.8	478630	4786301	1513561
		10:00	2200	56.1	407380	4073803	1288250
	pm	11:00	2300	54.2	263027	2630268	831764

Leq Morning Peak Hour 7:00-10:00 a.m.
61 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
61 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
58 dBA

Leq Daytime 7:00 am-10:00 p.m.
61 dBA

Leq 24-Hour
60 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
65 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
65 dBA **and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.**

CNEL - Ldn 0.22218211

Notes:

APPX 120 feet from edge of the closestCaltrain rail

METROSONICS db-308 SN 3402 V3.0 4/88
REPORT PRINTED 7/02/07 @ 10:07:13

DOUBLING RATE: 3dB FILTER: A WGHT
DOSE CRITERION: 90dB RESPONSE: SLOW
PRE-CALIBRATION TIME: 6/26/07 @ 10:30:33
PRE-CALIBRATION RANGE: 40.5dB TO 140.5dB
NO POST-CALIBRATION

CALIBRATOR TYPE & SERIAL # : _____

CALIBRATOR CALIBRATION DATE: _____

TEST BEGAN 6/27/07 @ 11:00:03
TEST LENGTH: 2DAYS 0:00:00
TEST ENDED 6/29/07 @ 11:00:03
TEST INTERRUPTIONS: 1

Lav = 56.6dB Lav (80)= 40.6dB
SEL =108.8dB Lav (90)= 40.5dB
Lmax = 80.7dB ON 6/27/07 @ 15:39:54
Lpk =123.8dB ON 6/27/07 @ 19:09:06
TIME OVER 115dB 0D 0:00:00.00

8 HR DOSE (80dB CUTOFF)= 0.00%
8 HR DOSE (90dB CUTOFF)= 0.00%
"TIME HISTORY REPORT

"# OF PERIODS: 48 MODE: CONTINUOUS
"PERIOD LENGTH: 1:00:00
"TIME HISTORY CUTOFF: NONE
"Ln(1): 1.6% Ln(2): 90.0%

"DATE: 6/27/07 TAG #: 0

"INT"	"TIME"	"Lav"	"Lmx"	"Lpk"	"L1"	"L2"
1	"11:00:03"	55.7	70.3	112.5	64	48
2	"12:00:03"	54.2	68.9	110.3	62	48
3	"13:00:03"	56.8	75.1	112.1	65	50
4	"14:00:03"	59.2	75.8	119.7	68	51
5	"15:00:03"	64.1	80.7	123.2	72	54
6	"16:00:03"	63.2	78.7	123.0	70	54
7	"17:00:03"	58.9	76.4	119.2	68	51
8	"18:00:03"	60.7	76.6	119.2	69	52
9	"19:00:03"	58.1	73.9	123.8	66	51
10	"20:00:03"	54.4	67.0	117.5	62	49
11	"21:00:03"	56.9	77.8	"UNR"	65	47
12	"22:00:03"	54.2	70.7	116.4	62	48
13	"23:00:03"	59.7	73.3	117.7	68	49
14	" 0:00:03"	55.8	71.1	116.1	64	46
15	" 1:00:03"	48.3	65.3	"UNR"	56	44
16	" 2:00:03"	49.7	64.7	111.3	57	43
17	" 3:00:03"	50.5	64.9	111.3	58	44

18	" 4:00:03"	47.1	59.7	"UNR"	52	44
19	" 5:00:03"	51.6	70.7	"UNR"	60	46
20	" 6:00:03"	54.1	69.1	"UNR"	62	48
21	" 7:00:03"	57.3	69.1	109.9	65	50
22	" 8:00:03"	58.2	74.8	117.1	66	50
23	" 9:00:03"	59.4	77.7	120.2	67	50
24	"10:00:03"	57.5	71.7	116.6	65	49
25	"11:00:03"	56.7	70.0	118.5	64	48
26	"12:00:03"	56.9	74.0	116.4	65	48
27	"13:00:03"	57.4	72.6	118.9	66	49
28	"14:00:03"	58.5	80.2	116.8	66	49
29	"15:00:03"	55.8	73.5	119.2	64	49
30	"16:00:03"	57.7	72.9	121.1	66	49
31	"17:00:03"	60.9	74.1	121.4	68	52
32	"18:00:03"	55.0	68.7	114.5	63	48
33	"19:00:03"	52.7	70.5	"UNR"	61	46
34	"20:00:03"	54.2	70.0	"UNR"	64	46
35	"21:00:03"	56.0	77.2	"UNR"	65	46
36	"22:00:03"	51.0	65.6	"UNR"	60	45
37	"23:00:03"	50.6	71.0	110.3	61	43
38	" 0:00:03"	46.5	63.9	111.3	57	41
39	" 1:00:03"	43.7	60.5	"UNR"	51	40
40	" 2:00:03"	42.7	61.5	111.3	46	40
41	" 3:00:03"	43.5	65.1	112.1	49	40
42	" 4:00:03"	43.0	64.9	"UNR"	49	40
43	" 5:00:03"	49.5	70.2	111.7	59	41
44	" 6:00:03"	51.0	68.7	108.8	61	42
45	" 7:00:03"	53.9	70.2	"UNR"	64	43
46	" 8:00:03"	53.8	72.1	"UNR"	64	44
47	" 9:00:03"	54.0	71.6	120.1	64	44
48	"10:00:03"	55.6	73.3	114.8	66	44

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 2764800

dB	SAMPLES	% OF TOTAL
40	112152 ****	4.06
41	79894 ***	2.89
42	76532 ***	2.77
43	90514 ***	3.27
44	96039 ***	3.47
45	114063 ****	4.13
46	130673 *****	4.73
47	146073 *****	5.28
48	158053 ******	5.72
49	175445 ******	6.35
50	192290 *******	6.95
51	188033 *******	6.80
52	160126 ******	5.79
53	155502 ******	5.62
54	139195 *****	5.03
55	128984 *****	4.67
56	107595 ****	3.89

57	98406	****	3.56
58	82227	***	2.97
59	68058	**	2.46
60	52765	**	1.91
61	47378	**	1.71
62	39419	*	1.43
63	31037	*	1.12
64	25205	*	.91
65	19412	*	.70
66	15805	*	.57
67	11451	+	.41
68	7666	+	.28
69	5176	+	.19
70	3693	+	.13
71	2259	.	.08
72	1312	.	.05
73	856	.	.03
74	539	.	.02
75	416	.	.02
76	284	.	.01
77	156	.	.01
78	70		.00
79	39		.00
80	8		.00

Ln(0.0) = 80dB
Ln(10.0) = 59dB
Ln(50.0) = 51dB
Ln(99.9) = 40dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	54.8dB	40.0dB	40.0dB
Losha	53.9dB	40.0dB	40.0dB
Leq(6)	53.4dB	40.0dB	40.0dB

Calculated Ldn from long-term noise monitoring data northwest perimeter

					10 dBA	5 dBA	
		TIME		dBA	Numbers...	More Numbers...	
6/28/2007	Midnight	0 / 24		55.8	380189	3801894	1202264
	am 1:00	100		48.3	67608	676083	213796
	2:00	200		49.7	93325	933254	295121
	3:00	300		50.5	112202	1122018	354813
	4:00	400		47.1	51286	512861	162181
	5:00	500		51.6	144544	1445440	457088
	6:00	600		54.1	257040	2570396	812831
	7:00	700		57.3	537032	5370318	1698244
	8:00	800		58.2	660693	6606934	2089296
	9:00	900		59.4	870964	8709636	2754229
	10:00	1000		57.5	562341	5623413	1778279
	11:00	1100		56.7	467735	4677351	1479108
	12:00	1200		56.9	489779	4897788	1548817
	pm 1:00	1300		57.4	549541	5495409	1737801
	2:00	1400		58.5	707946	7079458	2238721
	3:00	1500		55.8	380189	3801894	1202264
	4:00	1600		57.7	588844	5888437	1862087
	5:00	1700		60.9	1230269	12302688	3890451
	6:00	1800		55.0	316228	3162278	1000000
	7:00	1900		52.7	186209	1862087	588844
	8:00	2000		54.2	263027	2630268	831764
	9:00	2100		56.0	398107	3981072	1258925
	10:00	2200		51.0	125893	1258925	398107
	pm 11:00	2300		50.6	114815	1148154	363078

Leq Morning Peak Hour 7:00-10:00 a.m.
58 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
58 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
52 dBA

Leq Daytime 7:00 am-10:00 p.m.
57 dBA

Leq 24-Hour
56 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
60 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
60 dBA **and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.**

CNEL - Ldn 0.35237041

Notes:

APPX 150 feet from centerline of Tunnel road and 580 feet from Caltrain rail

METROSONICS db-308 SN 2671 V2.3 3/87

CURRENT DATE: 7/02/07
CURRENT TIME: 10:14:11

_____

_____

_____

_____

CALIBRATED: 6/26/07 @ 10:23:18

DISPLAY RANGE: 43.4dB TO 139.4dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

  START DATE: 6/27/07
  START TIME:11:00:00
  LENGTH: 48:00:00

** OVERALL REPORT **

TEST STARTING DATE: 6/27/07
TEST STARTING TIME: 11:00:19
TEST LENGTH: 2DAYS 0:00:00

Lav = 57.9dB
Lav 80= 45.0dB
Lav 90= 43.4dB
SEL =110.1dB

Lmax = 85.9dB ON 6/27/07 @ 17:47:45
Lpk = 120dB ON 6/27/07 @ 15:53:00

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.00%
 8 HR DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 1:00:00
TIME HISTORY CUTOFF: NONE
Ln(1): 1.6% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk		
TAG#	TIME	ET	L1	L2		
1	6/27/07	57.7	73.3	<118	*	+
0	11:00:19	1:00:00	66	51		
2	6/27/07	56.9	71.6	<118	*	+
0	12:00:19	1:00:00	64	50		
3	6/27/07	59.0	80.1	<118	*	+
0	13:00:19	1:00:00	67	51		
4	6/27/07	58.7	77.8	<118	*	+
0	14:00:19	1:00:00	67	52		
5	6/27/07	62.7	79.4	120	*	+
0	15:00:19	1:00:00	71	53		
6	6/27/07	62.0	83.2	<118	*	+
0	16:00:19	1:00:00	70	54		
7	6/27/07	60.9	85.9	120	*	+
0	17:00:19	1:00:00	69	53		
8	6/27/07	61.2	82.5	119	*	+
0	18:00:19	1:00:00	69	54		
9	6/27/07	61.9	82.1	118	*	+
0	19:00:19	1:00:00	70	54		
10	6/27/07	59.3	75.0	<118	*	+
0	20:00:19	1:00:00	67	52		
11	6/27/07	57.5	75.5	<118	*	+
0	21:00:19	1:00:00	66	50		
12	6/27/07	56.4	77.3	<118	*	+
0	22:00:19	1:00:00	64	50		
13	6/27/07	59.0	74.0	<118	*	+
0	23:00:19	1:00:00	67	51		
14	6/28/07	55.7	72.9	<118	*	+
0	0:00:19	1:00:00	65	47		
15	6/28/07	55.6	74.2	<118	*	+

0 1:00:19 1:00:00 65 47

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

16 6/28/07 53.4 69.9 <118 * +
0 2:00:19 1:00:00 63 45

17 6/28/07 54.8 72.9 <118 * +
0 3:00:19 1:00:00 64 45

18 6/28/07 54.5 72.1 <118 * +
0 4:00:19 1:00:00 64 47

19 6/28/07 54.0 72.4 <118 * +
0 5:00:19 1:00:00 63 48

20 6/28/07 57.0 73.2 <118 * +
0 6:00:19 1:00:00 64 50

21 6/28/07 58.8 70.3 <118 * +
0 7:00:19 1:00:00 66 53

22 6/28/07 59.4 73.6 <118 * +
0 8:00:19 1:00:00 66 54

23 6/28/07 61.7 80.1 <118 * +
0 9:00:19 1:00:00 69 54

24 6/28/07 59.5 77.3 <118 * +
0 10:00:19 1:00:00 67 52

25 6/28/07 59.0 70.2 <118 * +
0 11:00:19 1:00:00 66 52

26 6/28/07 58.4 76.6 <118 * +
0 12:00:19 1:00:00 66 51

27 6/28/07 58.3 74.9 <118 * +
0 13:00:19 1:00:00 66 51

28 6/28/07 59.3 77.6 <118 * +
0 14:00:19 1:00:00 68 51

29 6/28/07 56.2 71.8 <118 * +
0 15:00:19 1:00:00 64 50

30 6/28/07 57.6 76.0 <118 * +
0 16:00:19 1:00:00 66 51

31 6/28/07 60.5 76.4 <118 * +
0 17:00:19 1:00:00 69 53

32 6/28/07 56.2 71.2 <118 * +
0 18:00:19 1:00:00 64 51

33 6/28/07 56.1 75.0 <118 * +
0 19:00:19 1:00:00 65 49

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

34 6/28/07 57.1 82.6 <118 * +
0 20:00:19 1:00:00 66 49

35 6/28/07 57.2 76.9 <118 * +
0 21:00:19 1:00:00 66 49

36 6/28/07 53.7 69.2 <118 * +
0 22:00:19 1:00:00 62 48

37 6/28/07 55.4 73.4 <118 * +
0 23:00:19 1:00:00 65 46

38 6/29/07 51.3 72.7 <118 * +
0 0:00:19 1:00:00 60 45

39 6/29/07 49.2 69.3 <118 * +
0 1:00:19 1:00:00 58 43

40 6/29/07 47.7 65.5 <118 * +
0 2:00:19 1:00:00 55 43

41 6/29/07 49.7 68.0 <118 * +
0 3:00:19 1:00:00 59 43

42 6/29/07 49.1 65.9 <118 * +
0 4:00:19 1:00:00 58 43

43 6/29/07 52.4 81.0 <118 * +
0 5:00:19 1:00:00 59 43

44 6/29/07 55.7 69.3 <118 * +
0 6:00:19 1:00:00 63 44

45 6/29/07 57.3 72.8 <118 * +
0 7:00:19 1:00:00 66 48

46 6/29/07 57.3 73.4 <118 * +
0 8:00:19 1:00:00 66 49

47 6/29/07 56.6 73.9 <118 * +
0 9:00:19 1:00:00 66 47

48 6/29/07 58.2 78.4 <118 * +
0 10:00:19 PARTIAL 67 49

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 1382400

dB	SAMPLES	% OF TOTAL
43	36608 ***	2.64
44	32246 **	2.33
45	35550 ***	2.57
46	37254 ***	2.69
47	44000 ***	3.18
48	56419 ****	4.08
49	67794 *****	4.90
50	85249 ******	6.16
51	92850 *******	6.71
52	109677 ********	7.93
53	118152 *********	8.54
54	117503 ********	8.49
55	95748 *******	6.92
56	78820 ******	5.70
57	85480 ******	6.18
58	66346 *****	4.79
59	53638 ****	3.88
60	37921 ***	2.74
61	30777 **	2.22
62	25644 **	1.85
63	18382 *	1.32
64	14702 *	1.06
65	11696 *	.84
66	8829 *	.63
67	5852 +	.42
68	4500 +	.32
69	3748 +	.27
70	2314 +	.16
71	1777 +	.12
72	1063 .	.07
73	616 .	.04
74	462 .	.03
75	241 .	.01
76	189 .	.01
77	130	.00
78	98	.00
79	47	.00
80	22	.00
81	20	.00
82	17	.00
83	7	.00
84	3	.00
85	9	.00

Ln(0.0) = 85dB
Ln(10.0) = 60dB
Ln(50.0) = 53dB

Ln(99.9) = 43dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	56.3dB	43.3dB	43.0dB
Losha	55.7dB	43.1dB	43.0dB
Leq(6)	55.3dB	43.0dB	43.0dB

Calculated Ldn from long-term noise monitoring data southwest perimeter

					10 dBA	5 dBA		
			TIME	dBA	Numbers...	More Numbers...		
6/28/2007	Midnight		0 / 24	55.7	371535	3715352	1174898	**Leq Morning Peak Hour 7:00-10:00 a.m.**
	am	1:00	100	55.6	363078	3630781	1148154	**60** dBA
		2:00	200	53.4	218776	2187762	691831	
		3:00	300	54.8	301995	3019952	954993	**Leq Evening Peak Hour 4:00-8:00 p.m.**
		4:00	400	54.5	281838	2818383	891251	**58** dBA
		5:00	500	54.0	251189	2511886	794328	
		6:00	600	57.0	501187	5011872	1584893	**Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)**
		7:00	700	58.8	758578	7585776	2398833	**55** dBA
		8:00	800	59.4	870964	8709636	2754229	
		9:00	900	61.7	1479108	14791084	4677351	**Leq Daytime 7:00 am-10:00 p.m.**
		10:00	1000	59.5	891251	8912509	2818383	**59** dBA
		11:00	1100	59.0	794328	7943282	2511886	
		12:00	1200	58.4	691831	6918310	2187762	**Leq 24-Hour**
	pm	1:00	1300	58.3	676083	6760830	2137962	**58** dBA
		2:00	1400	59.3	851138	8511380	2691535	
		3:00	1500	56.2	416869	4168694	1318257	**Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.**
		4:00	1600	57.6	575440	5754399	1819701	**62** dBA
		5:00	1700	60.5	1122018	11220185	3548134	
		6:00	1800	56.2	416869	4168694	1318257	**CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,**
		7:00	1900	56.1	407380	4073803	1288250	**63** dBA **and 10 dBA penalty for noise between**
		8:00	2000	57.1	512861	5128614	1621810	**10:00 p.m. and 7:00 a.m.**
		9:00	2100	57.2	524807	5248075	1659587	
		10:00	2200	53.7	234423	2344229	741310	
	pm	11:00	2300	55.4	346737	3467369	1096478	CNEL - Ldn 0.32905087

Notes:

APPX 150 feet from centerline of Tunnel road and 850 feet from Caltrain rail

METROSONICS db-308 SN 2668 V2.3 3/87

CURRENT DATE: 7/05/07
CURRENT TIME: 11:09:35

_____

_____

_____

_____

CALIBRATED: 6/26/07 @ 10:18:12

DISPLAY RANGE: 43.0dB TO 139.0dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

  START DATE: 7/02/07
  START TIME:13:00:00
  LENGTH: 48:00:00

** OVERALL REPORT **

TEST STARTING DATE: 7/02/07
TEST STARTING TIME: 13:00:19
TEST LENGTH: 2DAYS 0:00:00

Lav = 65.6dB
Lav 80= 53.4dB
Lav 90= 46.5dB
SEL =117.8dB

Lmax = 96.5dB ON 7/04/07 @ 11:51:49
Lpk = 124dB ON 7/02/07 @ 17:37:16

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.12%
 8 HR DOSE (90dB CUTOFF)= 0.02%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 1:00:00
TIME HISTORY CUTOFF: NONE
Ln(1): 1.6% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2
1	7/02/07	66.5	82.9	<118
0	13:00:19	1:00:00	73	60
2	7/02/07	66.1	79.6	<118
0	14:00:19	1:00:00	73	59
3	7/02/07	66.8	81.2	122
0	15:00:19	1:00:00	73	60
4	7/02/07	69.6	94.0	123
0	16:00:19	1:00:00	76	62
5	7/02/07	70.1	88.7	124
0	17:00:19	1:00:00	78	63
6	7/02/07	69.2	82.3	123
0	18:00:19	1:00:00	76	62
7	7/02/07	67.3	78.8	123
0	19:00:19	1:00:00	74	60
8	7/02/07	64.9	77.9	<118
0	20:00:19	1:00:00	71	60
9	7/02/07	65.8	82.5	120
0	21:00:19	1:00:00	72	61
10	7/02/07	63.2	76.7	<118
0	22:00:19	1:00:00	70	57
11	7/02/07	62.2	81.3	<118
0	23:00:19	1:00:00	70	57
12	7/03/07	60.0	75.3	<118
0	0:00:19	1:00:00	68	54
13	7/03/07	58.8	73.1	<118
0	1:00:19	1:00:00	67	51
14	7/03/07	61.3	83.6	<118
0	2:00:19	1:00:00	68	51
15	7/03/07	59.3	79.6	<118

0 3:00:19 1:00:00 68 51

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

16 7/03/07 60.9 74.8 <118 * +
0 4:00:19 1:00:00 69 53

17 7/03/07 64.1 75.9 <118 * +
0 5:00:19 1:00:00 71 58

18 7/03/07 66.2 84.2 <118 * +
0 6:00:19 1:00:00 74 60

19 7/03/07 67.7 80.7 <118 * +
0 7:00:19 1:00:00 75 62

20 7/03/07 68.4 80.9 <118 * +
0 8:00:19 1:00:00 75 63

21 7/03/07 68.3 82.2 <118 * +
0 9:00:19 1:00:00 76 63

22 7/03/07 67.3 79.0 <118 * +
0 10:00:19 1:00:00 73 62

23 7/03/07 67.0 82.3 <118 * +
0 11:00:19 1:00:00 73 62

24 7/03/07 67.4 82.2 <118 * +
0 12:00:19 1:00:00 74 62

25 7/03/07 67.6 82.5 <118 * +
0 13:00:19 1:00:00 75 62

26 7/03/07 67.2 89.6 <118 * +
0 14:00:19 1:00:00 74 60

27 7/03/07 66.6 79.2 <118 * +
0 15:00:19 1:00:00 74 60

28 7/03/07 66.3 80.4 <118 * +
0 16:00:19 1:00:00 73 61

29 7/03/07 67.7 85.0 <118 * +
0 17:00:19 1:00:00 75 62

30 7/03/07 66.8 79.0 <118 * +
0 18:00:19 1:00:00 73 61

31 7/03/07 66.8 89.5 <118 * +
0 19:00:19 1:00:00 73 61

32 7/03/07 64.7 76.0 <118 * +
0 20:00:19 1:00:00 71 60

33 7/03/07 64.8 82.9 <118 * +
0 21:00:19 1:00:00 72 59

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

34 7/03/07 63.6 77.0 <118 * +
0 22:00:19 1:00:00 71 58

35 7/03/07 61.9 75.7 <118 * +
0 23:00:19 1:00:00 69 57

36 7/04/07 60.8 74.9 <118 * +
0 0:00:19 1:00:00 69 55

37 7/04/07 59.1 72.6 <118 * +
0 1:00:19 1:00:00 66 53

38 7/04/07 59.0 74.1 <118 * +
0 2:00:19 1:00:00 66 53

39 7/04/07 58.2 72.2 <118 * +
0 3:00:19 1:00:00 67 52

40 7/04/07 59.7 74.5 <118 * +
0 4:00:19 1:00:00 67 54

41 7/04/07 60.5 74.4 <118 * +
0 5:00:19 1:00:00 68 55

42 7/04/07 61.1 73.9 <118 * +
0 6:00:19 1:00:00 68 56

43 7/04/07 62.1 74.3 <118 * +
0 7:00:19 1:00:00 69 57

44 7/04/07 63.3 84.2 <118 * +
0 8:00:19 1:00:00 69 58

45 7/04/07 63.0 76.4 <118 * +
0 9:00:19 1:00:00 70 58

46 7/04/07 63.8 75.7 <118 * +
0 10:00:19 1:00:00 70 59

47 7/04/07 67.4 96.5 118 * +
0 11:00:19 1:00:00 73 59

48 7/04/07 63.9 82.5 <118 * +
0 12:00:19 PARTIAL 70 58

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 1382400

dB	SAMPLES	% OF TOTAL
47	14	.00
48	376 .	.02
49	1731 +	.12
50	4667 +	.33
51	9922 *	.71
52	17394 *	1.25
53	25402 **	1.83
54	32274 **	2.33
55	35990 ***	2.60
56	42135 ***	3.04
57	65401 *****	4.73
58	72534 *****	5.24
59	92930 *******	6.72
60	102857 *******	7.44
61	123272 *********	8.91
62	129965 *********	9.40
63	123795 *********	8.95
64	106450 ********	7.70
65	87125 ******	6.30
66	71137 *****	5.14
67	53742 ****	3.88
68	48536 ****	3.51
69	43796 ***	3.16
70	27834 **	2.01
71	21946 **	1.58
72	14552 *	1.05
73	9325 *	.67
74	5606 +	.40
75	3930 +	.28
76	2668 +	.19
77	1911 +	.13
78	1137 .	.08
79	710 .	.05
80	518 .	.03
81	349 .	.02
82	189 .	.01
83	96	.00
84	39	.00
85	32	.00
86	22	.00
87	23	.00
88	20	.00
89	22	.00
90	2	.00
91	5	.00
92	4	.00
93	5	.00

94	5	.00
95	3	.00
96	2	.00

Ln(0.0) = 96dB
Ln(10.0) = 68dB
Ln(50.0) = 62dB
Ln(99.9) = 49dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	64.2dB	46.8dB	43.6dB
Losha	63.8dB	44.4dB	43.1dB
Leq(6)	63.4dB	43.7dB	43.0dB

Calculated Ldn from long-term noise monitoring data San Francisco Street

					10 dBA	5 dBA	
		TIME		dBA	Numbers...	More Numbers...	
7/3/2007	Midnight	0 / 24		60.0	1000000	10000000	3162278
	am	1:00	100	58.8	758578	7585776	2398833
		2:00	200	61.3	1348963	13489629	4265795
		3:00	300	59.3	851138	8511380	2691535
		4:00	400	60.9	1230269	12302688	3890451
		5:00	500	64.1	2570396	25703958	8128305
		6:00	600	66.2	4168694	41686938	13182567
		7:00	700	67.7	5888437	58884366	18620871
		8:00	800	68.4	6918310	69183097	21877616
		9:00	900	68.3	6760830	67608298	21379621
		10:00	1000	67.3	5370318	53703180	16982437
		11:00	1100	67.0	5011872	50118723	15848932
		12:00	1200	67.4	5495409	54954087	17378008
	pm	1:00	1300	67.6	5754399	57543994	18197009
		2:00	1400	67.2	5248075	52480746	16595869
		3:00	1500	66.6	4570882	45708819	14454398
		4:00	1600	66.3	4265795	42657952	13489629
		5:00	1700	67.7	5888437	58884366	18620871
		6:00	1800	66.8	4786301	47863009	15135612
		7:00	1900	66.8	4786301	47863009	15135612
		8:00	2000	64.7	2951209	29512092	9332543
		9:00	2100	64.8	3019952	30199517	9549926
		10:00	2200	63.6	2290868	22908677	7244360
	pm	11:00	2300	61.9	1548817	15488166	4897788

Leq Morning Peak Hour 7:00-10:00 a.m.
68 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
67 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
62 dBA

Leq Daytime 7:00 am-10:00 p.m.
67 dBA

Leq 24-Hour
66 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
70 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
70 dBA

CNEL - Ldn 0.41091487

Notes:

Overlooks project site and Bayshore Boulevard
Includes construction noise from new overpass

METROSONICS db-308 SN 2673 V2.3 3/87

CURRENT DATE: 7/05/07
CURRENT TIME: 11:15:40

_____

_____

_____

_____

CALIBRATED: 6/18/07 @ 11:41:26

DISPLAY RANGE: 43.2dB TO 139.2dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

  START DATE: 7/02/07
  START TIME:13:00:00
  LENGTH: 48:00:00

** OVERALL REPORT **

TEST STARTING DATE: 7/02/07
TEST STARTING TIME: 13:00:19
TEST LENGTH: 2DAYS 0:00:00

Lav = 59.1dB
Lav 80= 43.4dB
Lav 90= 43.2dB
SEL =111.3dB

Lmax = 81.7dB ON 7/03/07 @ 21:15:48
Lpk < 118dB

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.00%
 8 HR DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 1:00:00
TIME HISTORY CUTOFF: NONE
Ln(1): 1.6% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2
1	7/02/07	59.0	74.8	<118
0	13:00:19	1:00:00	67	53
2	7/02/07	57.9	75.4	<118
0	14:00:19	1:00:00	66	53
3	7/02/07	59.0	71.8	<118
0	15:00:19	1:00:00	67	53
4	7/02/07	59.6	72.2	<118
0	16:00:19	1:00:00	67	54
5	7/02/07	60.9	73.2	<118
0	17:00:19	1:00:00	68	55
6	7/02/07	60.2	75.2	<118
0	18:00:19	1:00:00	68	55
7	7/02/07	59.6	73.0	<118
0	19:00:19	1:00:00	67	54
8	7/02/07	59.1	72.3	<118
0	20:00:19	1:00:00	66	54
9	7/02/07	58.4	74.8	<118
0	21:00:19	1:00:00	66	53
10	7/02/07	58.4	72.6	<118
0	22:00:19	1:00:00	65	54
11	7/02/07	57.3	78.2	<118
0	23:00:19	1:00:00	64	53
12	7/03/07	54.1	72.7	<118
0	0:00:19	1:00:00	61	49
13	7/03/07	51.5	72.0	<118
0	1:00:19	1:00:00	57	48
14	7/03/07	50.9	65.4	<118
0	2:00:19	1:00:00	57	47
15	7/03/07	49.1	66.2	<118

0 3:00:19 1:00:00 54 46

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

16 7/03/07 53.6 72.8 <118 * +
0 4:00:19 1:00:00 60 49

17 7/03/07 59.7 73.9 <118 * +
0 5:00:19 1:00:00 67 52

18 7/03/07 61.6 73.7 <118 * +
0 6:00:19 1:00:00 69 56

19 7/03/07 63.6 76.2 <118 * +
0 7:00:19 1:00:00 70 57

20 7/03/07 61.9 74.4 <118 * +
0 8:00:19 1:00:00 69 55

21 7/03/07 61.0 77.5 <118 * +
0 9:00:19 1:00:00 70 54

22 7/03/07 58.7 72.2 <118 * +
0 10:00:19 1:00:00 67 53

23 7/03/07 59.5 73.0 <118 * +
0 11:00:19 1:00:00 68 54

24 7/03/07 60.5 78.8 <118 * +
0 12:00:19 1:00:00 69 53

25 7/03/07 60.6 76.3 <118 * +
0 13:00:19 1:00:00 68 55

26 7/03/07 61.6 78.4 <118 * +
0 14:00:19 1:00:00 68 58

27 7/03/07 61.0 74.5 <118 * +
0 15:00:19 1:00:00 68 56

28 7/03/07 61.2 73.6 <118 * +
0 16:00:19 1:00:00 68 57

29 7/03/07 61.9 75.4 <118 * +
0 17:00:19 1:00:00 69 56

30 7/03/07 61.8 76.4 <118 * +
0 18:00:19 1:00:00 69 57

31 7/03/07 61.0 72.7 <118 * +
0 19:00:19 1:00:00 68 56

32 7/03/07 59.7 75.9 <118 * +
0 20:00:19 1:00:00 67 54

33 7/03/07 60.4 81.7 <118 * +
0 21:00:19 1:00:00 69 54

INT# START Lav Lmax Lpk
TAG# TIME ET L1 L2

---

34 7/03/07 58.8 74.3 <118 * +
0 22:00:19 1:00:00 67 52

35 7/03/07 55.6 72.7 <118 * +
0 23:00:19 1:00:00 63 51

36 7/04/07 54.4 71.3 <118 * +
0 0:00:19 1:00:00 65 48

37 7/04/07 54.5 79.3 <118 * +
0 1:00:19 1:00:00 62 48

38 7/04/07 53.1 72.9 <118 * +
0 2:00:19 1:00:00 61 48

39 7/04/07 51.6 63.3 <118 * +
0 3:00:19 1:00:00 56 48

40 7/04/07 52.3 64.0 <118 * +
0 4:00:19 1:00:00 55 50

41 7/04/07 54.3 70.5 <118 * +
0 5:00:19 1:00:00 59 52

42 7/04/07 57.3 73.6 <118 * +
0 6:00:19 1:00:00 65 53

43 7/04/07 57.5 72.7 <118 * +
0 7:00:19 1:00:00 66 53

44 7/04/07 58.3 73.4 <118 * +
0 8:00:19 1:00:00 67 53

45 7/04/07 59.5 77.5 <118 * +
0 9:00:19 1:00:00 68 54

46 7/04/07 59.3 75.3 <118 * +
0 10:00:19 1:00:00 68 54

47 7/04/07 59.0 75.7 <118 * +
0 11:00:19 1:00:00 67 54

48 7/04/07 60.2 72.9 <118 * +
0 12:00:19 PARTIAL 68 56

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 1382400

dB	SAMPLES	% OF TOTAL
44	45	.00
45	1172 .	.08
46	7701 *	.55
47	16626 *	1.20
48	31897 **	2.30
49	49368 ****	3.57
50	54326 ****	3.92
51	53965 ****	3.90
52	63099 *****	4.56
53	100289 *******	7.25
54	156562 **********	11.32
55	153830 **********	11.12
56	151762 **********	10.97
57	130855 *********	9.46
58	97386 *******	7.04
59	77337 ******	5.59
60	53567 ****	3.87
61	36296 ***	2.62
62	29456 **	2.13
63	25055 **	1.81
64	23911 **	1.72
65	20696 *	1.49
66	15426 *	1.11
67	11073 *	.80
68	6687 +	.48
69	6812 +	.49
70	3211 +	.23
71	1816 +	.13
72	949 .	.06
73	515 .	.03
74	280 .	.02
75	176 .	.01
76	129	.00
77	58	.00
78	40	.00
79	15	.00
80	7	.00
81	5	.00

Ln(0.0) = 81dB
Ln(10.0) = 62dB
Ln(50.0) = 56dB
Ln(99.9) = 46dB

NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF

Ldod	57.9dB	43.0dB	43.0dB
Losha	57.4dB	43.0dB	43.0dB
Leq(6)	57.1dB	43.0dB	43.0dB

Calculated DNL from long-term noise monitoring data Mission Blue Road

					10 dBA	5 dBA	
		TIME		dBA	Numbers...	More Numbers...	
7/3/2007	Midnight	0 / 24		54.1	257040	2570396	812831
	am 1:00	100		51.5	141254	1412538	446684
	2:00	200		50.9	123027	1230269	389045
	3:00	300		49.1	81283	812831	257040
	4:00	400		53.6	229087	2290868	724436
	5:00	500		59.7	933254	9332543	2951209
	6:00	600		61.6	1445440	14454398	4570882
	7:00	700		63.6	2290868	22908677	7244360
	8:00	800		61.9	1548817	15488166	4897788
	9:00	900		61.0	1258925	12589254	3981072
	10:00	1000		58.7	741310	7413102	2344229
	11:00	1100		59.5	891251	8912509	2818383
	12:00	1200		60.5	1122018	11220185	3548134
	pm 1:00	1300		60.6	1148154	11481536	3630781
	2:00	1400		61.6	1445440	14454398	4570882
	3:00	1500		61.0	1258925	12589254	3981072
	4:00	1600		61.2	1318257	13182567	4168694
	5:00	1700		61.9	1548817	15488166	4897788
	6:00	1800		61.8	1513561	15135612	4786301
	7:00	1900		61.0	1258925	12589254	3981072
	8:00	2000		59.7	933254	9332543	2951209
	9:00	2100		60.4	1096478	10964782	3467369
	10:00	2200		58.8	758578	7585776	2398833
	pm 11:00	2300		55.6	363078	3630781	1148154

Leq Morning Peak Hour 7:00-10:00 a.m.
62 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
61 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
57 dBA

Leq Daytime 7:00 am-10:00 p.m.
61 dBA

Leq 24-Hour
60 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.
64 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m.,
65 dBA **and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.**

CNEL - Ldn 0.46659513

Notes:

Overlooks project site and Bayshore Boulevard

2023 Noise Monitoring

Summary

File Name on Meter	LxT_Data.110.s
File Name on PC	LxT_0004337-20230307 122654-LxT_Data.110.ldbin
Serial Number	0004337
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	ST-1: Intersection of Sunnydale Ave and Desmond St
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-03-07 12:26:54
Stop	2023-03-07 12:41:56
Duration	00:15:01.5
Run Time	00:15:01.5
Pause	00:00:00.0
Pre-Calibration	2023-03-07 12:21:17
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamplifier	PRMLxT2B	
Microphone Correction	Off	
Integration Method	Linear	
Overload	143.3	dB

	A	C	Z	
Under Range Peak	99.5	96.5	**101.5**	dB
Under Range Limit	**37.9**	37.4	44.2	dB
Noise Floor	28.7	28.3	35.1	dB

	First	Second	Third
Instrument Identification			

Results

LA_{eq}	59.7		
LAE	89.2		
EA	92.736	µPa²h	
EA8	2.963	mPa²h	
EA40	14.813	mPa²h	
$LZ_{peak\ (max)}$	2023-03-07 12:41:19	110.3	dB
LAS_{max}	2023-03-07 12:40:19	74.5	dB
LAS_{min}	2023-03-07 12:39:45	44.8	dB
SEA	-99.9	dB	

	Exceedance Counts	Duration	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{eq}	71.5	dB
LA_{eq}	59.7	dB
LC_{eq} - LA_{eq}	11.9	dB
LAI_{eq}	61.6	dB
LA_{eq}	59.7	dB
LAI_{eq} - LA_{eq}	2.0	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	59.7		71.5			
$L_{S(max)}$	74.5	2023/03/07 12:40:19				
$L_{S(min)}$	44.8	2023/03/07 12:39:45				
$L_{Peak(max)}$					110.3	2023/03/07 12:41:19

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.112.s
File Name on PC	LxT_0004337-20230307 133931-LxT_Data.112.ldbin
Serial Number	0004337
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	ST-2: Main St meets Linda Vista Dr
Job Description	Brisbane Baylands
Note	

Measurement

Description		
Start	2023-03-07	13:39:31
Stop	2023-03-07	13:54:33
Duration		00:15:01.7
Run Time		00:15:01.7
Pause		00:00:00.0
Pre-Calibration	2023-03-07	12:21:17
Post-Calibration		None
Calibration Deviation		---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamplifier	PRMLxT2B	
Microphone Correction	Off	
Integration Method	Linear	
Overload	143.3	dB

	A	C	Z	
Under Range Peak	99.5	96.5	**101.5**	dB
Under Range Limit	**37.9**	37.4	44.2	dB
Noise Floor	28.7	28.3	35.1	dB

	First	Second	Third
Instrument Identification			

Results

LA_{eq}	62.4		
LAE	92.0		
EA	174.135	µPa²h	
EA8	5.562	mPa²h	
EA40	27.809	mPa²h	
$LZ_{peak\ (max)}$	2023-03-07 13:48:58	107.7	dB
LAS_{max}	2023-03-07 13:49:12	81.2	dB
LAS_{min}	2023-03-07 13:50:14	46.9	dB
SEA	-99.9	dB	

	Exceedance Counts	Duration	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{eq}	71.3	dB
LA_{eq}	62.4	dB
LC_{eq} - LA_{eq}	8.9	dB
LAI_{eq}	65.8	dB
LA_{eq}	62.4	dB
LAI_{eq} - LA_{eq}	3.4	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	62.4		71.3			
$L_{S(max)}$	81.2	2023/03/07 13:49:12				
$L_{S(min)}$	46.9	2023/03/07 13:50:14				
$L_{Peak(max)}$					107.7	2023/03/07 13:48:58

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.111.s
File Name on PC	LxT_0004337-20230307 130846-LxT_Data.111.ldbin
Serial Number	0004337
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2023-03-07 13:08:46
Stop	2023-03-07 13:23:48
Duration	00:15:01.5
Run Time	00:15:01.5
Pause	00:00:00.0
Pre-Calibration	2023-03-07 12:21:17
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Linear			
Overload	143.3 dB			
	A		**C**	**Z**
Under Range Peak	99.5		96.5	**101.5** dB
Under Range Limit	**37.9**		37.4	44.2 dB
Noise Floor	28.7		28.3	35.1 dB
	First		**Second**	**Third**
Instrument Identification				

Results

L_{Aeq}	57.6			
LAE	87.2			
EA	57.879	µPa²h		
EA8	1.849	mPa²h		
EA40	9.245	mPa²h		
$LZ_{peak\ (max)}$	2023-03-07 13:10:29		108.8	dB
LAS_{max}	2023-03-07 13:09:22		73.7	dB
LAS_{min}	2023-03-07 13:14:54		46.1	dB
SEA	-99.9	dB		

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LZ_{peak} > 135.0 dB	0	0.0 s
LZ_{peak} > 137.0 dB	0	0.0 s
LZ_{peak} > 140.0 dB	0	0.0 s

LC_{eq}	67.4	dB
LA_{eq}	57.6	dB
LC_{eq} - LA_{eq}	9.8	dB
LAI_{eq}	60.4	dB
LA_{eq}	57.6	dB
LAI_{eq} - LA_{eq}	2.8	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	57.6		67.4			
$L_{S(max)}$	73.7	2023/03/07 13:09:22				
$L_{S(min)}$	46.1	2023/03/07 13:14:54				
$L_{Peak(max)}$					108.8	2023/03/07 13:10:29

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	831_Data.075
File Name on PC	SLM_0002783_831_Data_075.00.ldbin
Serial Number	0002783
Model	Model 831
Firmware Version	2.403
User	C.. Sanchez
Location	ST-4 San Bruno Ave
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-03-08 13:45:30
Stop	2023-03-08 14:00:31
Duration	00:15:01.7
Run Time	00:15:01.7
Pause	00:00:00.0
Pre Calibration	2023-03-08 12:48:27
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamp	PRM831		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Low		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	Z Weighting		
OBA Max Spectrum	Bin Max		
Gain	0.0 dB		
Overload	144.7 dB		
	A	**C**	**Z**
Under Range Peak	77.1	74.1	**79.1** dB
Under Range Limit	**26.7**	27.2	33.1 dB
Noise Floor	17.6	18.0	23.5 dB

Results

L_{Aeq}	61.8									
LAE	91.4									
EA	153.139 µPa²h									
$L_{Zpeak\ (max)}$	2023-03-08 13:46:41		100.1 dB							
L_{ASmax}	2023-03-08 13:48:51		74.1 dB							
L_{ASmin}	2023-03-08 13:47:07		49.9 dB							
SEA	-99.94 dB									
LAS > 65.0 dB (Exceedance Counts / Duration)	33		157.4 s							
LAS > 85.0 dB (Exceedance Counts / Duration)	0		0.0 s							
L_{Zpeak} > 135.0 dB (Exceedance Counts / Duration)	0		0.0 s							
L_{Zpeak} > 137.0 dB (Exceedance Counts / Duration)	0		0.0 s							
L_{Zpeak} > 140.0 dB (Exceedance Counts / Duration)	0		0.0 s							
Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**		**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**		
	61.8	61.8	-99.94		61.8	61.8	-99.94	-99.94	dB	
L_{Ceq}	70.4 dB									
L_{Aeq}	61.8 dB									
L_{Ceq} - L_{Aeq}	8.6 dB									
L_{AIeq}	65.3 dB									
L_{Aeq}	61.8 dB									
L_{AIeq} - L_{Aeq}	3.5 dB									

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	61.8		70.4		74.4	
$L_{S(max)}$	74.1	2023/03/08 13:48:51	83.7	2023/03/08 13:51:33	88.3	2023/03/08 13:54:36
$L_{F(max)}$	77.1	2023/03/08 13:46:41	86.0	2023/03/08 13:51:33	92.0	2023/03/08 13:54:36
$L_{I(max)}$	80.8	2023/03/08 13:46:41	86.9	2023/03/08 14:00:06	94.6	2023/03/08 13:54:36
$L_{S(min)}$	49.9	2023/03/08 13:47:07	57.7	2023/03/08 13:55:05	61.1	2023/03/08 13:46:36
$L_{F(min)}$	48.2	2023/03/08 13:46:30	55.9	2023/03/08 13:46:35	58.4	2023/03/08 13:46:34
$L_{I(min)}$	49.0	2023/03/08 13:52:21	58.5	2023/03/08 13:55:00	62.0	2023/03/08 13:46:36
$L_{Peak(max)}$	97.0	2023/03/08 13:46:41	99.2	2023/03/08 13:46:41	100.1	2023/03/08 13:46:41

# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Summary

File Name on Meter	831_Data.076
File Name on PC	SLM_0002783_831_Data_076.00.ldbin
Serial Number	0002783
Model	Model 831
Firmware Version	2.403
User	C. Sanchez
Location	ST-5: Solano Street
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-03-08 14:21:47
Stop	2023-03-08 14:36:50
Duration	00:15:02.8
Run Time	00:15:02.8
Pause	00:00:00.0
Pre Calibration	2023-03-08 12:48:27
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamp	PRM831		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Low		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	Z Weighting		
OBA Max Spectrum	Bin Max		
Gain	0.0 dB		
Overload	144.7 dB		
	A	**C**	**Z**
Under Range Peak	77.1	74.1	**79.1** dB
Under Range Limit	**26.7**	27.2	33.1 dB
Noise Floor	17.6	18.0	23.5 dB

Results

L_{Aeq}	53.5		
LAE	83.0		
EA	22.312 μPa^2h		
$LZ_{peak\ (max)}$	2023-03-08 14:36:45	111.7 dB	
LAS_{max}	2023-03-08 14:34:38	67.6 dB	
LAS_{min}	2023-03-08 14:32:49	45.9 dB	
SEA	-99.94 dB		
LAS > 65.0 dB (Exceedance Counts / Duration)	3	5.9 s	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s	
LZ_{peak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s	
LZ_{peak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s	
LZ_{peak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s	

Community Noise	**Ldn**	**LDay 07:00-22:00**	**LNight 22:00-07:00**	**Lden**	**LDay 07:00-19:00**	**LEvening 19:00-22:00**	**LNight 22:00-07:00**	
	53.5	53.5	-99.94	53.5	53.5	-99.94	-99.94	dB

LC_{eq}	66.3	dB
LA_{eq}	53.5	dB
LC_{eq} - LA_{eq}	12.8	dB
LAI_{eq}	58.1	dB
LA_{eq}	53.5	dB
LAI_{eq} - LA_{eq}	4.6	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	53.5		66.3		74.3	
$L_{S(max)}$	67.6	2023/03/08 14:34:38	88.5	2023/03/08 14:36:45	99.7	2023/03/08 14:36:45
$L_{F(max)}$	73.8	2023/03/08 14:36:47	94.7	2023/03/08 14:36:45	105.5	2023/03/08 14:36:45
$L_{I(max)}$	78.5	2023/03/08 14:36:47	97.6	2023/03/08 14:36:45	108.3	2023/03/08 14:36:45
$L_{S(min)}$	45.9	2023/03/08 14:32:49	57.7	2023/03/08 14:32:14	59.7	2023/03/08 14:32:14
$L_{F(min)}$	44.9	2023/03/08 14:32:08	56.5	2023/03/08 14:32:13	58.3	2023/03/08 14:32:13
$L_{I(min)}$	45.6	2023/03/08 14:32:08	58.3	2023/03/08 14:32:14	61.0	2023/03/08 14:32:13
$L_{Peak(max)}$	98.2	2023/03/08 14:22:54	105.5	2023/03/08 14:36:47	111.7	2023/03/08 14:36:45

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.153.s
File Name on PC	LxT_0004435-20230207 102339-LxT_Data.153.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-1: Adjacent to Bayshore Boulevard (West side)
Job Description	Brisbane Baylands
Note	

Measurement

Description		
Start	2023-02-07	10:23:39
Stop	2023-02-07	10:38:41
Duration		00:15:02.0
Run Time		00:15:02.0
Pause		00:00:00.0
Pre-Calibration	2023-02-07	10:00:23
Post-Calibration		None
Calibration Deviation		---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamplifier	PRMLxT2B	
Microphone Correction	Off	
Integration Method	Exponential	
Overload	144.4	dB

	A	C	Z	
Under Range Peak	100.6	97.6	**102.6**	dB
Under Range Limit	**38.9**	38.5	45.3	dB
Noise Floor	29.8	29.4	36.2	dB

	First	Second	Third
Instrument Identification			

Results

L_{ASeq}	70.5			
LASE	100.0			
EAS	1.119	mPa²h		
EAS8	35.722	mPa²h		
EAS40	178.610	mPa²h		
$LZ_{peak\ (max)}$	2023-02-07 10:27:17		98.3	dB
LAS_{max}	2023-02-07 10:38:12		72.7	dB
LAS_{min}	2023-02-07 10:37:33		67.4	dB
SEA	-99.9	dB		

	Exceedance Counts	Duration	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{Seq}	76.2	dB
LA_{Seq}	70.5	dB
LC_{Seq} - LA_{Seq}	5.7	dB
LAI_{eq}	71.2	dB
LA_{eq}	70.5	dB
LAI_{eq} - LA_{eq}	0.7	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	70.5					
$L_{S(max)}$	72.7	2023/02/07 10:38:12				
$L_{S(min)}$	67.4	2023/02/07 10:37:33				
$L_{Peak(max)}$					98.3	2023/02/07 10:27:17

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.154.s
File Name on PC	LxT_0004435-20230207 104944-LxT_Data.154.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-2: Adjacent to Bayshore Fwy (West side)
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-02-07 10:49:44
Stop	2023-02-07 11:04:47
Duration	00:15:03.0
Run Time	00:15:03.0
Pause	00:00:00.0
Pre-Calibration	2023-02-07 10:00:21
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamplifier	PRMLxT2B	
Microphone Correction	Off	
Integration Method	Exponential	
Overload	144.4	dB

	A	C	Z	
Under Range Peak	100.6	97.6	**102.6**	dB
Under Range Limit	**38.9**	38.5	45.3	dB
Noise Floor	29.8	29.4	36.2	dB

	First	Second	Third
Instrument Identification			

Results

L_{ASeq}	73.8	
LASE	103.3	
EAS	2.403	mPa²h
EAS8	76.627	mPa²h
EAS40	383.137	mPa²h
$LZ_{peak\ (max)}$	2023-02-07 10:54:27	102.0 dB
LAS_{max}	2023-02-07 10:54:27	83.2 dB
LAS_{min}	2023-02-07 10:55:56	70.2 dB
SEA	-99.9	dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LZ_{peak} > 135.0 dB	0	0.0 s
LZ_{peak} > 137.0 dB	0	0.0 s
LZ_{peak} > 140.0 dB	0	0.0 s

LC_{Seq}	76.4	dB
LA_{Seq}	73.8	dB
LC_{Seq} - LA_{Seq}	2.6	dB
LAI_{eq}	74.6	dB
LA_{eq}	73.8	dB
LAI_{eq} - LA_{eq}	0.8	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	73.8					
$L_{S(max)}$	83.2	2023/02/07 10:54:27				
$L_{S(min)}$	70.2	2023/02/07 10:55:56				
$L_{Peak(max)}$					102.0	2023/02/07 10:54:27

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.156.s
File Name on PC	LxT_0004435-20230207 114950-LxT_Data.156.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-3: Adjacent to Tunnel Avenue (East side)
Job Description	Brisbane Baylands
Note	

Measurement

Description		
Start	2023-02-07	11:49:50
Stop	2023-02-07	12:04:52
Duration		00:15:01.7
Run Time		00:15:01.7
Pause		00:00:00.0
Pre-Calibration	2023-02-07	10:00:21
Post-Calibration		None
Calibration Deviation		---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamplifier	PRMLxT2B	
Microphone Correction	Off	
Integration Method	Exponential	
Overload	144.4	dB

	A	C	Z	
Under Range Peak	100.6	97.6	**102.6**	dB
Under Range Limit	**38.9**	38.5	45.3	dB
Noise Floor	29.8	29.4	36.2	dB

	First	Second	Third
Instrument Identification			

Results

L_{ASeq}	59.6			
LASE	89.2			
EAS	91.881	µPa²h		
EAS8	2.935	mPa²h		
EAS40	14.673	mPa²h		
$LZ_{peak\ (max)}$	2023-02-07 11:53:41		97.8	dB
LAS_{max}	2023-02-07 12:02:44		67.0	dB
LAS_{min}	2023-02-07 11:49:50		55.2	dB
SEA	-99.9	dB		

	Exceedance Counts	Duration	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{Seq}	69.7	dB
LA_{Seq}	59.6	dB
LC_{Seq} - LA_{Seq}	10.1	dB
LAI_{eq}	60.6	dB
LA_{eq}	59.6	dB
LAI_{eq} - LA_{eq}	1.0	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	59.6					
$L_{S(max)}$	67.0	2023/02/07 12:02:44				
$L_{S(min)}$	55.2	2023/02/07 11:49:50				
$L_{Peak(max)}$					97.8	2023/02/07 11:53:41

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.155.s
File Name on PC	LxT_0004435-20230207 112312-LxT_Data.155.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-4: Adjacent to Tunnel Ave (East side)
Job Description	Brisbane Baylands
Note	

Measurement

Description		
Start	2023-02-07	11:23:12
Stop	2023-02-07	11:38:14
Duration		00:15:01.6
Run Time		00:15:01.6
Pause		00:00:00.0
Pre-Calibration	2023-02-07	10:00:21
Post-Calibration		None
Calibration Deviation		---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamplifier	PRMLxT2B	
Microphone Correction	Off	
Integration Method	Exponential	
Overload	144.4	dB

	A	C	Z	
Under Range Peak	100.6	97.6	**102.6**	dB
Under Range Limit	**38.9**	38.5	45.3	dB
Noise Floor	29.8	29.4	36.2	dB

	First	Second	Third
Instrument Identification			

Results

LA_{Seq}	55.8		
LASE	85.4		
EAS	38.355	µPa²h	
EAS8	1.225	mPa²h	
EAS40	6.126	mPa²h	
$LZ_{peak\ (max)}$	2023-02-07 11:25:24	100.8	dB
LAS_{max}	2023-02-07 11:25:04	69.4	dB
LAS_{min}	2023-02-07 11:29:40	46.3	dB
SEA	-99.9	dB	

	Exceedance Counts	Duration	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{Seq}	68.6	dB
LA_{Seq}	55.8	dB
LC_{Seq} - LA_{Seq}	12.8	dB
LAI_{eq}	57.7	dB
LA_{eq}	55.8	dB
LAI_{eq} - LA_{eq}	1.9	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	55.8					
$L_{S(max)}$	69.4	2023/02/07 11:25:04				
$L_{S(min)}$	46.3	2023/02/07 11:29:40				
$L_{Peak(max)}$					100.8	2023/02/07 11:25:24

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.158.s
File Name on PC	LxT_0004435-20230207 130321-LxT_Data.158.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-5: Adjacen tto Caltrain tracks (East side)
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-02-07 13:03:21
Stop	2023-02-07 13:18:22
Duration	00:15:01.4
Run Time	00:15:01.4
Pause	00:00:00.0
Pre-Calibration	2023-02-07 10:00:21
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.4	dB		
	A		**C**	**Z**
Under Range Peak	100.6		97.6	**102.6** dB
Under Range Limit	**38.9**		38.5	45.3 dB
Noise Floor	29.8		29.4	36.2 dB

	First	**Second**	**Third**
Instrument Identification			

Results

LA_{Seq}	54.5			
LASE	84.1			
EAS	28.420	µPa²h		
EAS8	908.031	µPa²h		
EAS40	4.540	mPa²h		
$LZ_{peak\ (max)}$	2023-02-07 13:18:09		93.8	dB
LAS_{max}	2023-02-07 13:14:39		65.8	dB
LAS_{min}	2023-02-07 13:05:27		44.7	dB
SEA	-99.9	dB		

	Exceedance Counts	**Duration**
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LZ_{peak} > 135.0 dB	0	0.0 s
LZ_{peak} > 137.0 dB	0	0.0 s
LZ_{peak} > 140.0 dB	0	0.0 s

LC_{Seq}	67.6	dB
LA_{Seq}	54.5	dB
LC_{Seq} - LA_{Seq}	13.1	dB
LAI_{eq}	56.2	dB
LA_{eq}	54.5	dB
LAI_{eq} - LA_{eq}	1.7	dB

	A		**C**		**Z**	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	54.5					
$L_{S(max)}$	65.8	2023/02/07 13:14:39				
$L_{S(min)}$	44.7	2023/02/07 13:05:27				
$L_{Peak(max)}$					93.8	2023/02/07 13:18:09

Overload Count	0	
Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.157.s
File Name on PC	LxT_0004435-20230207 121642-LxT_Data.157.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	Nick Reynoso
Location	LT-6: Adjacent to Bayshore Blvd (East side)
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-02-07 12:16:42
Stop	2023-02-07 12:31:45
Duration	00:15:02.5
Run Time	00:15:02.5
Pause	00:00:00.0
Pre-Calibration	2023-02-07 10:00:21
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	144.4	dB		
	A		**C**	**Z**
Under Range Peak	100.6		97.6	**102.6** dB
Under Range Limit	**38.9**		38.5	45.3 dB
Noise Floor	29.8		29.4	36.2 dB
	First		**Second**	**Third**
Instrument Identification				

Results

LA_{Seq}	50.9			
LASE	80.4			
EAS	12.260	µPa²h		
EAS8	391.221	µPa²h		
EAS40	1.956	mPa²h		
$LZ_{peak\ (max)}$	2023-02-07 12:19:56		96.9	dB
LAS_{max}	2023-02-07 12:19:53		66.1	dB
LAS_{min}	2023-02-07 12:22:01		43.4	dB
SEA	-99.9	dB		

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LZ_{peak} > 135.0 dB	0	0.0 s
LZ_{peak} > 137.0 dB	0	0.0 s
LZ_{peak} > 140.0 dB	0	0.0 s

LCS_{eq}	69.5	dB
LAS_{eq}	50.9	dB
LCS_{eq} - LAS_{eq}	18.6	dB
LAI_{eq}	52.8	dB
LA_{eq}	50.9	dB
LAI_{eq} - LA_{eq}	2.0	dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	50.9					
$L_{S(max)}$	66.1	2023/02/07 12:19:53				
$L_{S(min)}$	43.4	2023/02/07 12:22:01				
$L_{Peak(max)}$					96.9	2023/02/07 12:19:56

Overload Count	0	
Overload Duration	0.0	s

File Name on Meter	LxT_Data.162
File Name on PC	SLM_0004435_LxT_Data_162.00.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	C. Sanchez
Location	LT-7: San Francisco Street
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-03-07 13:00:00
Stop	2023-03-08 14:10:03
Duration	25:10:03.0
Run Time	25:10:03.0
Pause	00:00:00.0
Pre Calibration	2023-03-07 11:23:09
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamp	PRMLxT2B		
Microphone Correction	Off		
Integration Method	Exponential		
Overload	143.7 dB		
	A	**C**	**Z**
Under Range Peak	99.9	96.9	**101.9** dB
Under Range Limit	**38.2**	37.8	44.6 dB
Noise Floor	29.1	28.7	35.4 dB

Results

L_{ASeq}	60.2			
LASE	109.7			
EAS	10.426	mPa²h		
EAS8	3.314	mPa²h		
EAS40	16.570	mPa²h		
$LZ_{Speak\ (max)}$	2023-03-08 06:15:18		118.7	dB
LAS_{max}	2023-03-08 06:50:27		90.3	dB
LAS_{min}	2023-03-08 02:32:39		38.5	dB
SEA	-99.94	dB		
LAS > 85.0 dB (Exceedance Counts / Duration)	6		19.0	s
LAS > 115.0 dB (Exceedance Counts / Duration)	0		0.0	s
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0		0.0	s
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0		0.0	s
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0		0.0	s
LC_{Seq}	69.7	dB		
LA_{Seq}	60.2	dB		
LC_{Seq} - LA_{Seq}	9.5	dB		
LAI_{eq}	62.9	dB		
LA_{eq}	60.2	dB		
LAI_{eq} - LA_{eq}	2.7	dB		

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	60.2					
$L_{S(max)}$	90.3	2023/03/08 6:50:27				
$L_{S(min)}$	38.5	2023/03/08 2:32:39				
$L_{Peak(max)}$					118.7	2023/03/08 6:15:18

# Overloads	0	
Overload Duration	0.0	s

Calculated Ldn from long-term noise monitoring data

		TIME		dBA	Remove LOG	10 dBA Penalized Values	5 dBA Penalized Values
3/8/2023	Midnight	0 / 24		53.7	235424	2354241	744477
	am	1:00	100	49.0	79518	795179	251458
		2:00	200	50.1	101978	1019784	322484
		3:00	300	52.5	178183	1781833	563465
		4:00	400	55.4	348905	3489048	1103334
		5:00	500	59.2	838793	8387934	2652498
		6:00	600	66.2	4193040	41930399	13259557
		7:00	700	63.4	2170871	21708709	6864897
		8:00	800	62.8	1896924	18969243	5998601
		9:00	900	62.1	1613259	16132586	5101572
		10:00	1000	60.7	1165851	11658509	3686744
		11:00	1100	60.3	1076554	10765544	3404364
		12:00	1200	59.6	922357	9223569	2916749
	pm	1:00	1300	59.3	851622	8516223	2693066
3/7/2023		2:00	1400	63.6	2289855	22898551	7241158
		3:00	1500	60.0	993692	9936925	3142332
		4:00	1600	62.9	1959711	19597109	6197150
		5:00	1700	61.3	1345086	13450858	4253535
		6:00	1800	61.5	1402956	14029558	4436536
		7:00	1900	58.0	627729	6277287	1985053
		8:00	2000	57.8	608285	6082848	1923566
		9:00	2100	55.8	377053	3770527	1192345
		10:00	2200	55.7	367542	3675420	1162270
	pm	11:00	2300	55.8	379626	3796260	1200483

Leq Morning Peak Hour 7:00-10:00 a.m.

63 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.

61 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)

59 dBA

Leq Daytime 7:00 am-10:00 p.m.

61 dBA

Leq 24-Hour

60 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.

66 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.

66 dBA

CNEL - Ldn : 0.17161789

Summary

File Name on Meter	LxT_Data.146
File Name on PC	SLM_0004437_LxT_Data_146.00.ldbin
Serial Number	0004437
Model	SoundTrack LxT®
Firmware Version	2.404
User	C.Sanchez
Location	LT:-8: Residential Area at Mission Blue Drive
Job Description	Brisbane Baylands
Note	

Measurement

Description	
Start	2023-03-07 13:00:00
Stop	2023-03-08 14:00:00
Duration	25:00:00.0
Run Time	25:00:00.0
Pause	00:00:00.0
Pre Calibration	2023-03-07 11:08:50
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamp	PRMLxT2B		
Microphone Correction	Off		
Integration Method	Linear		
Overload	143.0 dB		
	A	**C**	**Z**
Under Range Peak	99.2	96.2	**101.2** dB
Under Range Limit	**37.6**	37.1	43.9 dB
Noise Floor	28.4	28.0	34.8 dB

Results

L_{Aeq}	59.1		
LAE	108.7		
EA	8.171	mPa²h	
EA8	2.615	mPa²h	
EA40	13.074	mPa²h	
$L_{Zpeak\ (max)}$	2023-03-08 03:11:12	114.2	dB
L_{ASmax}	2023-03-08 13:35:42	86.0	dB
L_{ASmin}	2023-03-08 03:10:45	47.2	dB
SEA	-99.94	dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	1	1.3	s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0	s
L_{Zpeak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0	s
L_{Zpeak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0	s
L_{Zpeak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0	s
L_{Ceq}	68.8	dB	
L_{Aeq}	59.1	dB	
L_{Ceq} - L_{Aeq}	9.7	dB	
L_{AIeq}	60.4	dB	
L_{Aeq}	59.1	dB	
L_{AIeq} - L_{Aeq}	1.3	dB	

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	59.1		68.8			
$L_{S(max)}$	86.0	2023/03/08 13:35:42				
$L_{S(min)}$	47.2	2023/03/08 3:10:45				
$L_{Peak(max)}$					114.2	2023/03/08 3:11:12

# Overloads	0
Overload Duration	0.0 s

Calculated Ldn from long-term noise monitoring data

			TIME	dBA	Remove LOG	10 dBA Penalized Values	5 dBA Penalized Values
1/27/1994	Midnight	0 / 24		56.1	410575	4105755	1298354
	am	1:00	100	54.0	253376	2533757	801244
		2:00	200	54.1	254348	2543484	804320
		3:00	300	53.1	203356	2033555	643067
		4:00	400	56.9	492499	4924986	1557417
		5:00	500	57.3	542203	5422031	1714597
		6:00	600	60.2	1054387	10543869	3334264
		7:00	700	61.9	1541051	15410510	4873231
		8:00	800	62.6	1809156	18091559	5721053
		9:00	900	61.3	1348724	13487237	4265039
		10:00	1000	59.0	802036	8020363	2536261
		11:00	1100	59.0	796359	7963592	2518309
		12:00	1200	58.5	706366	7063663	2233727
	pm	1:00	1300	59.8	952018	9520176	3010544
		2:00	1400	59.4	871712	8717120	2756595
		3:00	1500	59.5	889625	8896250	2813241
		4:00	1600	61.7	1495964	14959635	4730652
		5:00	1700	60.5	1122057	11220572	3548256
		6:00	1800	59.6	918400	9184003	2904237
		7:00	1900	59.0	794837	7948369	2513495
		8:00	2000	58.0	627837	6278371	1985395
		9:00	2100	58.1	648261	6482612	2049982
		10:00	2200	57.7	587445	5874447	1857663
	pm	11:00	2300	57.8	605888	6058875	1915985

Leq Morning Peak Hour 7:00-10:00 a.m.

62 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.

60 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)

57 dBA

Leq Daytime 7:00 am-10:00 p.m.

60 dBA

Leq 24-Hour

59 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.

64 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. and 10:00 p.m., and 10 dBA penalty for noise between 10:00 p.m. and 7:00 a.m.

64 dBA

CNEL - Ldn : 0.31582301