

ASCENT

NOISE TECHNICAL STUDY
FOR THE

5037 Patata Street Industrial Development Project

Prepared for:

City of South Gate
5037 Patata Street
South Gate, CA 90280

November 2023

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Contact:
Yalini Siva
Senior Planner
ysiva@sogate.org

Prepared by:



Ascent
15642 Sand Canyon, #54491
Irvine, CA 92619

Contact:
Dimitri Antoniou
Dimitri.Antoniou@ascent.inc

Peter Hoholick
Peter.Hoholick@ascent.inc

Chad Beckstrom, AICP
Chad.Beckstrom@ascent.inc

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LIST OF ABBREVIATIONS

Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
COA	Conditions of Approval
dB	decibels
dba	A-weighted decibels
EPA	U.S. Environmental Protection Agency
FICAN	Federal Interagency Commission on Aviation Noise
FICON	Federal Interagency Commission on Noise
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HVAC	Heating, Ventilation, and Air Conditioning
Hz	hertz
in/sec	inches per second
I-710	Interstate 710
L_{dn}	Day-Night Level
L_{eq}	Equivalent Continuous Sound Level
L_{max}	Maximum sound Level
L_{min}	Minimum noise level
L_{50}	Sound level exceeded 50 percent of the time
L_{25}	Sound level exceeded 25% of the time
L_{16}	Sound level exceeded 16% of the time
L_{03}	Sound level exceeded 3% of the time
LT	long-term
L_x	Percentile-Exceeded Sound Level
mPa	micro-Pascals
PPV	peak particle velocity
project	5037 Patata Street Industrial Development Proposed Project

RMS	root-mean-square
SEL	Sound Exposure Level
sf	square feet
SPL	sound pressure level
ST	short-term
UPRR	The Union Pacific Railroad
VdB	vibration decibels

1 INTRODUCTION

The purpose of this study is to address potential noise impacts associated with construction and operation of the proposed 5037 Patata Street Industrial Development Project (project), located at 5037 Patata Street, South Gate, California. The study includes a description of acoustic fundamentals, applicable noise and vibration policies that pertain to the project, standards for which impacts are evaluated against, and recommended noise minimization measures, where applicable.

1.1 ACOUSTIC FUNDAMENTALS

Prior to discussing the noise setting for the project, background information about sound, noise, vibration, and common noise descriptors is needed to provide context and a better understanding of the technical terms referenced throughout this study.

1.1.1 Sound, Noise, and Acoustics

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

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

1.1.2 Frequency

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

1.1.3 Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.0000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this large range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB).

ADDITION OF DECIBELS

Because decibels are logarithmic units, SPLs cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness at the same time, the resulting sound level at a given distance would be 3 dB higher than if only one of the sound sources was producing sound under the same conditions. For example, if one idling truck generates an SPL of 70 dB, two trucks idling simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level approximately 5 dB louder than one source. Table 1 shows the estimated decibel increase when adding

two noise sources that range between zero to ten decibels in difference. If the difference between two or more noise sources is greater than ten decibels, the cumulative increase is less than half a decibel.

Table 1 Estimated Decibel Addition

Difference Between Two Noise Levels Added	Resultant Noise Level Increase	For Example	Resultant Noise Level
0	3 dB	70 dB + 70 dB	73 dB
1	2.6 dB	69 dB + 70 dB	72.6 dB
2	2.1 dB	68 dB + 70 dB	72.1 dB
3	1.8 dB	67 dB + 70 dB	71.8 dB
4	1.4 dB	66 dB + 70 dB	71.4 dB
5	1.2 dB	65 dB + 70 dB	71.2 dB
6	1 dB	64 dB + 70 dB	71 dB
9	0.5 dB	61 dB + 70 dB	70.5 dB
10	0.4 dB	60 dB + 70 dB	70.4 dB
15-19	0.1 dB	51 dB + 70 dB	70.1 dB

A-WEIGHTED DECIBELS

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

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

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgment correlates well with the A-scale sound levels of those sounds. Thus, noise levels are typically reported in terms of A-weighted decibels. All sound levels discussed in this study are expressed in A-weighted decibels.

1.1.4 Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which a noise level decreases with distance depends on geometric spreading, ground absorption, atmospheric effects, and shielding by natural or human-made features, which are described in detail below:

GEOMETRIC SPREADING

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Roads and highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources, thus propagating at a slower rate in comparison to a point

source. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

GROUND ABSORPTION

The propagation path of noise from a source to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave-canceling provides additional attenuation associated with geometric spreading. Traditionally, this additional attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), additional ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the attenuate rate associated with cylindrical spreading, the additional ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance. This would hold true for point sources, resulting in an overall drop-off rate of up to 7.5 dB per doubling of distance.

ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels, as wind can carry sound. Other factors such as air temperature, humidity, and turbulence can also affect sound attenuation.

SHIELDING BY NATURAL OR HUMAN-MADE FEATURES

A large object or barrier in the path between a noise source and a receiver attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction (Caltrans 2013a:2-41; FTA 2018:42). Barriers higher than the line of sight provide increased noise reduction (FTA 2018:16). Vegetation between the source and receiver is rarely effective in reducing noise because it does not create a solid barrier unless there are multiple rows of vegetation of sufficient height (FTA 2018:15, 104, 106).

1.1.5 Single-Event Noise & Sleep Disturbances

A single event is an individual distinct loud activity, such as a blasting event, an aircraft overflight, a train or truck passage, or any other brief and discrete noise-generating activity. Noise exposure quantified in terms of 24-hour-averaged descriptors, such as day-night average sound level (L_{dn}) or community noise equivalent level (CNEL), can mask the potential for annoyance or sleep disturbance associated with individual loud events due to the averaging process.

Extensive studies have been conducted regarding the effects of single-event noise on sleep disturbance, with the Sound Exposure Level (SEL) metric being a common metric used for such assessments. SEL represents the entire sound energy of a given single-event normalized into a one-second period regardless of event duration. As a result, the single-number SEL metric contains information pertaining to both event duration and intensity. Another descriptor utilized to assess single-event noise is the maximum, or L_{max} , noise level associated with the event. A problem with utilizing L_{max} to assess single events is that the duration of the event is not considered.

Due to the wide variation in test subjects' reactions to noises of various levels (some test subjects were awakened by indoor SEL values of 50 dB, whereas others slept through indoor SEL values exceeding 80 dB), no definitive consensus has been reached with respect to a universal criterion to apply to environmental noise assessments. The Federal Interagency Committee on Aviation Noise (FICAN) has provided estimates of the percentage of people expected to

be awakened when exposed to specific SEL inside a home (FICAN 1997). According to the FICAN study, an estimated 5 to 10 percent of the population is affected when interior SEL noise levels are between 65 and 81 dB, and few sleep awakenings (less than 5 percent) are predicted if the interior SEL is less than 65 dB.

HUMAN RESPONSE TO CHANGES IN NOISE LEVELS

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

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear can discern 1-dB changes in sound levels when exposed to steady, single-frequency (“pure-tone”) signals in the midfrequency (1,000–8,000 Hz) range. In general, the healthy human ear is most sensitive to sounds between 1,000 and 5,000 Hz and perceives both higher and lower frequency sounds of the same magnitude with less intensity (Caltrans 2013a:2-18). In typical noisy environments, changes in noise of 1–2 dB are generally not perceptible. However, it is widely accepted that people can begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dB increase is generally perceived as a distinctly noticeable increase, and a 10-dB increase is generally perceived as a doubling of loudness (Caltrans 2013a:2-10). Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dB increase in sound would generally be perceived as barely detectable.

As depicted in Table 2, a noise level increase of 5.0, or greater, would typically be considered to result in increased levels of annoyance where existing ambient noise levels are less than 60 dB. Within areas where the ambient noise level ranges from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB, or greater. Increases of 1.5 dB, or greater, could result in increased levels of annoyance in areas where the ambient noise level exceeds 65 dB. The rationale for the Federal Interagency Committee on Noise (FICON) recommended criteria is that as ambient noise levels increase, a smaller increase in noise resulting from a project is sufficient to cause significant increases in annoyance (FICON 1992).

Table 2 Federal Interagency Committee on Noise Recommended Criteria for Evaluation of Increases in Ambient Noise Levels

Ambient Noise Level Without Project	Increase Required for Significant Impact
<60 dB	5.0 dB, or greater
60–65 dB	3.0 dB, or greater
>65 dB	1.5 dB, or greater

Source: FICON 1992.

COMMON NOISE DESCRIPTORS

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors used throughout this study.

Equivalent Continuous Sound Level (L_{eq}): L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound level that occurs during the same period (Caltrans 2013a:2-48). For instance, the 1-hour equivalent sound level, also referred to as the hourly L_{eq} , is the energy average of sound levels occurring during a 1-hour period.

Percentile-Exceeded Sound Level (L_x): L_x represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time) (Caltrans 2013a:2-16).

Maximum Sound Level (L_{max}): L_{max} is the highest instantaneous sound level measured during a specified period (Caltrans 2013a:2-48; FTA 2018:207–208).

Minimum Sound Level (L_{min}): L_{min} is the lowest sound level measured during a specified period (Larson Davis 2023).

Day-Night Level (L_{dn}): L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB “penalty” applied to sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m. (Caltrans 2013a:2-48; FTA 2018:214).

Community Noise Equivalent Level (CNEL): Similar to L_{dn} with an additional penalty of 4.77 dBA (A-weighted decibels), for the hours 7 p.m. to 10 p.m., which are usually reserved for relaxation, television, reading, and conversation (Caltrans 2013a:2-48).

Sound Exposure Level (SEL): SEL is the cumulative noise exposure from a single noise event, normalized to one second. SEL contains the same overall sound energy as the actual varying sound energy during the event. It is the primary metric for the measurement of transit vehicle noise emissions and is an intermediate metric in the measurement and calculation of both L_{eq} and L_{dn} (FTA 2018:208).

1.1.6 Vibration Fundamentals

Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Ground-borne vibration is vibration of and through the ground. Ground-borne vibration can range from levels that are imperceptible by humans to levels that can create substantial damage to buildings and structures. Sources ground-borne of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., operating factory machinery) or transient in nature (e.g., explosions). Vibration levels can be depicted in terms of amplitude and frequency, relative to displacement, velocity, or acceleration.

Ground-borne vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV and RMS vibration velocity are normally described in inches per second (in/sec) or in millimeters per second. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings (FTA 2018:110; Caltrans 2013a:6).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2018:110, 199; Caltrans 2013b:7). This is based on a reference value of 1 microinch per second.

The typical background ground-borne vibration-velocity level in residential areas is approximately 50 VdB. Ground vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA 2018:120; Caltrans 2013b:27).

Typical outdoor sources of perceptible ground vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur to fragile buildings. Construction activities can generate sufficient ground vibrations to pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA 2018:113).

Ground vibration levels generated by construction activity can be transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations are generated by vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment.

Table 3 summarizes the general human response to different ground vibration-velocity levels.

Table 3 Human Response to Different Levels of Ground Noise and Vibration

Vibration-Velocity Level	Human Reaction
65 VdB	Approximate threshold of perception.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Notes: VdB = vibration decibels referenced to 1 microinch/second and based on the root mean square (RMS) velocity amplitude.

Source: FTA 2018:120.

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2 PROJECT DESCRIPTION

The project proposes to develop the 27.12-acre project site in the northeast portion of the City of South Gate to include an approximately 451,383 square foot (sf) warehouse and distribution facility with corporate offices, a warehouse, storage and cooler space, and a mezzanine space. The proposed building would be set back from the northern property line by 85 feet. A Fleet Maintenance Building would be located at the southeast corner of the project site and would be used for preventative fleet maintenance. The ingress/egress point of the property is at the most southwestern point of the lot and approximately 680 feet away from the north property line. Parking would be located within surface parking lots that would surround the proposed main building. The parking areas would be concentrated on the west side of the project site, with the majority of parking provided near the office and the remainder provided around the perimeter along the north and east property lines. Landscaping would be provided around the perimeter of the project site, along the northern and western sides of the main building, and a 10-foot sound wall would be provided along the northern property line to create a barrier between the project site and the City of Cudahy residential area. In addition, sixty-four 36-inch box trees spaced 20 feet apart will be planted along the northern property line. The project vicinity is shown in Figure 1 and a detailed site plan with the proposed project facilities is shown in Figure 2.

The warehouse would include loading docks and delivery vehicles and trailer stalls that would be located on the south side of the main building, providing separation from the residential properties located to the north of the site in the City of Cudahy. The loading docks would be located approximately 369 feet from the northern property line with the intervening building structure in between and the truck court would be screened due to the project site's natural slope to the south. Charging stations would be installed in the parking areas and at the loading docks to accommodate electric vehicle (EV) fleet and employee vehicle charging.

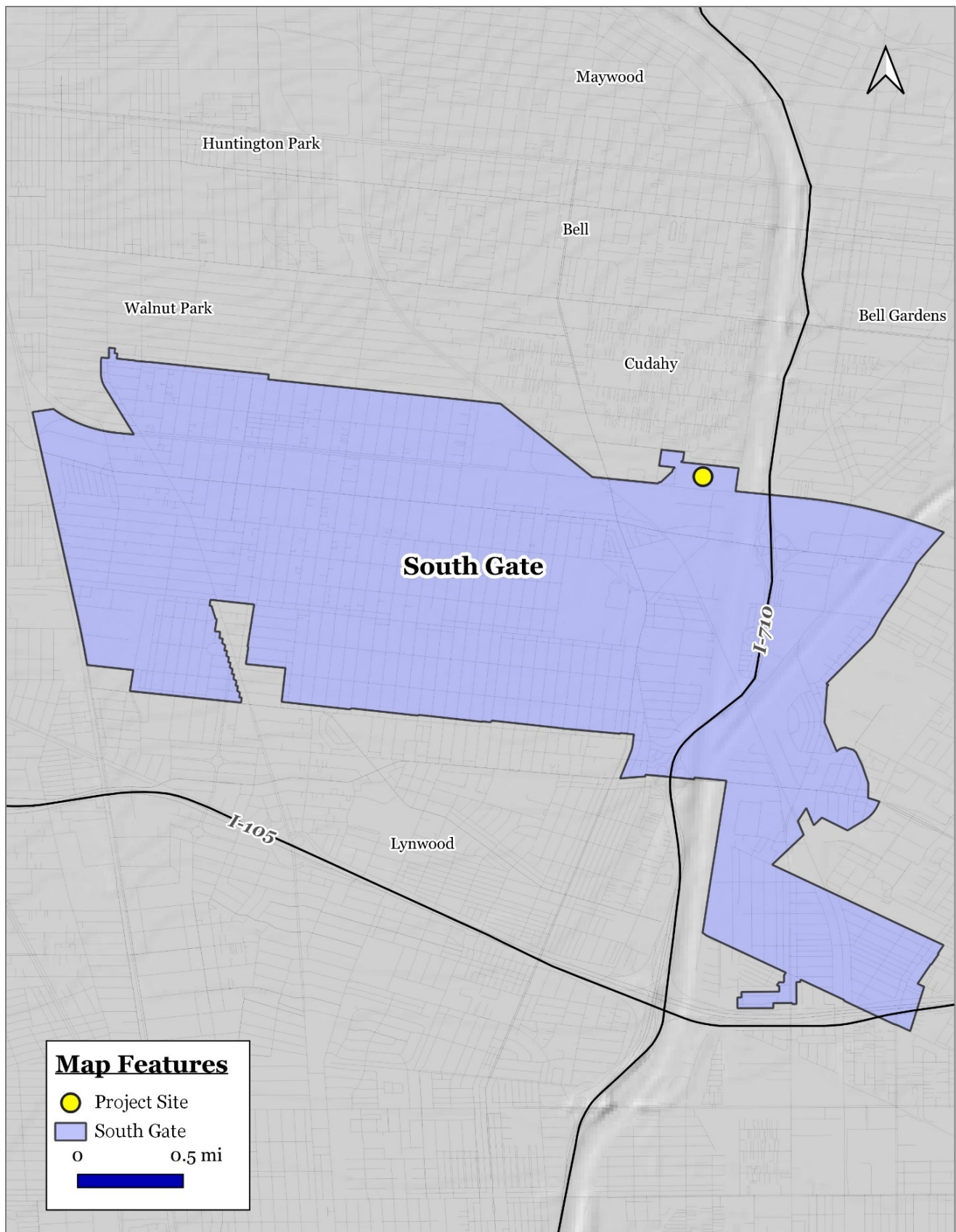
The operations will receive inbound shipments from suppliers up to 7 days/week from facilities within the United States. Routine operations will take place Monday-Friday on a 24-hour cycle with some smaller routines taking place on Saturdays and Sundays based on need. Internal warehousing operations include receiving inbound shipments, storing bulk goods, inventory, building customer orders, loading delivery, and unloading delivery trucks. The internal warehouse would consist of 100 percent electric manual material handling equipment. The warehouse operates 24 hours/day on a usual schedule of Sunday afternoon – Friday evening and shifts on Saturday and Sunday as needed.

Inbound shipments are received 7 days/week with exception on certain holidays as coordinated by production facilities. The operation anticipates an average of 30 inbound shipments per day Monday through Friday and 10-15 on Saturday and Sunday. The inbound shipments would be unloaded on the southern facing docks.

The heavy-duty fleet for the proposed operation includes 160 heavy-duty delivery vehicles comprised of approximately 22 Class 7 (straight) side loaders and 4 box truck end loaders, and approximately 54 Class 8 (tractor trailer) side loaders and 76 end loaders. Upon occupancy, 60 percent of the heavy-duty fleet (i.e., 96 Class 8 trucks) is planned to be EV with a migration plan to achieve a 100 percent EV delivery fleet by end of 2026. However, this analysis assumes only 60 percent of the fleet would be EV. The medium-duty fleet would be comprised of approximately 50 EV vans.

End loader trucks would be loaded/unloaded at the south- or future east-facing docks. Side-loader trucks would be loaded/unloaded inside the warehouse. Four 16 x 16-foot high-speed, electric roll-up doors would be located on the south side to accommodate side loader trucks entering the building to be loaded/unloaded, and four additional high-speed electric roll-up doors would be located on the north side to accommodate exiting side loader trucks. The roll-up doors will only be open when vehicles are entering and exiting the facility.

Between 6:00 p.m. and 3:00 a.m., approximately 60 side loader trucks would enter the warehouse through the southern roll-up doors, be loaded, and exit through the northern roll-up doors, drive along the drive aisle on the north side of the building to the southern parking lot to charge and await delivery. This flow through the warehouse would average 6 trucks per hour with a maximum of 12 trucks per hour. End loader trucks would be loaded at the truck docks along the south side of the building and charged and parked at the docks or in either the southern lot or the eastern yard lot.



Source: adapted by Ascent Environmental in 2023.

Figure 1 Project Vicinity

On average, 120 daily delivery routes are planned to depart the facility (Monday-Friday) with a maximum of 150 (occurring a few days per year). Heavy duty drivers depart the facility in waves between 3:00 a.m. and 8:00 a.m. to perform the delivery of the routes to which they have been assigned. The truck flow from the site during this period can range from approximately 3 trucks per hour to 26 trucks per hour over the 5-hour departure timeframe.

Upon return from deliveries between 11:00 a.m. and 6:00 p.m., the 60 side loader trucks enter the warehouse from the southern roll up doors to be unloaded, stripped of returns and empty pallets, and cleaned before exiting through the northern roll up doors to proceed toward the southern parking lot. This flow through the warehouse would average 12 trucks per hour with a maximum of 24 trucks per hour. End loader trucks would be unloaded and cleaned at the truck docks along the south side of the building.

The proposed project would employ a combination of on-site and field-based employees. Approximately 380 would be field-based employees that will report occasionally to the facility, but their primary function and time would be spent in the field. Approximately 340 would be on-site employees that report to the facility daily in multiple shifts spanning the 24-hour operation to perform all warehousing functions, customer order fulfillment, and office operations. This includes approximately 112 employees from 8:00 a.m. to 4:00 p.m., 35 employees from 4:00 p.m. to 12:00 a.m., and 193 from 12:00 a.m. to 8:00 a.m. Heavy duty drivers would report daily to the facility (typically Monday-Friday) in waves between 3:00 a.m. and 8:00 a.m. to perform the delivery of the routes to which they have been assigned. The proposed project would have limited employees onsite on Saturdays and Sundays.

The demolition and remediation phases of the proposed project are anticipated to take approximately 6 to 7 months. Demolition and abatement of the existing buildings began in May 2021. Asbestos and soil remediation began in March 2023 and is ongoing at the time of this study. Construction activities including site preparation, grading, building construction, concrete pours, paving, and architectural coating are anticipated to begin in January 2024 and conclude in September 2024.

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3 EXISTING NOISE AND VIBRATION-SENSITIVE LAND USES

Noise-sensitive land uses are generally considered to include those uses where exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels, and because of the potential for nighttime noise to result in sleep disruption. Additional land uses such as schools, transient lodging, historic sites, cemeteries, and places of worship are also generally considered sensitive to increases in noise levels. These land use types are also considered vibration-sensitive land uses in addition to commercial and industrial buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance.

The nearest noise-sensitive receptors are single-family homes north of the project site along Fostoria Street in the City of Cudahy, which border the site boundary. Based on a review of the proposed site plan and associated components, the acoustical center of primary construction activities would be approximately 350 feet from the nearby residences. In addition, industrial land uses are considered sensitive receptors in South Gate. Nearby industrial uses include the Dodson Global, Inc., approximately 325 feet west of the project site along Patata Street (750 feet west of the acoustical center of primary construction). Construction activities for the main building could occur as close as 35 feet from the residences to the north (worst-case distance applied to vibration analysis). Other residential uses are located approximately 925 feet east of the project site and are separated from the project site by the Los Angeles River and Interstate (I)-710. Approximately 450 feet south of the project site are industrial use buildings.

The sound levels in most communities fluctuate, depending on the activity of nearby and distant noise sources, time of the day, or season of the year, with major roads and highways typically the primary sources of ambient noise in a community. Local roads bordering the project site include Patata Street to the south, Wilcox Avenue to the West, and Fostoria Street to the North. Major roadways near the project site include I-710 located 0.34 mile east and I-105 located 2.75 miles south of the project site. The Union Pacific Railroad (UPRR) runs east and west approximately 70 feet south of the project boundary. The Los Angeles River is approximately 300 feet east of the project site. Additionally, the Compton Woodley Airport is located approximately 5.7 miles southwest of the project site.

To establish existing noise levels, an ambient noise survey was conducted on Thursday, April 20 through Friday, April 21, 2023. One long-term (LT) (24-hour) and four short-term (ST) (less than one hour) measurements were conducted using a Larson Davis Laboratories LxT precision integrating sound level meter. The meter was calibrated before use with a Larson Davis Laboratories Model CAL200 acoustical calibrator to ensure measurement accuracy. The measurement equipment meets all pertinent specifications of the American National Standards Institute. Weather conditions during the measurement period were mild ranging from 71 Fahrenheit to 83, clear skies, and average wind speeds of 3 miles per hour. The locations of the noise monitoring sites are shown in Figure 3. Results from the LT measurement are summarized in Table 4 and Figure 4, and results from the ST measurements are summarized in Table 5.

Table 4 Long-Term Noise Measurement Summary

Long-Term			L _{dn}	Daytime (7:00 a.m.-10:00 p.m.)					Nighttime (10:00 p.m.-7:00 a.m.)										
				L _{eq}	L _{max}	L _{min}	L ₅₀ (Average)	L ₂₅ (Average)	L ₁₆ (Average)	L ₀₈ (Average)	L ₀₃ (Average)	L _{eq}	L _{max}	L _{min}	L ₅₀ (Average)	L ₂₅ (Average)	L ₁₆ (Average)	L ₀₈ (Average)	L ₀₃ (Average)
LT-1 (24-hour)	Thursday, April 20, 2023	2:00 p.m. to 2:00 p.m.	63.9	57.1	72.6	49.0	52.6	55.6	56.1	61.5	64.5	57.0	70.2	52.2	55.9	57.0	57.6	58.9	60.0

Notes: LT=Long-Term; L_{dn} = Day-night level; L_{eq} = equivalent continuous sound level; L_{max} = maximum noise level; L_{min} = minimum noise level; L₅₀ = sound level exceeded 50 percent of the time; L₂₅ = sound level exceeded 25 percent of the time; L₁₆ = sound level exceeded 16 percent of the time; L₀₈ = sound level exceeded 8 percent of the time; L₀₃ = sound level exceeded 3 percent of the time

Refer to Figure 2 for ambient noise level measurement locations.

See Appendix A for detailed noise measurement data.

Source: Data collected by Ascent Environmental 2023.

Four short-term noise measurements (approximately 15-minute measurements) were conducted on Thursday, April 20, 2023. The short-term measurements ranged from 54.6 dBA L_{eq} and had an average of 56.9 dBA L_{eq}. The L_{max} ranged from 68.0 dBA to 79.3 dBA, with an average of 73.2 dBA L_{max}. This aligned very closely with the daytime long-term measurements that had an L_{eq} of 57.1 dBA and L_{max} of 72.6 dBA.

Table 5 Short-Term Noise Measurement Summary

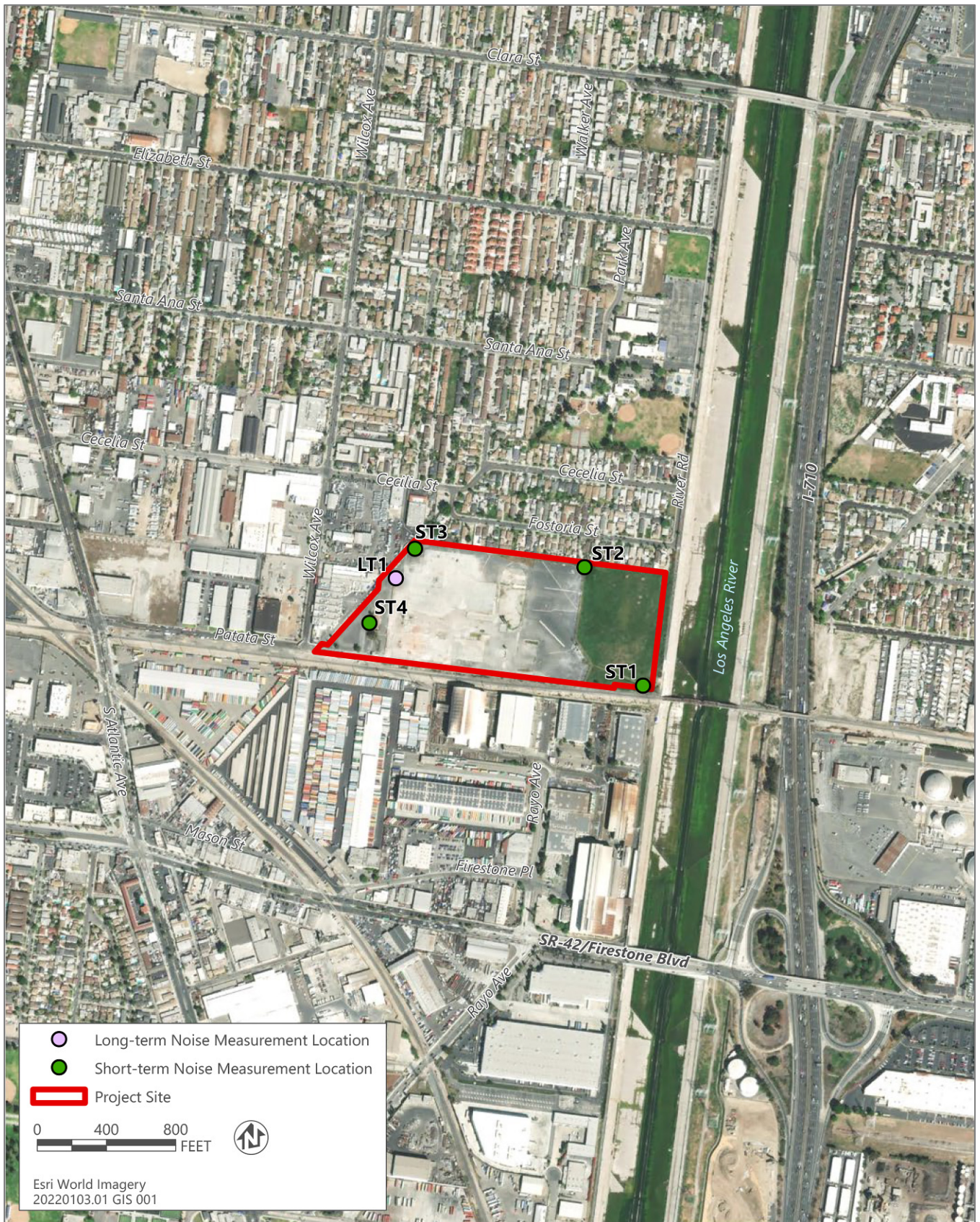
Measurements		L _{eq}	L _{max}	L _{min}	L ₅₀	L ₂₅	L ₁₆	L ₀₈	L ₀₃
ST-1 (32-minute)	10:23 a.m. to 10:56 a.m.	55.8	72.0	47.2	50.7	53.8	56.5	60.6	64.0
ST-2 (30-minute)	11:12 a.m. to 11:42 a.m.	59.5	79.3	48.5	53.1	57.1	59.7	62.4	66.0
ST-3 (30-minute)	11:49 a.m. to 12:19 p.m.	54.6	68.0	48.9	52.6	54.4	55.6	57.4	60.8
ST-4 (36-minute)	12:25 p.m. to 1:01 p.m.	57.8	73.3	49.8	54.2	56.9	58.3	62.0	65.3
Averages		56.9	73.2	48.6	52.7	55.6	57.5	60.6	64.0

Notes: L_{dn} = ST= Short-Term; Day-night level; L_{eq} = equivalent continuous sound level; L_{max} = maximum noise level; L_{min} = minimum noise level; L₅₀ = sound level exceeded 50 percent of the time; L₂₅ = sound level exceeded 25 percent of the time; L₁₆ = sound level exceeded 16 percent of the time; L₀₈ = sound level exceeded 8 percent of the time; L₀₃ = sound level exceeded 3 percent of the time

Refer to Figure 2 for ambient noise level measurement locations.

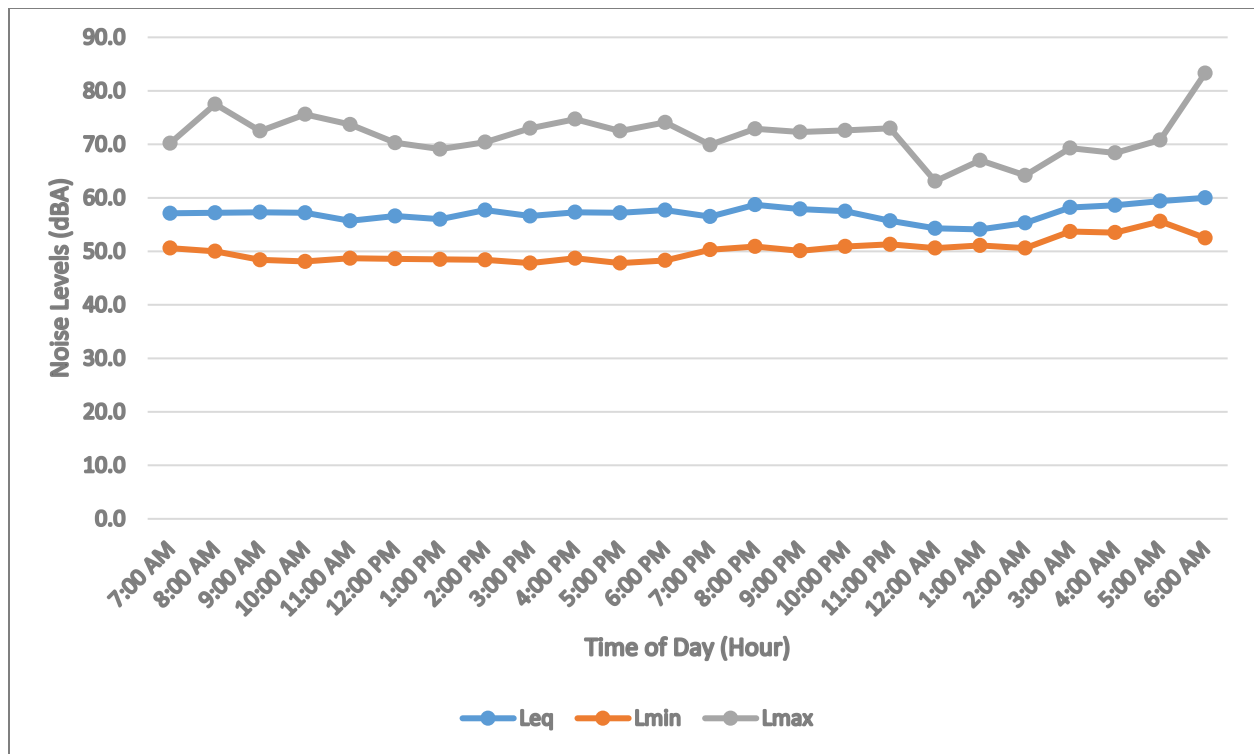
See Appendix A for detailed noise measurement data.

Source: Data collected by Ascent Environmental 2023.



Source: adapted by Ascent Environmental in 2023.

Figure 3 Noise Measurement Locations



Leq = equivalent continuous sound level; Lmax = maximum noise level; Lmin = minimum noise level
 See Appendix A for detailed noise measurement data.

Source: Data collected by Ascent Environmental 2023.

Figure 4 Summary of Long-Term (24-Hour) Noise Measurement

The existing noise environment in the project area is primarily influenced by transportation noise from vehicular traffic. Patata Street is the most heavily traveled roadway in the immediate vicinity of the project site. Patata Street stretches east and west and is located approximately 400 feet south of the center of the project site and 730 feet south of the nearest sensitive receptors, the residential houses on Fostoria Street. The existing noise levels from the surrounding roads were modeled using available traffic data for existing conditions from the Local Traffic Assessment (K2 Traffic Engineering 2022). Existing roadway noise levels ranged from 58.2 dBA CNEL to 68.6 dBA. Table 6 summarizes the modeled existing noise.

Table 6 Existing Transportation-Related Noise Levels (Modeled)

Roadway	Segment Description	Existing Condition Noise Levels (dBA, CNEL)
Patata Street	Wilcox Ave to Atlantic Ave	58.2
Firestone Blvd	Rayo Ave to Atlantic Ave	68.6
Atlantic Ave	Southern Ave to Firestone Blvd	64.7
Atlantic Ave	Firestone Blvd to Azalea West	67.2
Atlantic Ave	Azalea West to Patata St	67.2
Atlantic Ave	Patata St to Cecelia St	64.3
Atlantic Ave	Cecelia St to Santa Ana	60.0
Wilcox Ave	Patata St to Cecelia St	58.2
Wilcox Ave	Cecelia St to Santa Ana St	59.7

Notes: CNEL = Community Noise Equivalent Level; dBA= A-weighted decibels.

Source: Ascent Environmental (2023).

4 REGULATORY SETTING

4.1 FEDERAL

4.1.1 Federal Transit Administration Standards for Exposure to Ground Vibration

The Federal Transit Administration (FTA) Division of Environmental Analysis developed the Transit Noise and Vibration Impact Assessment Manual, which provides guidance to engineers, planners, and consultants in assessing vibration from construction, operation, and maintenance of projects. To address the human response to ground vibration, the FTA has set forth guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines are presented below in Table 7. In addition, FTA has also established construction vibration damage criteria, shown below in Table 8.

Table 7 Ground-Borne Vibration Impact Criteria for General Assessment for Human Response

Land Use Category	Ground-Borne Vibration Impact Levels for Human Response (VdB re 1 microinch/second)		
	Frequent Events ¹	Occasional Events ²	Infrequent Events ³
<i>Category 1:</i> Buildings where vibration would interfere with interior operations.	65 ⁴	65 ⁴	65 ⁴
<i>Category 2:</i> Residences and buildings where people normally sleep.	72	75	80
<i>Category 3:</i> Institutional land uses with primarily daytime uses.	75	78	83

Notes: VdB re 1 microinch/second = vibration decibels referenced to 1 microinch/second and based on the root mean square (RMS) velocity amplitude.

¹ "Frequent Events" is defined as more than 70 vibration events of the same source per day.

² "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

³ "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.

⁴ This criterion is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research would require detailed evaluation to define acceptable vibration levels.

Source: FTA 2018:123–126.

Table 8 FTA Construction Damage Vibration Criteria

Land Use Category	PPV, in/sec
Reinforced-concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Note: PPV = Peak Particle Velocity, in/sec = inches per second

Source: FTA 2018:186.

In addition to vibration criteria, FTA has also established construction noise criteria based on the land use type affected by noise and depending on whether or not construction noise would occur during the daytime or nighttime. The FTA criteria are as follows:

- Residential: 90 dBA L_{eq} (day) and 80 dBA L_{eq} (night)
- Commercial/Industrial: 100 dBA L_{eq} (day and night)

4.2 STATE

4.2.1 California Building Code Sound Transmission Standards

Noise within habitable units that is attributable to external sources is regulated by the California Building Standards codified in the California Code of Regulations CCR, Title 24, Part 2, Section 1207. These standards are enforceable at the time of construction or during occupancy and apply to habitable units with common interior walls, partitions, and ceilings or those adjacent to public areas such as halls, corridors, stairways, and service areas. Under these standards the interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metrics used to measure these levels can be L_{dn} or CNEL), consistent with the local general plan. Under California Public Resources Code Section 25402.1(g), all cities and counties in the state are required to enforce the adopted California Building Code, including these standards for noise in interior environments.

4.2.2 California General Plan Guidelines

The State of California General Plan Guidelines 2017, published by the California Governor's Office of Planning and Research, provides guidance for the compatibility of projects within areas of specific noise exposure (OPR 2017). Acceptable and unacceptable community noise exposure limits for various land use categories have been determined to help guide new land use decisions in California communities. In many local jurisdictions, these guidelines are used to derive local noise standards and guidance. Citing the U.S Environmental Protection Agency (EPA) materials and the State Sound Transmissions Control Standards, the State's general plan guidelines recommend interior and exterior CNEL of 45 and 60 decibels (dB) for residential units, respectively (OPR 2017:378).

4.2.3 California Department of Transportation

In 2013, the California Department of Transportation (Caltrans) published the Transportation and Construction Vibration Manual (Caltrans 2013a). The manual provides general guidance on vibration issues associated with construction and operation of projects in relation to human perception and structural damage. Table 9 presents recommendations for levels of vibration that could result in damage to structures exposed to continuous vibration.

Table 9 Caltrans Recommendations Regarding Levels of Vibration Exposure

PPV (in/sec)	Effect on Buildings
0.4-0.6	Architectural damage and possible minor structural damage
0.2	Risk of architectural damage to normal dwelling houses
0.1	Virtually no risk of architectural damage to normal buildings
0.08	Recommended upper limit of vibration to which ruins and ancient monuments should be subjected
0.006-0.019	Vibration unlikely to cause damage of any type

Notes: PPV= Peak Particle Velocity; in/sec = inches per second

Source: Caltrans 2013a.

4.3 LOCAL

4.3.1 South Gate General Plan 2035

The Noise Element of the South Gate General Plan 2035 (South Gate 2009) provides noise exposure information pertaining to construction, maintenance, planning decisions, ambient noise, and transportation, which all pertain to this project. Policies applicable to the project are summarized below.

Construction and Maintenance: Objective N1.1

The General Plan seeks to reduce noise levels created by construction and maintenance activities. The Noise Element within the General Plan establishes the following policies and standards that are relevant to the analysis of the noise effects of the project:

- **P.1:** Construction activities will be prohibited between the hours of 7:00 PM to 8:00 AM Monday through Saturday and on Sundays and Federal holidays.
- **P.2:** Construction noise reduction methods will be employed to the maximum extent feasible. These measures may include, but not limited to, shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment.
- **P.3:** Prior to approval of project plans and specifications by the City, project applicants and/or construction contractors will identify construction equipment and noise reducing measures, and the anticipated noise reduction.

Land Use Planning Decisions: Objective N2.1

The Noise Element is intended to provide ways to measure the noise impact on different land uses. It seeks to ensure noise impacts are considered in land use planning decisions. The following policies and standards that are relevant to the analysis of the noise effects of the project:

- **P.1:** The City will adhere to the noise standards identified in Table N-4 (Table 10 of this study).
- **P.2:** The City will incorporate noise considerations into land use planning decisions and future City land use plans by establishing acceptable limits of noise for various land uses throughout the community.
- **P.3:** The City should fully integrate noise considerations into land use planning decisions to prevent new noise/land use conflicts.
- **P.4:** The City will require that acoustical analysis be incorporated into the environmental review process for the purposes of identifying potential noise impacts and noise abatement procedures.
- **P.5:** The City will require that all new residential construction in areas with an exterior noise level greater than 55 dBA CNEL will include sound attenuation measures, as well as to incorporate design measures to reduce interior noise levels to 45 dBA CNEL.
- **P.6:** The City will require that all new non-residential development will demonstrate that ambient noise levels will not exceed an exterior noise level of 65 dBA CNEL.
- **P.7:** New development projects will provide buffers and/or appropriate mitigation measures to reduce potential noise sources on noise-sensitive land uses.
- **P.8:** The City should avoid locating noise-sensitive land uses in existing and future noise-impacted areas.
- **P.9:** The City will work to ensure acceptable noise levels are maintained near residential areas, schools, hospitals, convalescent homes, churches, and other noise sensitive areas.
- **P.10:** The City will consider land use compatible issues when developing and/or amending land use plans.
- **P.11:** The City should work with adjacent jurisdictions to minimize noise impacts to South Gate from projects that occur outside the City.

Development Review Process: Objective N2.2

The General Plan seeks to incorporate a review of noise impacts into the development review process. The following policies and standards are relevant to the analysis of the noise effects of the project:

- **P.1:** The City Community Development Department and/or City Council will consider noise impacts of proposed developments.
- **P.2:** The City should establish a Development Review process, which considers noise impacts and applies to, but is not limited to, the following:
 - Specific Plans
 - Tentative Tract Maps
 - Parcel Maps
 - Precise Plans
 - Conceptual Development Plans
 - Design Review
 - Non-residential development
 - Significant remodels and redevelopment
- **P.3:** The City will require that project applicants for the above actions submit relevant plans and analysis that facilitate the review of the proposal for conformance with the General Plan and applicable codes and regulations related to noise impacts.
- **P.4:** All new development, significant remodels, and redevelopment adjacent to noise sensitive land uses will be required to prepare an acoustical analysis that evaluates potential noise impacts and recommends noise abatement mitigation to ensure compliance with the City's General Plan and Noise Ordinance.
- **P.5:** The City will require findings of consistency with the City of South Gate's General Plan's goals, objectives, policies, and implementation actions; Zoning Ordinance; Municipal Code; and Building Code, and other local, Federal, State, and regional regulations applicable to noise impacts as a condition of project approval and entitlement.
- **P.6:** The City will require noise mitigation as conditions of approval (COA) on major development projects, including a clear description of mitigation on subdivision maps, site plans, and building plans for inspection purposes.
- **P.7:** The City will review development plans for the identification of sound attenuation measures, including but not limited to, double-glazed windows, sound insulation, sound walls, landscaping, use of low walls and landscaped slopes, enclose courtyards, rubberized asphalt, or relocation of driveways.

Minimize Noise Impacts to Sensitive Land Uses Adjacent to Non-residential Uses: Objective N3.3

The General Plan seeks to minimize noise impacts on residential or other noise-sensitive land uses located adjacent to non-residential uses. The Noise Element within the General Plan establishes the following policies and standards that are relevant to the analysis of the noise effects of the project:

- **P.1:** Truck deliveries to non-residential uses abutting residential or noise sensitive uses will be limited to the hours between 7:00 AM and 10:00 PM.
- **P.2:** New non-residential projects adjacent to residential uses will be required to incorporate noise reducing features into the project design to minimize impacts to nearby residential uses and other noise sensitive land uses.

- **P.3:** The City will prohibit the location of uses characterized by excessive noise, such as industrial uses and fast food restaurants with drive-through speakers, directly adjacent or in close proximity to existing or planned residential uses.
- **P.4:** The City will prohibit the siting of loading and shipping facilities for commercial and industrial operations adjacent to existing or planned residential uses.
- **P.5:** New buildings being developed adjacent to existing and/or planned residential uses or other noise-sensitive land uses will be required to site and operate heating, ventilating, and air conditioning generators in a manner that limits adverse noise impacts to the greatest extent feasible.
- **P.6:** Wherever feasible, parking areas for new or redeveloped non-residential uses should be buffered and shielded by, but not limited to, walls, fences, and/or adequate landscaping.
- **P.7:** The City should encourage existing noise sensitive uses, including schools, libraries, health care facilities, and residential uses in areas where existing or future noise levels exceed 65 dBA CNEL to incorporate fences, walls, landscaping, and/or other noise buffers and barriers, where appropriate and feasible.
- **P.8:** The City should encourage school districts or other educational facilities to locate outdoor activity areas, such as playgrounds and sport fields, away from residential areas.

Reduce Transportation Noise: Objective N4.1

The General Plan seeks to work towards the reduction of transportation noise. The Noise Element within the General Plan establishes the following policies and standards that are relevant to the analysis of the noise effects of the project:

- **P.1:** The City should minimize transportation noise through the proper design of street circulation, coordination of routing, and other traffic control measures (e.g., shifting travel lanes away from impacted units, adding bike ways, etc. to relieve traffic congestion).
- **P.2:** Businesses in industrial areas will be required to manage heavy truck and vehicle access to minimize noise and vibration impacts on adjoining uses.
- **P.3:** The City should discourage through traffic on residential local streets to reduce noise impacts.
- **P.4:** The City will coordinate and work with California Department of Transportation (Caltrans) to minimize freeway noise levels from Interstate 710 (I-710) on nearby noise-sensitive land uses to a level below the State standard of 65 dBA CNEL for exterior noise levels and 45 dBA CNEL for interior residential noise levels.

Noise and Land Use Compatibility Matrix

The State of California Office of Planning and Research (OPR) Noise Element Guidelines include recommended interior and exterior level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. Table 10 shows the State guidelines established by the State Department of Health Services and adopted by the City of South Gate for acceptable noise levels.

Table 10 Community Noise Exposure (L_{dn} or CNEL, dBA)

Land Use Category	Normally Acceptable ¹	Conditionally Acceptable ²	Normally unacceptable ³	Clearly Unacceptable ⁴
Residential – Low Density, Single-Family, Duplex, Mobile Homes	50-60	55-70	70-75	75-85
Residential – Multiple Family	50-65	60-70	70-75	70-85
Transient Lodging – Motels, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	80-85
Auditoriums, Concert Halls, Amphitheaters	NA	50-70	NA	65-85
Sports Arenas, Outdoor Spectator Sports	NA	50-75	NA	70-85
Playgrounds, Neighborhood Parks	50-70	NA	67.5-75	72.5-85

Land Use Category	Normally Acceptable ¹	Conditionally Acceptable ²	Normally unacceptable ³	Clearly Unacceptable ⁴
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	NA	70-80	80-85
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5	75-85	NA
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80	75-85	NA

Note: CNEL = Community noise equivalent Level; L_{dn} = day-night level dBA = A-weighted decibels; NA = Not Applicable

¹ Normally Acceptable -Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

² Conditionally Acceptable – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

³ Normally Unacceptable – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

⁴ Clearly Unacceptable – New construction or development should generally not be undertaken.

Source: Office of Planning and Research, California, General Plan Guidelines, October 2003.

City of South Gate Noise Standards

The City of South Gate maintains a comprehensive Noise Ordinance within its Municipal Code that establishes citywide interior and exterior noise level standards. Table 11 shows the summary of the City's Standards contained within the General Plan as well as adopted in the municipal code (see below).

Table 11 South Gate Noise Ordinance Standards

Noise Zone	Land Use Category	Noise Standards	
		Standard	Time Period
I	Noise-Sensitive Area	45 dBA	Anytime
II	Residential Properties (in any zone)	50 dBA	7:00 a.m. to 10:00 p.m.
		40 dBA	10:00 p.m. to 7:00 a.m.
III	Commercial Properties	55 dBA	Anytime
IV	Industrial Properties	65 dBA	Anytime

This table is consistent with Table N-5 of the South Gate general Plan noise element.

dBA = A-weighted decibel L_{eq} standard.

Source: South Gate (2009).

4.3.2 South Gate Municipal Code

On July 26, 2022, the City Clerk's office adopted the requirements of the general noise regulations for the City of South Gate and its residents and visitors. The following sections of Chapter 11.34 Noise Control Program pertain to the project.

11.34.020 Applicability and exemptions.

- A. Applicability. The provisions of this chapter shall be applicable to noise generated in any zone, subject to the established standards and thresholds herein.
- B. Exemptions. The following activities shall be exempted from the provisions of this chapter:
- Alerting people to danger or emergencies, or sound related to the performance of emergency work.
 - Public safety or self-defense warning devices or alert systems.
 - Public and private playground and school ground activities, including athletic and school entertainment events.
 - Bells, chimes, or carillons while being used in conjunction with religious services.

11.34.080 Maximum sound levels by noise zone.

A. Noise Zone Standards. Table 11.34-1 (Table 12 in this Noise Study), Noise Zone Standards, establishes noise-level standards and temporary maximum standards applicable to land use categories by noise zone. No person shall make, cause, or allow noise that exceeds the standards of Table 11.34-1 (Table 12 in this Noise Study), inclusive of ambient noise. These standards are inclusive of all noise sources, including ambient noise, animals, equipment, firearms, people gatherings or parties, tools, vehicles, or other noise source resulting in temporary or sustained noise levels in excess of the standards of Table 11.34-1 and Table 11.34-2 (Table 12 and Table 13 in this Noise Study).

Table 12 Noise Zone Standards

Noise Zone	Land Use Category	Noise Standards	
		Standard	Time Period
I	Noise-Sensitive Area	45 dBA	Anytime
II	Residential Properties (in any zone)	50 dBA	7:00 a.m. to 10:00 p.m.
		40 dBA	10:00 p.m. to 7:00 a.m.
III	Commercial Properties	55 dBA	Anytime
IV	Industrial Properties	65 dBA	Anytime

This table is consistent with Table N-5 of the South Gate general Plan noise element.

dBA = A-weighted decibel L_{eq} standard.

Source: South Gate (2022).

- B. Noise-Sensitive Zones. Creating or causing the creation of any noise disturbance within any noise-sensitive zone; provided, that conspicuous signs are displayed indicating the presence of the zone; shall be prohibited.
1. Noise-sensitive zones shall be indicated by the display of conspicuous signs in at least three separate locations within six hundred feet of the institution or facility.
- C. Permitted Temporary Increase. Table 11.34-2 (Table 13 in this Noise Study) establishes the maximum temporary noise level increases permitted in any noise zone based on the duration of noise.

Table 13 Permitting Temporary Noise Level Increase

Permitted Maximum Increase	Noise Duration
+5 dBA	30 mins. Per hour
+10 dBA	15 mins. Per hour
+12 dBA	10 mins. Per hour
+15 dBA	5 mins. Per hour
+20 dBA	2 mins. Per hour

Notes: dBA = A-weighted decibel; mins. = minutes.

Source: South Gate (2022).

- D. Measurement of Noise. All noise standards shall be based on the actual measured ambient noise level, as measured at the closest adjoining property line between habitable parcels or at the nearest public right-of-way.
- E. Unit of Measure. The unit of measure shall be designated as an A-weighted decibel (dBA), equivalent continuous sound level (L_{eq}) standard. Noise shall be measured with a sound level meter that meets the standards of the American National Standards Institute (Section S1.4-1979, Type 1 or Type 2). A calibration check shall be made of the instrument at the time any noise measure is made.
- F. Location of Measure.
1. Exterior Noise. Noise levels shall be measured in decibels at the property line of the receptor property, and at least four feet above the ground and ten feet from the nearest structure or wall, where possible.

2. Interior Noise. Interior noise shall be measured within the building or structure, and at least four feet from any wall, ceiling, or floor nearest the noise source.

11.34.110 Noise Variance

The owner or operator of a noise source that violates any of the provisions of this chapter may file a variance application, consistent with the procedures of Chapter 11.51, Permits and Procedures.

A variance application shall detail the approved method of achieving maximum compliance and a time schedule for its accomplishment. In its determinations, the noise control officer (NCO) shall consider the following:

1. The magnitude of nuisance caused by the offensive noise.
2. The uses of property within the area of impingement by the noise.
3. The time factors related to study, design, financing, and construction of remedial work.
4. The economic factors related to age and useful life of the equipment.
5. The general public interest, welfare, and safety.

4.3.3 Cudahy 2040 General Plan

The residential properties located on Fostoria Street are located in the city of Cudahy as the project site is along the border of South Gate and Cudahy. The Noise Element of the Cudahy 2040 General Plan (Cudahy 2018) provides noise exposure information pertaining to protecting noise-sensitive uses and clearing and enforcing noise regulations.

Noise and Land Use Compatibility Standards

The City of Cudahy Noise Element provides a framework for assessing the noise environment that the community deems acceptable. The standards are shown below in Table 14.

Table 14 Land Use Compatibility Standards for Community Noise Environments (CNEL, dB)

Land Use Category	Normally Acceptable ¹	Conditionally Acceptable ²	Normally unacceptable ³	Clearly Unacceptable ⁴
Low-Density Residential	Under 60	60-65	65-80	80+
Medium-Density Residential	Under 60	60-70	70-80	80+
High Density Residential	Under 60	60-75	75-80	80+
Mixed Use Districts (civic, commercial)	Under 65	65-80	80-85	85+
Neighborhood Commercial	Under 70	70-80	80-85	85+
Entertainment	Under 75	75-80	80-85	85+
Innovation Industrial	Under 70	70-80	80-85	85+
Light Industrial	Under 80	80+	NA	NA
School and Public Facilities (outside of Mixed-Use Civic)	Under 60	60-70	70-75	75+
Open Space/Parks/Recreation	Under 80	NA	80-85	85+

Note: CNEL = Community noise equivalent Level; dB = decibels; NA = Not Applicable

¹ Normally Acceptable – Specified land use is satisfactory, assuming buildings are of conventional construction.

² Conditionally Acceptable – New development should be undertaken only after detailed analysis of noise reduction requirements are made.

³ Normally Unacceptable – New development should be generally discouraged, if not, a detailed analysis of noise reduction requirements must be made.

⁴ Clearly Unacceptable – New development should generally not be undertaken.

Source: City of Cudahy 2018.

Protect Noise-Sensitive Uses

The General Plan seeks to protect noise-sensitive land uses. The Noise Element within the General Plan establishes the following policies and standards that are relevant to the analysis of the noise effects of the project:

- **Policy NE 1.1:** Limit the hours of operation at all noise generation sources adjacent to noise sensitive areas or uses.
- **Policy NE 1.2:** Require all exterior noise sources (construction operations, air compressors, pumps, fans, and leaf blowers) to use available noise suppression techniques and devices to lower exterior noise to acceptable levels which are compatible with adjacent land uses.
- **Policy NE 1.3:** Encourage mixed-use structures to be designed so as to offset noise from adjacent uses within the structure and minimize the transfer of noise and vibration from any commercial/retail component to any residential component.
- **Policy NE 1.4:** Consult with responsible federal and state agencies to minimize the impact of transportation-related noise, including noise associated with freeways, major arterials, rail, and public transportation.

Clear and Enforced Noise Regulations

The General Plan seeks to protect noise-sensitive land uses. The Noise Element within the General Plan establishes the following policies and standards that are relevant to the analysis of the noise effects of the project:

- **Policy NE 2.1:** Review and modify noise level standards in the Cudahy Municipal Code, as appropriate, for all land uses.
- **Policy NE 2.2:** Consider noise impacts as part of the development review process, particularly the location of parking, ingress/egress/loading, and refuse collection areas relative to surrounding residential development and other noise-sensitive land uses.
- **Policy NE 2.3:** Provide, as appropriate, funding to monitor noise levels and investigate noise complaints.
- **Policy NE 2.4:** Prohibit new residential or other noise-sensitive land use development in noise impacted areas unless effective mitigation measures are incorporated into the project design to reduce outdoor activity area noise levels to a “normally acceptable” CNEL.
- **Policy NE 2.5:** Require noise created by new non-transportation noise sources to be mitigated so as not to exceed acceptable interior and exterior noise level standards.
- **Policy NE 2.6:** Implement appropriate standard construction noise controls for all construction projects.

4.3.4 Cudahy Municipal Code

On November 1, 2022, the city clerk’s office passed the Cudahy Municipal Code in the public interest to adopt the requirements of the general noise regulations for the City of Cudahy and its residents and visitors. The following sections of Chapter 20.60 Zoning – Performance Standards which pertain to the project.

20.60.070 Noise.

- A. *Standards Applicable to All Zones.* The regulations in this section aim to prohibit unnecessary, excessive, and annoying noises from all sources, as certain noise levels are detrimental to the health and welfare of individuals. The standards apply to all land uses in all zones unless otherwise specified.
- B. *Noise Measurements.* Noise shall be measured with a sound level meter that meets the standards of the American National Standards Institute (ANSI Section S1.4-1979, Type 1 or Type 2). The unit of measure shall be designated as a decibel (dBA). Noise levels shall be measured in dBA at the property line of the receptor property, and at least 4 feet above the ground and 5 feet from the nearest structure or wall. Where a boundary or wall exists, the measurement shall be made on the receptor property. A calibration check shall be made of the instrument at the time any noise measurement is made.

C. Exterior Noise Standards

1. No person shall create or allow the creation of noise that causes the exterior noise level to exceed the noise standards set forth in Table 20.60-1 (Table 15 of this Noise Study).

Table 15 Maximum Exterior Noise Standards

Receiving Land Use Category	Noise Level (dBA, L _{max})	
	10:00 p.m. – 7:00 a.m.	7:00 a.m. – 10:00 p.m.
Residential (except multi-family)	45	65
Multi-family residential and mobile home parks	50	65
commercial and mixed-use	60	65
Industrial	70	70

Source: (Cudahy 2022).

2. Increases in the allowable exterior noise levels listed in Table 20.60-1 (Table 15 in this Noise Study) may be permitted in accordance with the standards outlined in Table 20.60-2 (Table 16 in this Noise Study):

Table 16 Permitted Increase in Noise Levels

Permitted Increase (dBA)	Duration (cumulative minutes per hour)
5	15
10	5
15	1
20	Less than 1 minute

Source: (Cudahy 2022).

D. Interior Noise Standards

1. No person shall operate, or cause to be operated, any source of sound within a residential dwelling unit or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level, when measured inside a neighboring receiving dwelling unit, to exceed the environmental and/or nuisance interpretation of the applicable limits shown in Table 20.60-3 (Table 17 of this Noise Study):
2. If the ambient noise level inside a receiving dwelling unit exceeds permissible limits, the allowable noise exposure standard in that category shall be the measured ambient noise for a cumulative period of five minutes in any one hour, ambient plus five dBA for one minute within any one hour and shall not exceed the ambient plus 10 dBA at any time.

Table 17 Maximum Interior Noise Levels

Land Use Type	Time Period	Maximum Noise Level (dBA)	
		Anytime	1min./1hr.
Residential	10:00 p.m. to 7:00 a.m.	35	40
	7:00 a.m. to 10:00 p.m.	45	50
Mixed-use residential	All hours	45	50

Source: Cudahy 2022.

- E. *Enclosed Equipment.* Utilization of compressors or other equipment, including but not limited to vents, ducts, and conduits, but excluding window or wall-mounted air-conditioners which are located outside of the exterior walls of any building, shall be enclosed within a permanent, noncombustible, view-obscuring enclosure to ensure that the equipment will not emit noise in excess of the ANSI standards.

- F. *Residential Uses along Major Corridors.* New residential development along Atlantic Avenue, Clara Street (from Atlantic Avenue to River Road), and Salt Lake Avenue shall comply with the land use compatibility standards for noise in the 2040 *General Plan*. In order to confirm compliance, an acoustical study shall be performed in conjunction with any development project proposal. For residential uses in a mixed-use corridor, a residential noise notice shall be provided in accordance with CMC 20.28.0801.
- G. *Exemptions.* Warning devices necessary for the protection of public safety, including but not limited to police, fire and ambulance sirens, and train horns, are exempt from these noise standards. (Ord. 690 § 4 (Exh. A), 2018).

20.60.090 Vibration.

- A. *No Detectable Vibration.* No vibration shall be detectable beyond the property line of the site from which the vibration is emanating. The ground vibration caused by moving vehicles, trains, aircraft, or temporary construction/demolition activity is exempted.
- B. *Residential Use Near Railroad Tracks.* A vibration study shall be provided in conjunction with any proposed residential development within 200 feet of the Union Pacific Railroad tracks.
- C. *Industrial Districts.* Within industrial districts, vibration shall not exceed the standards set forth in Table 20.60-4 (Table 18 of this Noise Study):

Table 18 Maximum Vibration in Industrial Districts

Frequency (minutes per hour)	Vibration Displacement (inches)	
	Steady State	Impact
Under 10	.0055	.0010
10-19	.0044	.0008
20-29	.0033	.0006
30-39	.0002	.0004
40+	.0001	.0002

Source: (Cudahy 2022).

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5 THRESHOLDS OF SIGNIFICANCE

In consideration of the California Environmental Quality Act (CEQA) Guidelines Appendix G Checklist questions pertaining to noise, adopted South Gate and Cudahy General Plan policies, and Municipal Codes, the following criteria are used in this analysis to determine potential project impacts.

5.1 SHORT-TERM CONSTRUCTION NOISE

Short-term (construction) noise levels that exceed an adopted local or other applicable noise standard or a substantial temporary increase in noise that has the potential to cause an adverse effect to a sensitive receptor would be considered an impact. Based on both South Gate and Cudahy's adopted municipal code, this criterion is applied in the following way:

- Construction noise that occurs outside of the allowable daytime hours (i.e., before 8:00 a.m. or after 7:00 p.m., Monday through Saturday and on Sundays and Federal Holidays) within the City of South Gate. Note, City of Cudahy does not have construction time limits; however, this analysis considers nighttime construction noise outside of the City of South Gate's allowable times to be significant.
- An exceedance of FTA's construction noise criteria at nearby receptors:
 - Residential Receptors: 90 dBA L_{eq} (day) and 80 dBA L_{eq} (night)
 - Commercial/Industrial Receptors: 100 dBA L_{eq} (day and night)

5.2 LONG-TERM OPERATIONAL NOISE

Long-term (operational) noise levels that exceed an adopted local or other applicable noise standard or a substantial permanent increase in noise that has the potential to cause an adverse effect to a sensitive receptor would be considered an impact. Based on South Gate and Cudahy's adopted municipal code and General Plan Noise element, this criterion is applied in the following way:

- Long-term substantial increase in noise levels due to stationary sources exceeding:
 - City of South Gate's exterior noise standards for residential properties of 50 dB L_{eq} between the hours of 7:00 a.m. and 10:00 p.m. or 40 dB L_{eq} between the hours of 10:00 p.m. to 7:00 a.m. (Table 12);
 - City of Cudahy's exterior noise standards for residential properties of 45 dBA L_{max} between the hours of 10:00 p.m. and 7:00 a.m. or 65 dBA L_{max} during the hours of 7:00 a.m. and 10:00 p.m. (Table 15) or allowable increases in these standards for certain noise sources (Table 16);
 - Note: interior noise standards are set such that if exterior noise standards are achieved, so will interior, due to exterior-to-interior attenuation provided by normal structures. Thus, this analysis focused on achieving exterior noise standards.
- Long-term permanent increases in noise associated with all new non-residential development that do not exceed an exterior noise level of 65 dBA CNEL.
- Generate a substantial long-term increase in permanent noise sources (traffic noise, stationary noise) exceeding FICON's guidance for allowable incremental increases in noise (Table 2):
 - Where the ambient noise level is below 60 dB, increases of 5.0 dBA or greater would be considered substantial;
 - Where the ambient noise level ranges from 60 to 65 dB, increases of 3.0 dBA or greater would be considered substantial; or

- Where ambient noise levels currently exceed 65 dBA, increases of 1.5 dBA or greater would be considered substantial.

5.3 VIBRATION

The generation of excessive groundborne vibration or groundborne noise levels that cause structural damage or result in sleep disturbance to sensitive uses. Applying FTA's vibration assessment criteria, along with the City of Cudahy's vibrational standards for industrial districts, the project could result in a potentially significant vibration impact if the following standards are exceeded:

- Construction
 - Structural Damage: A limit of 0.20 in/sec PPV for buildings of normal conventional construction.
 - Sleep Disturbance: A limit of 80 VdB for infrequent events associated with construction equipment use.
- Operational Industrial Vibration Criteria
 - 0.0001 inches for steady state vibration sources occurring for more than 40 minutes in one hour.

5.4 SINGLE-EVENT NOISE AND SLEEP DISTURBANCES

The threshold for sleep disturbance is not absolute because there is a high degree of variability from one person to another. According to a FICAN study, 10 percent of the population is estimated to be awakened when the SEL interior noise level exceeds 81 dBA. An estimated 5 to 10 percent of the population is affected when the SEL interior noise level is between 65 and 81 dBA, and few sleep awakenings (less than 5 percent) are predicted if the interior SEL is less than 65 dBA. Thus, the following threshold is applied to single noise events:

- Thus, single-event levels resulting from the project would be considered significant if single-event noise levels would exceed 65 dB SEL within interior areas of residences located in the immediate project vicinity.

6 METHODS OF ANALYSIS

To assess potential short-term (construction-related) noise and vibration impacts, sensitive receptors and their relative exposure were identified. Project-generated construction source noise, vibration levels, and traffic-generated source noise were determined based on methodologies, reference emission levels, and usage factors from FTA's *Guide on Transit Noise and Vibration Impact Assessment* methodology (FTA 2018) and the Federal Highway Administration's (FHWA) *Roadway Construction Noise Model User's Guide* (FHWA 2006). Reference levels for noise and vibration emissions for specific equipment or activity types are well documented and the usage thereof common practice in the field of acoustics. To conduct the analysis, sensitive receptors near the proposed project site were identified. Noise and construction vibration levels were modeled based on a project-specific equipment list, activity data, and anticipated rate of construction. It should be further noted that regarding construction noise, and all noise in general, noise levels are presented with an associated reference distance from the source. This is to account for the fact that as the distance between a receiver and a source increases, noise perception decreases. Consistent with FTA methods, construction equipment reference levels are all provided at 50 feet from the operation of equipment. This is the distance used for all construction equipment reference levels; however, noise levels can be adjusted based on the distance to activity increasing or decreasing.

To assess long-term (operational) noise, sensitive receptors and their relative exposures were also identified. To identify reference noise levels of typical operational noise associated with this project, noise measurements were taken at the Harbor Distributing warehouse (13344 S. Main Street, Los Angeles, CA) and at the Anheuser Busch Distribution Facility (12065 Pike Street, Santa Fe Springs, CA). Noise measurements during three separate activities (i.e., loading/unloading, truck pass by events) were conducted during a peak activity hour to obtain reference levels for the operational noise analysis at the proposed site. Measurements at the Santa Fe Springs facility were taken during peak operational hours (4:00 a.m. to 8:00 a.m.) on Thursday, April 20, 2023. The first set of measurements were taken at the truck entrance/exit from 6:00 a.m. to 6:51 a.m. and the second set of measurements was taken of the loading/unloading activities from 6:54 a.m. to 7:55 a.m. The truck movement measurements were taken 16 feet from passing trucks and the loading and unloading measurements were taken 100 feet from the center of the docks. Measurements of a roll-up door were taken at the Harbor Distribution warehouse on August 22, 2023. The roll-up door at this facility was operated specifically for the purpose of obtaining reference noise levels. More details regarding the reference noise levels are described below in the impact analysis and in Appendix A.

Other proposed stationary noise sources (e.g., heating ventilation and air conditioning [HVAC], parking) were evaluated using calculation methods from FTA and standard attenuation factors. In addition, noise measurement data associated with the type of electric trucks that would be used onsite, were available and based on those measurements, reference noise levels for diesel trucks were adjusted. See Appendix A for calculations.

Regarding operational traffic noise, peak existing traffic data at each intersection was obtained from the Local Traffic Assessment (K2 Traffic Engineering, 2022). To conduct the traffic noise modeling, average daily trips generated from employee trips and truck deliveries were added to the daily trips of existing traffic at each nearby road segment and traffic noise modeling was conducted using calculation procedures consistent with Caltrans and FHWA' traffic noise model.

Although it is known that a wall would be developed along the northern edge of the property, due to the number of variables at play that can contribute to the effectiveness of a sound barrier (e.g., placement, material, thickness, continuity), no noise attenuation was applied to modeled noise levels. Rather, worst-case noise levels were calculated and where necessary, specific performance criteria were provided to inform the construction of the proposed wall, as mitigation.

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7 IMPACT ANALYSIS

Impact 1: Construction Noise

Short-term construction noise levels would fluctuate depending on the type, number, and duration of usage for the varying equipment. The effects of construction noise largely depend on the type of construction activities being performed; noise levels generated by those activities; distances to noise-sensitive receptors; the relative locations of noise attenuating features such as topography and existing structures; and existing ambient noise levels. Construction activities associated with the project would include demolition, site clearing and preparation, grading and excavation for building foundations, building construction, and paving. No pile driving or blasting is anticipated.

Construction equipment associated with this construction activity would include dump trucks, loaders, air compressors, cranes, dozers, graders, pavers, and rollers. Noise levels for these pieces of equipment can range from 80 to 85 dBA L_{max} at 50 feet, as indicated in Table 19.

Table 19 Noise Emission Levels from Construction Equipment

Equipment Type	Typical Noise Level (dBA) @ 50 feet
Dump Truck	84
Loader	80
Air Compressor	80
Crane	85
Dozer	85
Grader	85
Paver	85
Roller	85

Notes: Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacturer-specified noise levels for each piece of heavy construction equipment.

Source: FTA 2018.

Noise-generating construction activities that occur during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease, and because typical sleep hours occur during these times, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of residential uses.

Construction generally occurs in several discrete stages, each phase requiring a specific complement of equipment with varying equipment type, quantity, and intensity. These variations in the operational characteristics of the equipment change the effect they have on the noise environment of the project site and in the surrounding area for the duration of the construction period.

Noise levels from each phase of construction (i.e., demolition, grading, building construction, paving) were modeled to characterize varying noise levels over the duration of project construction. Worst-case scenario modeling was conducted with equipment used for each phase; a tractor, excavator, and dump truck for demolition, a tractor, excavator, grader, and front-end loader for grading, a man lift, concrete saw, crane, and dump truck for construction, and a paver, concrete saw, roller, and grader for paving. Based on the modeling, the peak noise-generating phase of the project would be the paving activities. Based on the reference noise levels listed in Table 19 and accounting for typical usage factors of the individual pieces of equipment, onsite construction-related activities could generate a combined hourly average noise level of approximately 87.4 L_{eq} and a maximum noise level as high as 92.9 L_{max} at 50 feet. Results can be found in Table 20 and specific inputs and modeling details can be found in appendix A. Detailed inputs and parameters for the estimated construction noise exposure levels are provided in Appendix A.

Table 20 Noise Levels by Phase of Construction

Phase	L_{eq} @ 50 feet	L_{eq} at Residences (350 ft north of site)	L_{max} @ 50 feet	L_{max} at Residences (350 ft north of site)	Current Ambient Noise Level (L_{eq}) ¹	Increase (L_{eq}) Above Ambient Noise Level	FICON Incremental Noise Increase Threshold (5 dBA) Exceeded? ²
Demolition	85.2	68.2	89.1	72.2	56.9	11.3	Yes
Grading	85.9	69.0	89.9	73.0		12.1	Yes
Construction	86.2	69.3	92.7	75.8		12.4	Yes
Paving	87.4	70.5	92.9	76.0		13.6	Yes

Notes: dBA = A-weighted decibels; L_{dn} = day-night level; ft= feet.

¹ Current ambient noise level refers to the average L_{eq} from Table 5. Measurement locations closest to receivers were selected to represent the ambient noise level.

² FICON incremental noise increase threshold is 5 dBA for ambient noise environments of 60 dBA or less.

Source: Modeled by Ascent Environmental in 2023 (see Appendix A).

The nearest noise-sensitive receptors to the acoustical center of the anticipated location of proposed construction activities are the residences located along Fostoria Street in the City of Cudahy approximately 350 feet north of the of the project site where construction noise generating activities would likely occur. Based on the construction noise modeling results, construction activity during the loudest anticipated construction phases (i.e., paving) would result in construction noise levels of 70.5 L_{eq} dBA and 76.0 L_{max} dBA at the nearest noise-sensitive receptors. Although the City of South Gate and City of Cudahy have not adopted maximum noise limits for construction activities, estimated worst-case construction noise levels would be below FTA-recommended levels of 90 dBA L_{eq} at nearby residential receptors. Construction noise would be exempt during daytime hours; however, if construction were to occur at night, construction noise would exceed the nighttime City of South Gate standards for residential receptors of 40 dBA L_{eq} and City of Cudahy nighttime noise standards for residential receptors of 45 dBA L_{max} . Further, daytime construction activities would result in a substantial temporary (i.e., greater than 5 dB per FICAN standards) increase in noise. This impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure NOISE-1: Reduce Construction Noise Levels

To reduce noise from construction activities, the City shall require construction contractors to comply with the following measures:

- ▶ All construction activities shall be prohibited between the hours of 7:00 p.m. to 8:00 a.m. Monday through Saturday and on Sundays and Federal holidays.
- ▶ Prior to grading and construction activities, the proposed soundwall shall be installed along the northern property line to reduce construction noise for residential receptors along Fostoria Street. Alternatively, during all active construction activities involving the use of heavy-duty diesel-powered construction equipment, install temporary noise curtains that meet the following parameters:
 - Install temporary noise curtains as close as possible to the boundary of the construction site within the direct line of sight path of the nearby sensitive receptor(s).
 - Temporary noise curtains shall consist of durable, flexible composite material featuring a noise barrier layer bounded to sound-absorptive material on one side.
 - The noise barrier layer shall consist of rugged, impervious, material with a surface weight of at least one pound per square foot, such that a minimum of 10 dBA reduction is achieved on the receiving side of the sound barrier.

- ▶ Locate all stationary equipment (e.g., generators, welders, dehumidifiers) on the construction site as far away from adjacent residential land uses and other noise-sensitive sites as possible and no less than 100 feet from residential uses.
- ▶ Position onsite stationary equipment such that existing noise sources (e.g., roadways) or structures (e.g., existing buildings) block the line of sight between the onsite equipment and offsite sensitive land uses.
- ▶ All construction equipment shall be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment engine shrouds shall be closed during equipment operation.
- ▶ All construction equipment with back-up alarms shall be equipped with either audible self-adjusting backup alarms or alarms that only sound when an object is detected. The self-adjusting backup alarms shall automatically adjust to 5 dBA over the surrounding background levels. All non-self-adjusting backup alarms shall be set to the lowest setting required to be audible above the surrounding noise levels. In addition to the use of backup alarms, the construction contractor shall implement the use of observers and scheduling of construction activities such that alarm noise is minimized.
- ▶ Combine noisy operations (e.g., riveting, cutting, hammering) to occur in the same time period (e.g., day or construction phase), such that the overall duration of these activities is reduced to the extent practical. By performing the noisiest operations together within the same time period, the overall duration that excessive noise would occur is reduced, minimizing the disturbing effects of exposure to prolonged increased noise levels.

Significance after Mitigation

Incorporation of the above measures would ensure compliance with City of South Gate and Cudahy adopted General Plan Policies and Municipal Code and would reduce noise exposure at the nearby receptors and surrounding community by limiting construction activities to the less sensitive daytime hours (8:00 a.m. to 7:00 p.m. consistent with South Gate General Plan Policy P.1). In addition, mitigation would require the installation of the sound wall or temporary noise barriers, siting equipment as far away from receptors as possible, and relocating or clustering noise-generating activities such that the magnitude and duration of noise levels affecting sensitive receptors are minimized. Effectiveness of these mitigation measures would vary from several decibels (which in general is a relatively small change) to 10 or more decibels (which subjectively would be perceived by receptors as a substantial reduction in noise by half), depending upon the specific equipment and the original condition of that equipment, the specific locations of the noise sources and the receivers. Installation of a noise barrier, for example, would vary in effectiveness depending upon the degree to which the line-of-sight between the source and receiver is broken, and typically ranges from 5 to 10 dB (NCHRP 1999). However, the performance standard of 10 dBA reduction, specified by the included mitigation measures would be considered achievable. Thus, residual maximum construction noise levels would be reduced to within 5 dBA of existing ambient levels, reducing the short-term increase in noise to a **less-than-significant** level.

Impact 2: Vibration

Project construction could result in short-term vibration from the use of heavy-duty equipment. Operational activities at the proposed industrial site, affecting nearby receptors within the City of Cudahy, would be subject to City of Cudahy's adopted vibration standards for all industrial uses. The following impact discusses construction and operation separately, below.

Construction

Project construction would not involve the use of ground vibration-intensive activities, such as pile driving or blasting, activities that generally result in vibration impacts. Pieces of equipment that generate lower levels of ground vibration, such as dozers and pavers, would be used during construction. These types of common construction equipment do not generate substantial levels of ground vibration that could result in structural damage, except at extremely close distances (i.e., within at least 10 feet). The most ground vibration-intensive activity that could be performed during project construction would be the use of a vibratory roller, during paving activities.

Vibratory rollers generate ground vibration levels of 0.21 in/sec PPV and 94 VdB at 25 feet (FTA 2018:184). Vibration from construction activities would exceed the threshold of significance of 0.2 in/sec PPV for building structural damage within 26 feet and would exceed the threshold of significance for human annoyance of 80 VdB within 73 feet of activities. Sensitive land uses (i.e., residences) are located as close as 25 feet from where construction activities could occur. Therefore, construction activities have the potential to result in substantial vibration exposure (annoyance and structural damage) at nearby residential structures.

Operations

The City of Cudahy has adopted vibration standards that apply to all new industrial land uses. Vibration standards are established based on the frequency of vibration events, with increasingly more stringent standards as the frequency of events increase and the type of vibration-inducing event (i.e., steady state or impact). Trucks traveling along a road would be considered a steady state vibration source, in comparison to impact sources (e.g., pile drivers, blasting, drop balls); thus, the steady state standards were applied. Based on anticipated operational peak activities that could result in up to 24 trucks per hour, it was conservatively assumed that vibration from truck activity could occur for more than 40 minutes per hour and the thresholds of 0.0001 vibration displacement (inches) was applied. See Table 18 for City of Cudahy vibration limits.

Using FTA-published reference vibration levels (PPV in/sec) for a heavy-duty truck and applying standard frequency ranges for trucks of 500 to 1,000 hertz (Hz), vibration levels for truck pass-by events were calculated in vibration displacement inches (Reiter and Rochat 2016). See table 21 below for a summary of vibration levels associated with trucks for the bottom range (i.e., 500 Hz) and top range (i.e., 1,000 Hz) of frequency levels, compared to applicable City vibration limits. See Appendix A for detailed modeling inputs and outputs. As shown below, vibration from heavy trucks would not exceed the threshold of 0.0001 inches for steady-state displacement.

Table 21 Truck Vibrational Displacement

Truck Frequency	Displacement (inches)	Threshold	Exceeds?
1,000 Hz	0.00003	0.0001 inches	No
500 Hz	0.00007		No

Note: Hz = Hertz

Source: Data modeled by Ascent Environmental in 2023.

Summary

Sensitive land uses (i.e., residences) are located as close as 25 feet from where construction activities could occur and anticipated construction activities could exceed structural damage thresholds within 26 feet and human annoyance thresholds within 73 feet, thus, resulting in the potential to exposure nearby receptors to substantial vibration levels during construction. Operational activities would not exceed applicable vibration limits for industrial land uses. Because construction vibration levels would exceed applicable thresholds, this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure NOISE-2: Reduce Construction-Related Vibration Exposure

A vibration control plan shall be developed by the project applicant, in consultation with an acoustic professional, that demonstrates with substantial evidence, based on finalized project-specific construction parameters (e.g., specific equipment profiles, location of construction activities, duration of construction activities), that vibration criteria of 0.21 PPV (in/sec) and 80 VdB at residential structures would not be exceeded. The plan shall be submitted to the City of South Gate for approval, prior to issuance of grading/construction permits. The plan shall include, at a minimum, the following measures.

- ▶ The prohibition of construction activities between the hours of 7:00 p.m. to 8:00 a.m. Monday through Saturday and on Sundays and Federal holidays.

- ▶ A site-specific vibration assessment shall be conducted by a qualified geotechnical engineer or ground vibration specialist that indicates that no structural damage or vibration nuisance would occur at nearby buildings or structures. Ongoing monitoring during construction activities or detailed construction plans submitted to the City prior to construction activities may satisfy this.
- ▶ Earthmoving and ground-impacting operations shall be phased so as not to occur simultaneously in areas close to sensitive receptors. The total vibration level produced could be significantly less when each vibration source is operated at separate times.

Significance after Mitigation

Incorporation of the above measures would ensure that vibration-inducing activities would not occur during the more sensitive times of the day (i.e., late evening through the early morning). Additional measures would require the construction contractor to minimize vibration exposure to nearby receptors by locating equipment far from the receptors and phasing operations. These measures would ensure compliance with the recommended levels to protect human annoyance and prevent structural damage, and this impact would be reduced to a **less-than-significant** level.

Impact 3: Operational Stationary Noise

Project operation would result in new stationary noise sources, including onsite heating, ventilation and air conditioning (HVAC) equipment, battery storage unit, trucks entering/leaving the warehouse through roll-up doors, loading and unloading of trucks, noise from the proposed surface parking lot, and noise from the fleet maintenance building. Each source is discussed separately, below.

HVAC Equipment

Implementation of the project would introduce new stationary noise sources associated with building mechanical equipment, primarily HVAC units and a battery storage unit. Detailed information regarding the make/model of the stationary equipment to be installed is not available at this time. However, noise levels commonly associated with air conditioning systems can reach levels of up to 78 dB at 3 feet (Lennox 2018). Applying this reference noise level as an hourly average (L_{eq}) and assuming a 50 percent usage rate, would result in 75 dBA L_{eq} at 3 feet from the source. The exact location or amount of the HVAC units are unknown at this time, but assuming that four units are located on the center of the roof of the warehouse, the nearest sensitive receptor to the equipment would be the single-family residential properties on Fostoria Street, approximately 220 feet north. The battery storage unit would be located in the parking lot, west of the main building, and approximately 260 feet south of the single-family houses on Fostoria Street. Noise levels at this receptor were modeled and are shown in Table 22 in comparison to City of South Gate and City of Cudahy's exterior day and night stationary noise standards.

Table 22 HVAC Equipment Noise Levels at Nearest Noise Sensitive Receptor

Noise Source	Modeled Noise Level (dBA) @ Receptor ¹	Threshold Applied	City Threshold Exceeded?	Existing Ambient Noise Levels ₂	FICON Incremental Noise Increase Threshold Exceeded? ³
HVAC Equipment	43.7 L_{eq}	South Gates's nighttime L_{eq} standard of 40 dBA	YES	57.0 dBA L_{eq}	NO
		South Gate's daytime L_{eq} standard of 50 dBA	NO	63.9 dBA L_{eq}	NO
	46.7 L_{max}	Cudahy's nighttime L_{max} standard of 45 dBA	YES	70.2 dBA L_{max}	NO
		Cudahy's daytime L_{max} standard of 65 dBA	NO	72.6 dBA L_{max}	NO
Battery Storage Unit	36.2 L_{eq}	South Gates's nighttime L_{eq} standard of 40 dBA	NO	57.0 dBA L_{eq}	NO
		South Gate's daytime L_{eq} standard of 50 dBA	NO	63.9 dBA L_{eq}	NO
	39.2 L_{max}	Cudahy's nighttime L_{max} standard of 45 dBA	NO	70.2 dBA L_{max}	NO
		Cudahy's daytime L_{max} standard of 65 dBA	NO	72.6 dBA L_{max}	NO

Notes: L_{eq} = Equivalent Continuous Sound Level; L_{max} = maximum instantaneous noise level; HVAC = heating, ventilation, and air conditioning.

¹ Modeled Noise Level (dBA) @ Receptor (220 feet for HVAC, 260 feet for Battery)

² Existing noise obtained from existing noise survey conducted for this project. For comparison to daytime thresholds, daytime average existing levels were used. For comparison to nighttime thresholds, nighttime average existing noise levels were used.

³ FICON's incremental noise increase threshold is 5 dBA for ambient noise environments of 60 dBA L_{50} or less, 3 dBA when noise is 60-65 dBA, and 1.5 dBA when noise levels are above 65 dBA.

Source: Data modeled by Ascent Environmental in 2023.

As shown above Table 22, noise levels generated from HVAC equipment would result in 43.7 dBA L_{eq} and 46.7 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 220 feet north of the anticipated location of HVAC units) and noise levels generated from the battery storage unit would result in 36.2 dBA L_{eq} and 39.2 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 260 feet north of the battery storage unit). Daytime operation of HVAC equipment would not exceed City of South Gate or City of Cudahy's daytime thresholds of 45 dBA L_{eq} or 65 dBA L_{max} , respectively. Daytime or nighttime operation of HVAC equipment would not result in substantial increases in noise over existing ambient noise levels. However, nighttime operation of HVAC equipment would exceed the City of South Gate's and City of Cudahy's nighttime standards of 40 dBA L_{eq} and 45 dBA L_{max} , respectively, and impacts would be significant. Because existing ambient noise levels currently exceed the noise standards, the incremental noise increase would not be substantial. Daytime or nighttime operation of the battery storage unit would not exceed the City of South Gate or the City of Cudahy's daytime or nighttime standards and would not result in a substantial increase in noise over existing levels. It should be noted that the building height and architectural features, such as parapets, are not accounted for in the modeling and would reduce noise levels at receptors when appropriately designed.

Truck Delivery and Loading/Unloading Activities

Noise Source Characterization

Project operations would include stationary noise sources associated with delivery trucks entering/leaving roll-up doors and loading/unloading activities at loading docks. Regarding delivery operations, side-loader trucks would enter the warehouse for loading and unloading from high-speed electric roll-up doors along the south side of the warehouse and would exit the warehouse after loading along the north side of the warehouse through a second set of high-speed electric roll-up doors. As trucks enter/exit the facility, the roll-up doors at these locations would open, letting trucks pass. Noise would be generated by trucks idling, accelerating (e.g., engine revving up, tire noise), and decelerating (i.e., brake noise) as well as from the roll-up doors opening and closing. Noise from loading/unloading activities includes noise associated with trailer truck doors opening/closing, trucks braking, engines idling, pallets being dropped/slammed, and loading equipment moving items between the loading docks and trucks. All these discrete activities occurring together combine to generate noise that is treated as a stationary noise source, emitting noise from the center of activities in a spherical fashion.

All these discrete activities occurring together combine to generate noise that is treated as a stationary noise source, emitting noise from the center of activities in a spherical fashion.

Reference Noise Levels

To evaluate anticipated noise from the proposed roll-up doors, truck movements, and load/unloading activities, two sets of measurements at existing similar facilities were taken by Ascent. Measurements of the operation of existing metal roll-up doors were taken at the Harbor Distributing warehouse (13344 S. Main Street, Los Angeles, CA) and measurements of truck deliveries and loading/unloading activities were taken at the Anheuser Busch Distribution Facility (12065 Pike Street, Santa Fe Springs, CA). For each measurement, L_{eq} , L_{max} , L_{min} , and percentile measurements were recorded. See Appendix A for complete set of raw measurement data. Measurements conducted for this analysis resulted in three discrete reference noise levels used to evaluate proposed operations, summarized below:

- **Roll-Up Door:** One door: 67.8 dBA L_{eq} / 73.5 dBA L_{max} ; three doors: 72.6 dBA L_{eq} / 78.3 dBA L_{max} @ 5 feet
- **Trucks Entering/Leaving:** 65.8 dBA L_{eq} / 81.4 dBA L_{max} @ 16 feet
- **Trucks Loading/Unloading at Docks:** 59.3 dBA L_{eq} / 79.6 dBA L_{max} @ 100 feet

For the roll-up door measurements, the meter was located 5 feet from the roll-up door and recorded noise levels in 1-second intervals of the door opening and closing. Noise generated from the door included the whooshing sound of the door moving as well as metal clanking. Observations during truck movement activities consisted of trucks passing through the gate to leave or enter the facility. Loading and unloading activities consisted of trucks idling, brake noise, opening and raising the truck trailer doors, and loading and unloading pallets from the back of the truck. Thus, based on the observations of activities occurring at the existing facilities, reference levels obtained for the roll-up doors, trucks entering/leaving, and the loading/unloading are representative of noise levels that would occur with the proposed project. However, one exception is that the trucks operating at the existing facility were all diesel-powered, whereas proposed trucks would be approximately 60 percent EV. When characterizing noise from truck activity and movement, there are various sources (e.g., air brake noise, tire noise, truck doors opening/closing/slamming, engine noise). Based on reference noise levels available for the proposed EV trucks, it is anticipated that truck travel noise could be as much as 6.5 dBA lower than conventional diesel trucks (See Appendix A for noise data and calculations).

Therefore, it is reasonable to assume that project-generated truck noise would be lower than values presented here, once EV percentages increase in the truck fleet. Considering the project would not include 100 percent EV trucks, and considering various noise sources involved (i.e., not all noise generated would be from trucks), the exact reduction is unknown; therefore, reference noise measurements taken at the existing facility were conservatively applied in this analysis.

Stationary Source Noise Analysis

Peak hours for the truck movements through the warehouse, including roll-up door activities and loading/unloading of trucks would occur from 11:00 a.m. to 6:00 p.m., but also occur in the overnight hours between 6:00 p.m. and 3:00 a.m.

Noise generated by the roll-up doors and trucks entering/leaving the doors were evaluated separately. Based on the anticipated maximum truck volume of 12 trucks per hour and accounting for potential queuing/idling of up to 30 seconds per truck, stationary truck noise could occur for cumulative period of six minutes per hour. As allowed by the City of Cudahy noise code, maximum noise level standards for sources operating for this duration can be increased by 5 dBA (Table 15). As such, stationary noise standards for stationary truck noise were increased by 5 dBA.

Roll-up door operation/truck movements would occur approximately 85 feet south from the nearest sensitive receptors, the residences on Fostoria Street and loading /unloading activities would take place within the warehouse approximately 110 feet south of the residences on Fostoria Street. The location on the northern side of the building was evaluated as that location is closest to nearby sensitive receptors (i.e., residences along Fostoria Street). Loading dock noise would occur approximately 375 feet from these receptors but would be shielded by the warehouse structure. These distances were calculated based on the proposed site plan and anticipated location of the roll-up doors and loading areas within the warehouse structure. The analysis assumed that up to three of the four roll-up doors could operate at the same time, to generate a maximum noise level. Although loading/unloading activities would occur indoors, this analysis conservatively assumed that the roll-up doors could potentially be open during loading activities.

Table 23 below compares noise from each source to City of South Gate's stationary noise source standards (day and night), City of Cudahy's stationary L_{max} standards (day and night), and FICON's incremental increase standards.

Table 23 Operational Stationary Noise Levels

Noise Source	Reference Noise Level ¹	Noise Level at Sensitive Receptor ²	Stationary Noise Threshold Applied	City Threshold Exceeded?	Existing Ambient Noise Level ³	FICON Incremental Noise Increase Threshold Exceeded? ⁴
Roll-Up Door	72.6 dBA L _{eq}	48.0 dBA L _{eq}	South Gates's nighttime L _{eq} standard of 40 dBA	YES	57.0 dBA L _{eq}	NO
			South Gate's daytime L _{eq} standard of 50 dBA	NO	63.9 dBA L _{eq}	NO
	78.3 dBA L _{max}	53.7 dBA L _{max}	Cudahy's nighttime L _{max} standard of 45 dBA	YES	70.2 dBA L _{max}	NO
			Cudahy's daytime L _{max} standard of 65 dBA	NO	72.6 dBA L _{max}	NO
Trucks Entering/Leaving	65.8 dBA L _{eq}	49.9 dBA L _{eq}	South Gates's nighttime L _{eq} standard of 40 dBA	YES	57.0 dBA L _{eq}	NO
			South Gate's daytime L _{eq} standard of 50 dBA	NO	63.9 dBA L _{eq}	NO
	81.4 dBA L _{max}	65.5 dBA L _{max}	Cudahy's nighttime L _{max} standard of 50 dBA ⁷	YES	70.2 dBA L _{max}	NO
			Cudahy's daytime L _{max} standard of 70 dBA ⁷	NO	72.6 dBA L _{max}	NO
Loading/Unloading Inside Warehouse	59.3 dBA L _{eq}	58.5 dBA L _{eq}	South Gates's nighttime L _{eq} standard of 40 dBA	YES	57.0 dBA L _{eq}	NO
			South Gate's daytime L _{eq} standard of 50 dBA	YES	63.9 dBA L _{eq}	NO
	79.6 dBA L _{max}	78.8 dBA L _{max}	Cudahy's nighttime L _{max} standard of 45 dBA	YES	70.2 dBA L _{max}	YES
			Cudahy's daytime L _{max} standard of 65 dBA	YES	72.6 dBA L _{max}	YES
Loading/Unloading Outside (Southern façade) Warehouse ⁶	59.3 dBA L _{eq}	37.8 dBA L _{eq}	South Gates's nighttime L _{eq} standard of 40 dBA	NO	57.0 dBA L _{eq}	NO
			South Gate's daytime L _{eq} standard of 50 dBA	NO	63.9 dBA L _{eq}	NO
	79.6 dBA L _{max}	58.5 dBA L _{max}	Cudahy's nighttime L _{max} standard of 45 dBA	NO	70.2 dBA L _{max}	NO
			Cudahy's daytime L _{max} standard of 65 dBA	NO	72.6 dBA L _{max}	NO

Notes: **bold** text represents an exceedance of a standard; L_{eq} = Equivalent Continuous Sound Level; L_{max} = maximum instantaneous noise level; dBA = A-weighted decibel.

¹ Reference noise levels for the anticipated noise sources; 1) roll-up door measured at 5 feet, 2) trucks entering/leaving measured at 16 feet, and 2) truck loading/unloading activity measured at 100 feet. Noise measurements were conducted at an existing similar facilities in Los Angeles and Santa Fe Springs. Measurement data is included in Appendix A. Note that reference noise levels were from diesel trucks, whereas proposed trucks would be electric and thus, would likely produce less noise than reported here.

² The trucks entering/leaving and roll-up door noise were measured to be approximately 85 feet south of the residences along Fostoria Street, based on the conceptual site plan available for the project. Loading/unloading would occur inside the building approximately 110 feet south of the residences along Fostoria Street and on the southern portion of the building 375 from residences along Fostoria Street. Noise levels presented above are based on these distances and using reference levels obtained for this project. See Appendix A for calculations and measurement data.

³ Existing noise levels obtained from existing noise survey conducted for this project. For comparison to daytime thresholds, daytime average existing levels were used. For comparison to nighttime thresholds, nighttime average existing noise levels were used.

⁴ FICON incremental noise increase threshold is 5 dBA for ambient noise environments of 60 dBA L₅₀ or less.

⁶ Applies a 10-db reduction (Caltrans 2013a: Table 7-1) from the intervening warehouse structure between docks and residences

⁷ in accordance with City of Cudahy's stationary noise standard (Table 15 and 16 in this Noise Study), standards were increased by 5 dBA for trucks entering/leaving activities which would occur for a cumulative period of 6 minutes in one hour.

Source: Data modeled by Ascent Environmental in 2023.

Based on the modeling conducted noise associated with the roll-up doors along the northern side of the building would exceed the City of South Gate's nighttime noise threshold of 40 dBA L_{eq} and the City of Cudahy's nighttime noise standard of 45 dBA L_{max} but would not result in a substantial increase in noise over existing conditions.

Truck activity (trucks accelerating/decelerating/idling) at the roll-up doors on the northern side of the building would exceed the City of South Gate's nighttime noise threshold of 40 dBA L_{eq} and the City of Cudahy's adjusted nighttime noise standard of 50 dBA L_{max} but would not result in a substantial increase in noise over existing conditions after mitigation (see Table 24).

The loading/unloading activities within the warehouse (assuming doors are open during this activity) would exceed City of South Gate's daytime and nighttime stationary noise standards of 50 dBA L_{eq} and 40 dBA L_{eq} , respectively and would exceed the City of Cudahy's daytime and nighttime stationary noise standards of 65 dBA L_{max} and 45 dBA L_{max} , respectively. The loading/unloading activities located on the exterior of the southern side of the building, accounting for a 10 dB reduction in noise from the intervening warehouse structure, would not exceed either South Gate or Cudahy's daytime or nighttime noise standards and would not result in a substantial increase in noise over existing levels. Therefore, substantial increases in noise relative to existing ambient noise levels would only occur during the loading/unloading activities (if doors were open), during both daytime and nighttime, which would result in substantial instantaneous maximum noise level increases (i.e., 1.5 dBA or more) over existing conditions.

Parking Facilities

Project-generated parking facility noise would be highest during morning hours of a surge day when employees arrive for the day and the peak number of trucks and trailers arrive for loading and unloading. The daytime noise impact associated with parking facilities is analyzed assuming a surge day with a maximum flow of 338 employees arriving for one hour to ensure that the worst-case scenario was analyzed. The closest sensitive receptor to the parking lot would be the single-family residences on Fostoria Street, approximately 385 feet north of the proposed employee parking lot. Because the project would operate 24 hours a day, the parking lot would be used during nighttime hours and would create additional noise during nighttime hours. The parking facility nighttime noise impact is analyzed assuming the max of 193 employees arriving for one hour to ensure that the worst-case scenario was analyzed. Table 24 summarizes the results. See Appendix A for detailed modeling inputs and results.

Table 24 Parking Lot Noise Levels at Nearest Noise Sensitive Receptor

Noise Source	Reference Noise Level ¹	Noise Level at Sensitive Receptor ²	Threshold Applied	City Threshold Exceeded?	Existing Ambient Noise Level ³	FICON Incremental Noise Increase (5 dB) Threshold Exceeded? ⁴
Daytime Peak Parking Activity	57.7 dBA L_{eq}	39.9 dBA L_{eq}	South Gate's daytime L_{eq} standard of 50 dBA	NO	63.9 dBA L_{eq}	NO
	78.1 dBA L_{max}	49.9 dBA L_{max}	Cudahy's daytime L_{max} standard of 65 dBA	NO	72.6 dBA L_{max}	NO
Nighttime Peak Parking Activity	55.2 dBA L_{eq}	37.5 dBA L_{eq}	South Gates's nighttime standard of 40 dBA L_{eq}	NO	57.0 dBA L_{eq}	NO
	78.1 dBA L_{max}	49.9 dBA L_{max}	Cudahy's nighttime standard of 45 dBA L_{max}	YES	70.2 dBA L_{max}	NO

Notes: dBA= A-weighted decibels; L_{eq} = Equivalent Continuous Sound Level; L_{max} =maximum instantaneous noise level.

¹ reference noise levels for parking lot L_{eq} were obtained by modeling a worst-case hour using FTA methods. See Appendix A. Reference L_{max} levels were obtained from measurements conducted at a parking lot by Ascent.

² The distance to the nearest sensitive receptors were obtained by reviewing project site plans and measuring from the center of the proposed parking lot location to the residences located along Fostoria Street (i.e., 385 feet)

³ FICON incremental noise increase threshold is 5 dBA for ambient noise environments of 60 dBA or less, 3 dBA increase where existing levels are between 60 dBA and 65 dBA, and 1.5 dBA where noise levels are above 65 dBA.

Source: Data modeled by Ascent Environmental in 2023.

As shown in Table 24, parking lot activities during the peak hours of a surge day would not exceed either City of South Gate's or City of Cudahy's daytime stationary noise standards of 65 dBA L_{eq} or 50 dBA L_{max} , respectively. If parking activities were to occur at night, City of South Gate's nighttime standard of 40 dBA L_{eq} would not be exceeded but City of Cudahy's nighttime standard of 45 dBA L_{max} would; therefore, impacts would be significant. Considering existing ambient noise levels are higher than anticipated parking lot noise, the FICON threshold would not be exceeded and a substantial increase in noise would not occur.

Fleet Maintenance Building

A fleet maintenance building would be located in the southeast corner of the project site, approximately 680 feet south of the nearest sensitive receptor, the residential properties on Fostoria Street. The dominating noise source at

the residential houses on Fostoria Street would be the operational activities located closest to the sensitive receptors (loading and unloading, the sliding door activities, the HVAC and battery storage units, and the parking lot). Noise-generating activities from the fleet maintenance building could include activities such as changing tires, general vehicle maintenance, vehicles idling and braking, and trucks passing. Because many of these activities such as trucks braking, idling, and passing by are similar to the noise-generating activities from other activities occurring on the project site, noise at the fleet maintenance building would be expected to be similar to noise associated with trucks loading/unloading (i.e., 59.3 dBA L_{eq}). Due to the logarithmic properties of noise, when combining two similar noise sources, an increase in 3 dB would occur (i.e., 10 dBA + 10 dBA = 13 dBA, not 20 dBA) and as noise reduces with increasing distance from the source, noise sources that are further away from a receiver contribute far less to the overall noise levels at that receiver. Therefore, considering that the fleet maintenance building is over 600 feet from the nearest receptors to the north of the project site, noise sources closest to the receptors (i.e., loading/unloading, trucks passing, gates operating, parking lots) would be the dominant noise sources at this location and noise from the fleet maintenance building would not substantially contribute to the overall noise levels at the nearest sensitive receptors.

In addition to the above analysis that considers stationary noise standards, the City of South Gate has a 65 dBA CNEL noise standard. The operational noise sources (HVAC units, battery storage unit, parking lot, truck movement, and loading/unloading) were identified and attenuated to the nearest sensitive receptor (residences on Fostoria Street). Based on anticipated operational activities, all of these sources, with the exception of the loading/unloading activities from 8:00 a.m. to 11:00 a.m., would operate 24 hours per day. Thus, the CNEL was calculated by applying the combined hourly noise levels for HVAC operation, parking lot activity, trucks entering/leaving for 24 hours of the day and loading/unloading from 11:00 a.m. to 8:00 a.m., the following day (i.e., 21 hours per day). The combined noise level from all operational activities could reach 66.2 dBA CNEL, which exceeds the 65 dBA CNEL standard by 1.2 decibels. Modeling details and inputs can be found in Appendix A.

Summary

Project operation would result in new stationary noise sources, including onsite HVAC equipment, noise associated with roll-up doors, trucks entering/leaving through the roll-up doors, loading/unloading activities, new surface parking lots, new battery storage units, and noise at the fleet maintenance building.

Noise levels generated from HVAC equipment would result in 43.7 dBA L_{eq} and 46.7 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 220 feet north of the anticipated location of HVAC units). These noise levels would not exceed City of South Gate's daytime stationary noise standards of 50 dBA L_{eq} but would exceed the nighttime standard of 40 dBA L_{eq} . Similarly, HVAC noise would not exceed the City of Cudahy's daytime standard of 65 dBA L_{max} but would exceed their nighttime standard of 45 dBA L_{max} . Therefore, this impact would be significant. Daytime or nighttime operation of HVAC equipment would not result in substantial increases in noise over existing ambient noise levels.

Noise levels generated from the roll-up doors would result in 46.6 dBA L_{eq} and 52.3 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 100 feet north of the northern roll-up doors). These noise levels would exceed City of South Gate's nighttime stationary noise standards of 40 dBA L_{eq} and would exceed the City of Cudahy's nighttime stationary noise standards of 45 dBA L_{max} . Therefore, this impact would be significant. It should be noted that these noise sources would not result in a substantial increase in noise in either South Gate or Cudahy as projected noise from this source would be lower than existing noise levels based on measurements conducted.

Noise levels generated from the trucks entering/leaving the roll-up doors would result in 49.9 dBA L_{eq} and 65.5 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 100 feet north of the northern roll-up doors). These noise levels would exceed City of South Gate's nighttime stationary noise standards of 40 dBA L_{eq} , and would exceed the City of Cudahy's (adjusted) nighttime stationary noise standard of 50 dBA L_{max} . Therefore, this impact would be significant. It should be noted that these noise sources would not result in a substantial increase in noise in either South Gate or Cudahy as projected noise from this source would be lower than existing noise levels based on measurements conducted.

Noise generated from loading/unloading activities inside the warehouse would result in 58.5 dBA L_{eq} and 78.8 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 110 feet north of the loading areas). These noise levels would exceed the City of South Gate's daytime and nighttime stationary noise standards of 50 dBA L_{eq} and 40 dBA L_{eq} , respectively and would exceed the City of Cudahy's daytime and nighttime stationary noise standards of 65 dBA L_{max} and 45 dBA L_{max} , respectively. Therefore, this impact would be significant. Additionally, substantial increases in noise (i.e., a 1.5 increase over existing noise levels where existing levels are greater than 65 dBA) would occur within the City of Cudahy during both daytime and nighttime loading dock activities.

The loading/unloading activities located on the exterior of the southern side of the building, accounting for a 10 dB reduction in noise from the intervening warehouse structure, would result in 37.8 dBA L_{eq} and 58.5 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 110 feet north of the loading areas). These levels would not exceed either South Gate or Cudahy's daytime or nighttime noise standards and not result in a substantial increase in noise in either South Gate or Cudahy as projected noise from this source would be lower than existing noise levels based on measurements conducted.

Noise generated from the proposed parking lot during the daytime would result in 39.9 dBA L_{eq} and 49.9 dBA L_{max} at the nearest sensitive receptors (i.e., residential uses 385 feet north from the proposed parking lot location). These noise levels would not exceed the City of South Gate's daytime or nighttime stationary noise standards of 50 dBA L_{eq} and 40 dBA L_{eq} , respectively. Parking activities occurring during the night could result in noise levels of 37.5 dBA L_{eq} and 49.9 dBA L_{max} which would not exceed the City of South Gate's nighttime standard of 40 dBA L_{eq} but would exceed the City of Cudahy's nighttime standard of 45 dBA L_{max} . Considering existing ambient noise levels are higher than anticipated parking lot noise, a substantial increase in noise would not occur from parking activities.

Considering the combined noise levels of all individual noise sources that would occur during the day and night hours, the 65 dBA CNEL standard would be exceeded by 1.2 decibel. Operational stationary noise impacts would be **potentially significant**.

Mitigation Measures

Mitigation Measure NOISE-3a: Reduce Operational Noise from HVAC Equipment

For all new stationary equipment associated with newly constructed buildings (i.e., HVAC equipment), the applicant shall comply with the following:

- Building air conditioning units for the proposed buildings shall be located a minimum of 350 feet from any residential structure; or, if this setback requirement cannot be met, other noise-reduction measures may be incorporated that include, but are not limited to, the selection of alternative or lower noise-generating equipment, relocation of equipment such that the line-of-sight to receptors is blocked, and use of equipment enclosures or roof parapets.
- Final map plan for project building locations and mechanical systems shall ensure that external building mechanical equipment (e.g., HVAC systems, battery storage) incorporate noise-reduction features sufficient to reduce operational noise levels at the nearest sensitive receptors to the applicable nighttime standards (i.e., 40 dBA L_{eq} and 45 dBA L_{max}). Prior to final approval of the location of any mechanical equipment a noise test shall be required to demonstrate compliance with these standards. Equipment for the test shall be provided by the owner or contractor and the test shall be conducted by a qualified acoustical professional, approved by the City of South Gate. A copy of noise test results on mechanical equipment shall be submitted to the City of South Gate for review to ensure that noise levels do not exceed maximum allowable levels for the applicable noise zone. (Note that if the above mentioned set back distance is met, acoustical testing is not required)

Mitigation Measure NOISE-3b: Reduce Operational Truck and Loading/Unloading Noise

To reduce the increases in noise associated with onsite truck and loading/unloading activities, the following measures shall be adopted as conditions of approval and implemented by the project applicant.

- **3b1:** To reduce noise exposure at existing residences along Fostoria Street, the proposed wall shall be constructed solid and continuous (i.e., no breaks, gaps, spaces) along the entire northern property boundary (from the northwest corner of the site to the LA River). The wall shall be constructed of concrete masonry to completely block the line-of-sight, a minimum of 10 feet tall, between the planned onsite truck route and the receptors north of the property, to achieve a minimum of a 12-db reduction in noise. Prior to issuance of building occupancy and operational permits, the applicant shall demonstrate to the City of South Gate that the sound barrier meets the above aforementioned requirements. To demonstrate compliance, a qualified acoustical professional, at the financial responsibility of the applicant, shall conduct a site assessment and provide documentation of noise attenuation ability of the constructed sound barrier, for City review and approval.
- **3b2:** Enclose the interior loading areas with solid walls (no gates or windows) such that the noise barrier completely blocks the line-of-sight between the source and offsite receptors; or, design the northern building façade to achieve a minimum of 22-dB (i.e., minimum reduction needed to achieve thresholds in combination with required sound wall) noise reduction (with doors and windows closed), and if the final design does include doors/windows, for any operational activities that would take place within the building, all doors and windows shall remain closed for the duration of the noise-generating activity from loading/unloading activities and truck movements within the warehouse.
- **3b3:** To reduce the duration of continuous “stationary” noise associated with trucks entering/leaving the northern roll-up doors during the nighttime hours of 10:00 p.m. to 7:00 a.m., either limit the maximum hourly truck activity to no more than 10 trucks entering or leaving the warehouse or enforce a strict no idling/queuing facility policy such that trucks do not idle/queue for more than 15 seconds prior to entering or leaving through a roll-up door. This could be achieved through a combination of measures, including but not limited to internal an employment policy and/or roll-up door sensor sensitivity calibration.
- **3b4:** A sign shall be posted on the project site in a place that is visible to the general public (e.g., building entrance, property gates), including the contact information for an onsite facilities manager and the City’s code compliance officer, where noise complaints can be directed to. The facilities manager shall keep records of any complaint received (e.g., time, date, contact information for the origin of the complaint), and a record of how the complaint was addressed.
- **3b5:** Within the first month of full operation, a noise test shall be conducted by a qualified acoustical professional, to demonstrate compliance with the City of South Gate’s noise standards and to reduce the incremental increases in noise based on the thresholds in this analysis at all nearby and affected residential land uses and submitted to the City for approval. If noise standards are not in compliance, the applicant shall modify operations or incorporate physical design measures to reduce noise impacts accordingly until compliance can be demonstrated.

Significance After Mitigation

Implementation of Mitigation Measure NOISE-3a would require the appropriate noise-reducing design considerations (e.g., setbacks, enclosures) to ensure that noise from HVAC and mechanical equipment do not exceed applicable noise standards. Further, the measure requires that compliance with noise standards be demonstrated prior to project operation through onsite noise measurements. Implementation of this measure would ensure that stationary mechanical equipment would not result in exceedances of noise standards or a substantial increase in noise.

Implementation of Mitigation Measure NOISE-3b1 would reduce noise exposure at the nearby receptors from all onsite noise sources by up to 12-dBA by incorporation of a sound wall, this reduction would be adequate to achieve the 65 dBA CNEL standard.

A reduction in 12-dBA of noise would be adequate to achieve the necessary reduction in noise associated with the roll-up doors (i.e., 8.0 dBA to achieve South Gates nighttime standard of 40 dBA L_{eq} and 8.7 dBA to achieve Cudahy’s’ nighttime standard of 45 dBA L_{max}) and from nighttime parking lot activities (i.e., 5 dBA to achieve Cudahy’s’ nighttime standard of 45 dBA L_{max}), and impacts from these sources would be reduced to below applicable standards.

Regarding noise from loading/unloading that would occur within the building, a 22 dBA exterior-to-interior noise reduction could be achieved with building doors and windows closed and in combination with a sound wall at the property line would achieve the needed 33.8 dBA reduction in L_{max} levels to meet the City of Cudahy’s nighttime 45 dBA L_{max} standard. In addition, the necessary 18.5 dBA reduction to meet the City of South Gate’s nighttime standard of 40 dBA L_{eq} would also be achieved. However, if the doors or any windows were opened during nighttime operations, the necessary noise reductions would not be achieved by the sound wall alone, and City of South Gate and Cudahy nighttime standards (40 dBA L_{eq} , 45 dBA L_{max}) would be exceeded. Compliance with Mitigation Measure NOISE-3b would require that doors remain closed during noisy nighttime operations (i.e., loading/unloading activities) within the building, ensuring that applicable noise standards would not be exceeded.

Regarding noise associated with trucks entering/leaving through the roll-up doors, limiting the number of trucks/hour to 10 would ensure that the cumulative duration of truck activity entering/leaving the roll-up doors would not exceed 5 minutes in one hour, and, thus, the allowable L_{max} limits in the City of Cudahy would be adjusted to daytime of 75 dBA L_{max} and nighttime 55 dBA L_{max} and would be achieved with the sound wall in place (i.e., nighttime 65.5 dBA L_{max} from trucks – 12 dBA from the sound wall = 53.5 dBA L_{max} , below the adjusted nighttime threshold of 55 dBA L_{max}).

Table 25 presents the operational stationary noise levels for noise associated with the roll-up doors, truck activity, and loading/unloaded after implementation of mitigation. As shown in the table, noise is reduced to below all applicable standards with incorporation of mitigation, and impacts would be reduced to **less than significant**.

Table 25 Operational Stationary Noise Levels With Mitigation

Noise Source	Noise Level at Sensitive Receptor	Stationary Noise Threshold Applied	Mitigation Reduction	Noise Levels with Mitigation	Threshold Exceeded?
Roll-Up Doors	48.0 dBA L_{eq}	South Gates’s nighttime L_{eq} standard of 40 dBA	12 dBA (Soundwall)	36.0 dBA L_{eq}	NO
		South Gate’s daytime L_{eq} standard of 50 dBA			NO
	53.7 dBA L_{max}	Cudahy’s nighttime L_{max} standard of 45 dBA		41.7 dBA L_{max}	NO
		Cudahy’s daytime L_{max} standard of 65 dBA			NO
Trucks Entering/Leaving	49.9 dBA L_{eq}	South Gates’s nighttime L_{eq} standard of 40 dBA	12 dBA (Soundwall)	37.9 dBA L_{eq}	NO
		South Gate’s daytime L_{eq} standard of 50 dBA			NO
	65.5 dBA L_{max}	Cudahy’s nighttime L_{max} standard of 55 dBA		53.5 dBA L_{max}	NO
		Cudahy’s daytime L_{max} standard of 65 dBA			NO
Loading/Unloading Inside Warehouse	58.5 dBA L_{eq}	South Gates’s nighttime L_{eq} standard of 40 dBA	34 dBA (12 dB, Soundwall + 22 dBA Building Façade w/closed doors)	24.5 dBA L_{eq}	NO
		South Gate’s daytime L_{eq} standard of 50 dBA			NO
	78.8 dBA L_{max}	Cudahy’s nighttime L_{max} standard of 45 dBA		44.8 dBA L_{max}	NO
		Cudahy’s daytime L_{max} standard of 65 dBA			NO
Nighttime Parking Activity	49.9 dBA L_{max}	Cudahy’s nighttime standard of 45 dBA L_{max}	12 dBA (Soundwall)	37.9 dBA L_{max}	NO

Notes: L_{eq} = Equivalent Continuous Sound Level; L_{max} = maximum instantaneous noise level; dBA = A-weighted decibel.

Source: Data modeled by Ascent Environmental in 2023.

Impact 4: Operational Mobile Source Noise

Project-generated vehicle trips (employee passenger vehicles and heavy-duty trucks) would result in an increase in average daily traffic volumes and associated increases in traffic noise levels along nearby affected roadway segments as well as introduce a new onsite mobile-source (i.e., truck route) that could contribute to noise increases in the project vicinity. Each scenario is evaluated separately below.

Regional Noise Increases

To analyze the impact of project-generated operational transportation noise sources, traffic noise levels under existing and existing-plus-project conditions were modeled for affected roadway segments. Refer to Appendix A for detailed noise modeling input parameters.

Table 26 summarizes the modeled traffic noise levels at the nearest applicable offsite receptors from the roadway centerlines under existing and existing plus project conditions, along with the overall net change in noise level as a result of project-generated traffic. Note that the analysis conservatively applied all project-generated trips to each nearby road; thus, the modeling represents an absolute worst-case scenario. Depending on how project trips are distributed across the various roads, incremental noise increases on each road would be expected to be lower than shown in this analysis.

According to FICON, areas where the ambient noise levels is below 60 dBA, increases of 5 dBA or more would be considered substantial, where existing levels range from 60 to 65 dB, increased levels of annoyance would be anticipated at increases of 3 dB or greater, and in areas where noise currently exceed 65 dBA, increases of 1.5 dBA would be considered substantial (FICON 1992). These standards were applied to project-generated traffic noise increase for purposes of determining significance.

Table 26 Summary of Modeled Existing Plus Project Noise Levels

Roadway Segment	Segment Description	Existing Condition Noise Levels (CNEL)	FICON Incremental Noise Increase Threshold	Existing plus Project Conditions (CNEL)	Traffic Noise Level Increase (dBA)	Exceeds Threshold?
Patata Street	Wilcox Ave to Atlantic Ave	58.2	5 dBA	61.4	3.2	NO
Firestone Blvd	Rayo Ave to Atlantic Ave	68.6	1.5 dBA	69.0	0.4	NO
Atlantic Ave	Southern Ave to Firestone Blvd	64.7	3 dBA	65.5	0.8	NO
Atlantic Ave	Firestone Blvd to Azalea West	67.2	1.5 dBA	67.7	0.5	NO
Atlantic Ave	Azalea West to Patata St	67.2	1.5 dBA	67.7	0.5	NO
Atlantic Ave	Patata St to Cecelia St	64.3	3 dBA	65.2	0.9	NO
Atlantic Ave	Cecelia St to Santa Ana	60.0	3 dBA	62.1	2.1	NO
Wilcox Ave	Patata St to Cecelia St	58.2	5 dBA	61.1	2.9	NO
Wilcox Ave	Cecelia St to Santa Ana St	59.7	5 dBA	61.9	2.3	NO

Notes: CNEL = Community Noise Equivalent Level

All modeling assumes average pavement, level roadways (less than 1.5 percent grade), constant traffic flow, and does not account for shielding of any type or finite roadway adjustments. All noise levels are reported as A-weighted noise levels. For additional details, refer to Appendix A for detailed traffic data, and traffic-noise modeling input data and output results.

Source: Data modeled by Ascent Environmental in 2023.

As shown in Table 26, the project would not result in a substantial increase ambient noise levels from traffic noise compared to existing conditions and would not represent a significant impact.

Onsite Truck Noise

In addition to long-term permanent changes in ambient noise levels on surrounding roadways, when evaluating noise impacts, especially from heavy-duty trucks, the potential to result in disturbance to sensitive receptors, including sleep awakenings, that could result in adverse health effects (e.g., stress, sleep deprivation), is also a consideration. This impact evaluates the potential for truck activity to result in sleep disturbance to nearby receptors as well as the long-term permanent increase in noise associated with onsite truck activities.

Nighttime operations would involve delivery trucks entering and leaving the facility during the early morning hours of the day. As trucks complete the loading/unloading process, they would exit the warehouse through the northern roll-up doors and would travel along the northern edge of the property to the main entrance location along Patata Street. Receptors nearest to the project site, most likely to be affected by this activity, include the residential receptors located along Fostoria Street directly adjacent and to the north of the project site.

To evaluate the potential for sleep disturbance from the anticipated truck activity that could occur during nighttime, the 65 dBA SEL (interior) standard established by FICON was used. Based on reference noise levels from FHWA, a heavy-duty truck traveling at 15 miles per hour (i.e., the highest speed that operational trucks would travel onsite) would result in an SEL of 75 at 50 feet from the center of the nearest travel lane (FHWA 2019). Using the proposed site plan and the location of the anticipated onsite truck route, the truck activity could be located as close as 32 feet (distance to nearest travel lane) from the adjacent residential uses to the north of the project site. See Figure 5 for distances to travel lane used in this analysis. Because this analysis is concerned with sleep disturbance, the distance from the nearest travel lane to the edge of the nearest residential structure was measured, rather than the distance from the travel lane to the residential property line. At this distance, a single truck passing by would result in noise levels of 76.9 dBA SEL, not accounting for a barrier between the travel route and sensitive receptors.

The proposed truck fleet would comprise 60 percent EVs at opening. An EV truck would generally achieve a 6.5 dBA noise reduction from standard diesel trucks. Applying an estimated 6.5 dBA reduction in noise for an EV truck, based on measurement data for electric trucks (See Appendix A), EV trucks passing by nearby residences could result in 70.5 dBA SEL.

Applying the 65 dBA SEL threshold and understanding that standard buildings can provide substantial (i.e., 15-20 dBA, [Caltrans 2011]) exterior-to-interior attenuation depending on structure type with closed windows, interior noise levels at nearby residences could be below the 65 dBA threshold (both with the use of diesel and EV trucks). However, it cannot be guaranteed that residents windows would be closed at all times and the condition and building attenuation factors for each residence cannot be determined without individual acoustic studies at each affected property. For these reasons single-event truck pass-by events that occur during the sensitive times of the day could have the potential to result in sleep disturbances to nearby residents.

Regarding substantial increases in noise, based on the anticipated peak activity levels of 150 trucks operating in one day, onsite truck-related noise would generate noise levels of 62.3 dBA CNEL for diesel trucks and 55.8 dBA CNEL applying the 6.5 dBA reduction from EV trucks, estimated at the property line of the project with adjacent residential zone and accounting for the proposed distance between the travel lane and the property based on the site plan shown in Figure 2.

Based on the noise measurements conducted at the project site, existing noise levels are 63.9 dBA CNEL. Considering that existing CNEL levels are higher than modeled truck noise, the project would not result in a substantial increase in noise over existing levels. Further, as discussed above, an EV truck could reduce noise by up to 6.5 dBA, thus, although the truck fleet would not be 100 percent EVs, replacement of some of the diesel trucks with EVs would reduce the overall noise levels, but to some degree less than the amount estimated for an individual truck. Nonetheless, under this worst-case scenario assuming all diesel trucks, onsite truck activity would not result in a substantial increase in noise over existing levels.

Because onsite truck activity could result in SEL levels of 76.98 dBA, exceeding the 65 dBA SEL threshold applied, the potential for sleep disturbance at nearby residences would exist and this impact would be **potentially significant**.

Mitigation Measures

Mitigation Measure NOISE-4a: Reduce Operational Onsite Truck Noise

Implement Mitigation Measure NOISE-3b1, which requires the construction of a sound wall along the northern property boundary to reduce noise exposure at offsite receptors by 12 db.

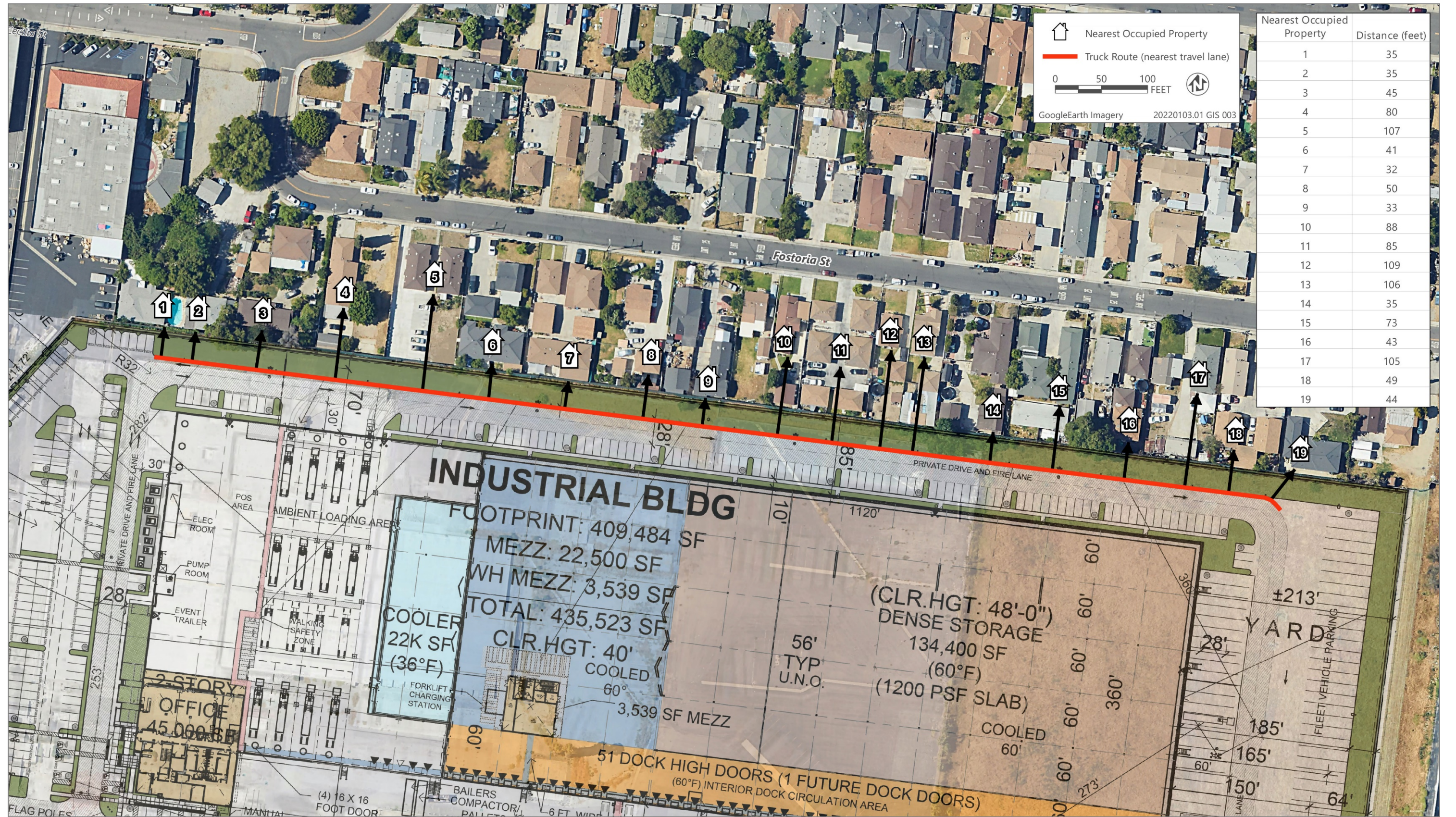
Mitigation Measure NOISE-4b: Siting of Onsite Truck Route

To ensure that applicable thresholds are not exceeded (nighttime SEL of 65 dBA and increases in noise above existing levels of 63.9 dBA CNEL), the final design of the onsite truck route to the north of the proposed building shall be sited such that distance from the edge of the nearest travel lane to the nearest adjacent occupied residential façade is no less than 32 feet. The final design shall be depicted on project plans, for City of South Gate approval prior to issuance of building permits.

Significance After Mitigation

The inclusion of a sound wall, required by Mitigation Measure NOISE-4, between the project site and adjacent residential properties would be constructed to reduce noise by 12 dBA, which would reduce truck noise to 64.9 dBA SEL and 50.3 dBA CNEL. A resulting noise level of 64.9 dBA SEL (exterior) would be below the interior threshold of 65 dBA SEL applied for evaluating sleep disturbance. In addition, when nearby residences have their windows closed and applying the minimum appropriate building attenuation of 15 dBA, interior levels would be reduced to 49.9 dBA SEL.

Estimated increases in noise would not be considered substantial prior to applying the noise reduction associated with the required soundwall; thus, the added noise reduction from the wall would further reduce project-generated onsite truck noise to below existing ambient levels. Ensuring that the distance between the proposed onsite truck route and nearby properties is adequate, per Mitigation Measure NOISE-5, in combination with the required soundwall would ensure that the interior noise level threshold of 65 dBA SEL and existing noise levels are not exceeded and this impact would be reduced to **less than significant**.



Sources: Adapted by Ascent in 2023.

Figure 5 Distance from Onsite Truck Route to Nearest Occupied Structure

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Appendix A

- Noise Measurement Data
- Noise Propagation Calculations

Noise Measurement Data

- Existing Ambient Noise Levels (Project Site)
- Reference Noise Measurements
 - Anheuser Busch, Santa Fe Springs
 - Harbor Distributing Center, Los Angeles
 - Parking Lot Noise, Squaw Valley

Summary

File Name on Meter LxT_Data.146.s
File Name on PC LxT_0003285-20230420 122424-LxT_Data.146.ldbin
Serial Number 0003285
Model SoundTrack LxT®
Firmware Version 2.302
User
Location
Job Description Long Term (LT) 1: 24-hour, onsite
Note

Measurement

Description
Start 2023-04-20 12:24:24
Stop 2023-04-21 14:08:14
Duration 25:43:50.102
Run Time 25:43:48.398
Pause 00:00:01.7
Pre-Calibration 2023-04-20 12:21:05
Post-Calibration None
Calibration Deviation ---

Overall Settings

RMS Weight A Weighting
Peak Weight A Weighting
Detector Slow
Preamplifier PRMLxT1L
Microphone Correction Off
Integration Method Linear
Overload 121.9 dB
Under Range Peak 78.2 A 75.2 C 80.2 Z dB
Under Range Limit 26.2 25.9 31.1 dB
Noise Floor 16.5 16.8 21.9 dB

Instrument Identification First Second Third

Results

LAeq 57.4 dB
LAE 107.1 dB
EA 5.656 mPa²h
EA8 1.759 mPa²h
EA40 8.793 mPa²h
LApeak (max) 2023-04-20 12:24:30 108.1 dB
LASmax 2023-04-21 06:56:17 83.3 dB
LASmin 2023-04-20 15:26:28 47.8 dB
SEA -99.9 dB

Exceedance Counts Duration
LAS > 85.0 dB 0 0.0 s
LAS > 115.0 dB 0 0.0 s
LApeak > 135.0 dB 0 0.0 s
LApeak > 137.0 dB 0 0.0 s
LApeak > 140.0 dB 0 0.0 s

LCeq 69.1 dB
LAeq 57.4 dB
LCeq - LAeq 11.7 dB
LAleq 59.0 dB
LAeq 57.4 dB
LAleq - LAeq 1.6 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	57.4		69.1			
Ls(max)	83.3	2023/04/21 6:56:17				
Ls(min)	47.8	2023/04/20 15:26:28				
LPeak(max)	108.1	2023/04/20 12:24:30				

Overload Count 0
Overload Duration 0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	3 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results		
Dose	2.97	0.18 %
Projected Dose	0.92	0.05 %
TWA (Projected)	56.2	57.4 dB
TWA (t)	64.6	62.5 dB
Lep (t)	62.5	62.5 dB

Statistics	
LA 3.00	64.1 dB
LA 8.00	60.8 dB
LA 16.00	58.7 dB
LA 25.00	57.3 dB
LA 50.00	54.0 dB
LA 90.00	50.6 dB

Calibration History		
Preamp	Date	dB re. 1V/Pa
PRMLxT1L	2023-04-20 12:21:05	-28.23
PRMLxT1L	2023-04-20 12:15:43	-28.27
PRMLxT1L	2023-04-20 11:25:27	-28.22
PRMLxT1L	2023-04-20 10:48:21	-28.18
PRMLxT1L	2023-04-20 10:48:00	-28.14
PRMLxT1L	2023-04-20 10:12:02	-28.25
PRMLxT1L	2023-04-20 09:22:48	-28.21
PRMLxT1L	2023-04-20 05:53:09	-28.17
PRMLxT1L	2023-04-20 04:58:32	-28.15
PRMLxT1L	2023-02-16 13:52:45	-28.11
PRMLxT1L	2023-02-16 12:38:23	-28.06

	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
PRMLxT1L	65.37	65.89	69.75	71.98	66.39	56.36	62.75	62.95	59.47	56.02	56.17	56.32	57.34	55.24	53.53	54.24	57.06	54.90	54.62	50.06	41.41	31.68	114.03	48.83	20.25	66.06	22.82	63.22	28.52	34.03	22.11	23.08	24.56	26.43	28.97	31.01
PRMLxT1L	41.54	48.03	51.27	52.51	61.11	58.99	63.61	62.00	58.53	56.62	60.83	54.62	58.36	52.99	50.46	53.21	48.48	49.51	49.07	44.14	36.94	30.22	113.93	48.73	18.75	65.98	22.57	63.15	28.35	33.87	22.10	22.95	24.21	26.33	28.45	30.60
PRMLxT1L	54.11	49.56	51.32	56.01	53.39	51.36	67.26	63.00	56.78	59.34	62.82	52.48	55.59	53.67	49.71	52.87	45.85	46.95	46.32	42.30	37.91	35.16	113.94	48.82	20.17	66.04	22.61	63.03	28.52	33.61	21.90	22.83	24.36	26.04	28.29	30.59
PRMLxT1L	93.18	72.86	49.55	58.51	51.92	65.81	65.50	60.96	63.52	58.10	55.36	56.27	54.47	55.20	59.05	51.18	53.11	52.15	52.87	46.95	41.63	39.31	113.95	48.87	22.78	65.90	22.16	63.00	28.29	33.59	22.45	23.20	41.67	25.97	28.68	31.51
PRMLxT1L	57.61	54.82	97.16	96.27	103.89	54.39	63.59	58.27	61.52	55.75	62.67	58.02	56.85	55.59	55.03	52.65	52.05	52.52	46.08	43.22	38.55	37.79	114.10	49.04	24.40	66.01	22.01	63.15	27.84	33.82	22.78	23.47	24.23	26.00	28.49	31.04
PRMLxT1L	50.48	51.81	57.85	55.24	67.59	62.22	59.85	63.05	54.95	55.33	58.78	56.20	82.52	81.18	76.66	69.95	70.93	68.71	67.47	60.64	60.14	64.62	113.93	61.68	49.47	70.16	49.03	66.33	60.17	55.82	53.23	51.90	50.48	48.89	47.72	46.85
PRMLxT1L	59.18	54.35	52.45	60.69	64.37	67.06	58.62	64.49	65.05	64.78	61.55	55.89	54.84	61.91	61.68	62.44	55.31	63.09	56.30	54.84	43.01	35.20	113.94	49.02	22.43	66.03	21.82	62.86	28.55	33.80	21.52	23.06	24.15	25.70	28.11	30.78
PRMLxT1L	46.01	48.06	45.97	45.66	55.38	56.64	54.71	59.17	62.81	56.41	54.52	64.39	58.12	53.75	57.16	50.37	47.92	47.42	46.61	43.74	37.46	31.46	113.96	49.08	18.82	65.82	21.67	62.81	28.55	34.03	21.63	22.64	24.04	25.88	27.96	30.90
PRMLxT1L	65.01	58.46	61.83	56.14	61.83	64.52	68.85	69.38	62.35	57.22	66.34	65.72	60.34	66.34	65.05	62.81	64.43	62.36	63.84	60.92	54.40	40.92	113.94	49.21	27.45	65.89	22.08	62.77	28.56	33.89	21.51	22.91	24.21	26.01	28.12	31.08
PRMLxT1L	59.49	56.37	53.26	54.06	45.60	45.34	43.69	44.27	38.96	36.84	32.73	33.38	33.58	36.19	31.56	32.60	37.52	34.57	36.42	37.45	27.09	29.02	113.94	48.96	18.55	66.38	20.66	60.93	26.90	32.18	21.47	22.53	24.21	25.91	28.37	31.04
PRMLxT1L	50.15	50.86	43.71	41.91	47.59	45.31	46.06	42.52	43.58	44.34	45.64	51.34	57.01	45.48	47.67	45.16	42.51	42.09	42.38	42.25	32.05	29.91	114.01	49.05	18.36	66.75	20.29	60.98	27.64	32.04	21.59	22.66	23.94	25.95	27.82	30.77

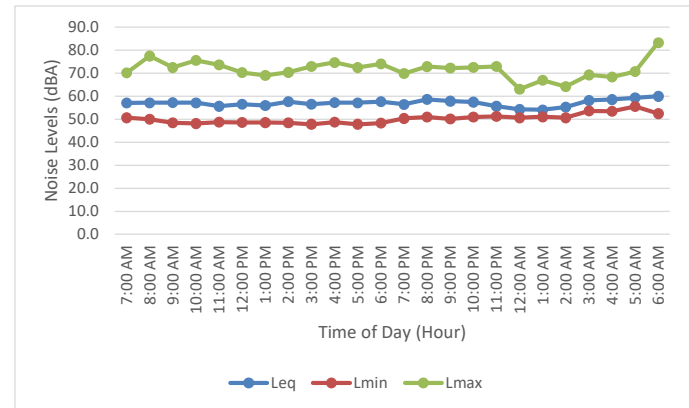
Record #	Date	Time	Record Type	Cause	#	TH Record	Sound Record
1	2023-04-20	12:24:24	Run	Key	1	0	
2	2023-04-21	14:08:12	Pause	Key	1	0	
3	2023-04-21	14:08:14	Stop	Key	1	0	

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LApeak (max)	LApeak (max) Time	SPL 1 Count	SPL 1 Duration	SPL 2 Count	SPL 2 Duration
1	2023-04-20	12:24:24	00:35:35.7	00:35:35.7	00:00:00.0	57.8	91.1	48.4	12:33:31	80.2	12:46:43	108.1	12:24:30	0	0.0	0	0.0
2	2023-04-20	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.5	94.1	48.6	13:59:37	76.3	13:34:49	89.0	13:27:41	0	0.0	0	0.0
3	2023-04-20	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.7	93.3	48.4	14:35:14	70.4	14:24:20	84.9	14:00:20	0	0.0	0	0.0
4	2023-04-20	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.6	92.2	47.8	15:26:28	73.0	15:23:21	85.8	15:23:21	0	0.0	0	0.0
5	2023-04-20	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.3	92.9	48.7	16:48:47	74.7	16:49:57	92.6	16:49:57	0	0.0	0	0.0
6	2023-04-20	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.2	92.8	47.8	17:01:03	72.5	17:43:15	85.5	17:43:06	0	0.0	0	0.0
7	2023-04-20	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.7	93.3	48.3	18:16:30	74.1	18:09:06	87.5	18:09:06	0	0.0	0	0.0
8	2023-04-20	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.5	92.1	50.3	19:20:30	69.9	19:01:32	83.0	19:01:29	0	0.0	0	0.0
9	2023-04-20	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.7	94.3	50.9	20:17:55	72.9	20:47:24	85.2	20:47:21	0	0.0	0	0.0
10	2023-04-20	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.9	93.5	50.1	21:34:40	72.3	21:02:04	85.3	21:49:38	0	0.0	0	0.0
11	2023-04-20	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.5	93.1	50.9	22:20:52	72.6	22:18:36	84.5	22:18:35	0	0.0	0	0.0
12	2023-04-20	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.7	91.3	51.3	23:30:45	73.0	23:36:04	87.0	23:36:02	0	0.0	0	0.0
13	2023-04-21	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.3	89.9	50.6	00:48:27	63.1	00:17:43	81.7	00:12:01	0	0.0	0	0.0
14	2023-04-21	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.1	89.7	51.1	01:06:02	67.0	01:19:43	85.0	01:19:43	0	0.0	0	0.0
15	2023-04-21	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.3	90.9	50.6	02:04:05	64.2	02:41:47	83.6	02:41:47	0	0.0	0	0.0
16	2023-04-21	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.2	93.8	53.7	03:57:10	69.3	03:56:35	88.8	03:56:35	0	0.0	0	0.0
17	2023-04-21	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.6	94.2	53.5	04:01:38	68.4	04:40:31	83.9	04:11:42	0	0.0	0	0.0
18	2023-04-21	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	59.4	95.0	55.6	05:47:14	70.8	05:56:09	83.5	05:56:09	0	0.0	0	0.0
19	2023-04-21	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	60.0	95.6	52.5	06:58:12	83.3	06:56:17	95.9	06:56:16	0	0.0	0	0.0
20	2023-04-21	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.1	92.7	50.6	07:47:32	70.2	07:50:10	84.8	07:09:04	0	0.0	0	0.0
21	2023-04-21	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.2	92.8	50.0	08:23:45	77.5	08:16:28	93.5	08:16:27	0	0.0	0	0.0
22	2023-04-21	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.3	92.9	48.4	09:47:54	72.5	09:42:25	87.5	09:55:36	0	0.0	0	0.0
23	2023-04-21	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.2	92.8	48.1	10:13:48	75.6	10:46:10	89.6	10:46:03	0	0.0	0	0.0
24	2023-04-21	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.7	91.3	48.7	11:21:02	73.7	11:10:38	92.7	11:10:38	0	0.0	0	0.0
25	2023-04-21	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.6	92.2	48.6	12:58:38	70.3	12:22:33	85.9	12:50:08	0	0.0	0	0.0
26	2023-04-21	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.0	91.6	48.5	13:37:11	69.1	13:00:57	83.4	13:17:16	0	0.0	0	0.0
27	2023-04-21	14:00:00	00:08:14.4	00:08:12.7	00:00:01.7	56.1	83.0	49.7	14:03:39	68.2	14:08:07	95.5	14:08:06	0	0.0	0	0.0

Record #	Date	Peak 1 Count	Peak 1 Duration	Peak 2 Count	Peak 2 Duration	Peak 3 Count	Peak 3 Duration	TWA(Projected) 0	TWA(Projected) 1	LAS3.00	LAS8.00	LAS16.00	LAS25.00	LAS50.00	LAS90.00	SEA	LCeq	LAeq
1	2023-04-20	0	0.0	0	0.0	0	0.0	55.4	57.8	64.9	61.1	56.7	54.7	51.6	49.8	-99.9	72.2	57.8
2	2023-04-20	0	0.0	0	0.0	0	0.0	57.1	58.5	66.3	62.8	59.4	57.2	54.3	51.4	-99.9	71.4	58.5
3	2023-04-20	0	0.0	0	0.0	0	0.0	56.1	57.7	65.8	63.3	60.1	56.3	51.8	49.9	-99.9	70.2	57.7
4	2023-04-20	0	0.0	0	0.0	0	0.0	55.0	56.5	64.3	61.3	57.7	54.9	51.6	49.5	-99.9	70.0	56.6
5	2023-04-20	0	0.0	0	0.0	0	0.0	55.7	57.3	64.9	61.9	58.8	55.8	51.9	50.1	-99.9	69.8	57.3
6	2023-04-20	0	0.0	0	0.0	0	0.0	55.7	57.2	64.2	61.7	59.1	56.2	52.4	49.8	-99.9	68.6	57.2
7	2023-04-20	0	0.0	0	0.0	0	0.0	55.9	57.7	65.5	62.5	58.7	55.4	52.0	50.0	-99.9	68.9	57.7
8	2023-04-20	0	0.0	0	0.0	0	0.0	55.4	56.5	64.0	61.1	57.8	55.4	52.5	51.3	-99.9	67.8	56.5
9	2023-04-20	0	0.0	0	0.0	0	0.0	57.3	58.7	66.1	62.9	60.1	57.4	54.2	52.1	-99.9	68.9	58.7
10	2023-04-20	0	0.0	0	0.0	0	0.0	56.6	57.9	65.4	63.0	59.3	56.3	53.5	51.5	-99.9	69.5	57.9
11	2023-04-20	0	0.0	0	0.0	0	0.0	56.3	57.5	65.4	61.3	57.3	55.7	54.0	52.1	-99.9	67.0	57.5
12	2023-04-20	0	0.0	0	0.0	0	0.0	55.1	55.7	58.0	56.5	55.7	55.3	54.5	53.0	-99.9	65.7	55.7
13	2023-04-21	0	0.0	0	0.0	0	0.0	54.2	54.3	57.2	56.0	55.4	54.8	53.9	52.3	-99.9	64.8	54.3
14	2023-04-21	0	0.0	0	0.0	0	0.0	54.0	54.1	56.0	55.3	54.8	54.5	53.8	52.5	-99.9	65.1	54.1
15	2023-04-21	0	0.0	0	0.0	0	0.0	55.2	55.3	58.3	57.4	56.6	55.9	54.9	53.2	-99.9	65.7	55.3
16	2023-04-21	0	0.0	0	0.0	0	0.0	58.1	58.2	60.6	59.8	59.3	58.8	58.0	56.4	-99.9	67.8	58.2
17	2023-04-21	0	0.0	0	0.0	0	0.0	58.4	58.5	61.2	60.1	59.5	59.1	58.4	55.9	-99.9	68.3	58.6
18	2023-04-21	0	0.0	0	0.0	0	0.0	59.2	59.4	63.4	61.1	60.0	59.5	58.6	57.3	-99.9	69.9	59.4
19	2023-04-21	0	0.0	0	0.0	0	0.0	58.8	60.0	65.5	62.9	60.2	59.1	57.4	54.8	-99.9	72.3	60.0
20	2023-04-21	0	0.0	0	0.0	0	0.0	56.2	57.1	64.2	61.2	58.3	56.1	54.1	52.1	-99.9	68.9	57.1
21	2023-04-21	0	0.0	0	0.0	0	0.0	55.6	57.2	63.7	60.9	57.5	55.3	52.8	51.6	-99.9	68.5	57.2
22	2023-04-21	0	0.0	0	0.0	0	0.0	55.9	57.3	64.3	60.6	57.7	56.1	53.8	50.6	-99.9	69.4	57.3
23	2023-04-21	0	0.0	0	0.0	0	0.0	55.3	57.2	64.0	61.5	58.4	55.5	51.2	49.2	-99.9	68.4	57.2
24	2023-04-21	0	0.0	0	0.0	0	0.0	54.3	55.7	63.7	59.6	55.7	53.6	51.6	49.9	-99.9	68.2	55.7
25	2023-04-21	0	0.0	0	0.0	0	0.0	55.4	56.6	63.9	60.6	57.7	55.4	52.9	50.9	-99.9	69.7	56.6
26	2023-04-21	0	0.0	0	0.0	0	0.0	54.7	56.0	64.0	60.9	56.7	54.5	52.0	50.0	-99.9	69.7	56.0
27	2023-04-21	0	0.0	0	0.0	0	0.0	54.9	56.1	64.1	59.8	56.9	54.2	52.6	50.6	-99.9	70.6	56.1

Record #	Date	LCeq - LAeq	LAleq	LAeq	LAleq - LAeq	Overload Count	Overload Duration
1	2023-04-20	14.4	62.5	57.8	4.7	0	0.0
2	2023-04-20	12.9	60.7	58.5	2.2	0	0.0
3	2023-04-20	12.5	59.8	57.7	2.1	0	0.0
4	2023-04-20	13.4	58.4	56.6	1.8	0	0.0
5	2023-04-20	12.5	59.4	57.3	2.1	0	0.0
6	2023-04-20	11.4	58.8	57.2	1.6	0	0.0
7	2023-04-20	11.2	59.2	57.7	1.5	0	0.0
8	2023-04-20	11.3	57.7	56.5	1.2	0	0.0
9	2023-04-20	10.2	59.8	58.7	1.1	0	0.0
10	2023-04-20	11.6	58.8	57.9	0.9	0	0.0
11	2023-04-20	9.5	58.4	57.5	0.9	0	0.0
12	2023-04-20	10.0	57.0	55.7	1.3	0	0.0
13	2023-04-21	10.5	55.1	54.3	0.8	0	0.0
14	2023-04-21	11.0	55.2	54.1	1.1	0	0.0
15	2023-04-21	10.4	56.0	55.3	0.7	0	0.0
16	2023-04-21	9.6	59.1	58.2	0.9	0	0.0
17	2023-04-21	9.7	59.5	58.6	0.9	0	0.0
18	2023-04-21	10.5	60.3	59.4	0.9	0	0.0
19	2023-04-21	12.3	61.5	60.0	1.5	0	0.0
20	2023-04-21	11.8	58.6	57.1	1.5	0	0.0
21	2023-04-21	11.3	58.5	57.2	1.3	0	0.0
22	2023-04-21	12.1	58.8	57.3	1.5	0	0.0
23	2023-04-21	11.2	59.5	57.2	2.3	0	0.0
24	2023-04-21	12.5	58.3	55.7	2.6	0	0.0
25	2023-04-21	13.1	59.2	56.6	2.6	0	0.0
26	2023-04-21	13.7	58.0	56.0	2.0	0	0.0
27	2023-04-21	14.5	59.4	56.1	3.3	0	0.0

Time	Leq	Lmin	Lmax	LAS3.00	LAS8.00	LAS16.00	LAS25.00	LAS50.00
7:00 AM	57.1	50.6	70.2	64.2	61.2	58.3	56.1	54.1
8:00 AM	57.2	50.0	77.5	63.7	60.9	57.5	55.3	52.8
9:00 AM	57.3	48.4	72.5	64.3	60.6	57.7	56.1	53.8
10:00 AM	57.2	48.1	75.6	64.0	61.5	58.4	55.5	51.2
11:00 AM	55.7	48.7	73.7	63.7	59.6	55.7	53.6	51.6
12:00 PM	56.6	48.6	70.3	63.9	60.6	57.7	55.4	52.9
1:00 PM	56.0	48.5	69.1	64.0	60.9	56.7	54.5	52.0
2:00 PM	57.7	48.4	70.4	65.8	63.3	60.1	56.3	51.8
3:00 PM	56.6	47.8	73.0	64.3	61.3	57.7	54.9	51.6
4:00 PM	57.3	48.7	74.7	64.9	61.9	58.8	55.8	51.9
5:00 PM	57.2	47.8	72.5	64.2	61.7	59.1	56.2	52.4
6:00 PM	57.7	48.3	74.1	65.5	62.5	58.7	55.4	52.0
7:00 PM	56.5	50.3	69.9	64.0	61.1	57.8	55.4	52.5
8:00 PM	58.7	50.9	72.9	66.1	62.9	60.1	57.4	54.2
9:00 PM	57.9	50.1	72.3	65.4	63.0	59.3	56.3	53.5
10:00 PM	57.5	50.9	72.6	65.4	61.3	57.3	55.7	54.0
11:00 PM	55.7	51.3	73.0	58.0	56.5	55.7	55.3	54.5
12:00 AM	54.3	50.6	63.1	57.2	56.0	55.4	54.8	53.9
1:00 AM	54.1	51.1	67.0	56.0	55.3	54.8	54.5	53.8
2:00 AM	55.3	50.6	64.2	58.3	57.4	56.6	55.9	54.9
3:00 AM	58.2	53.7	69.3	60.6	59.8	59.3	58.8	58.0
4:00 AM	58.6	53.5	68.4	61.2	60.1	59.5	59.1	58.4
5:00 AM	59.4	55.6	70.8	63.4	61.1	60.0	59.5	58.6
6:00 AM	60.0	52.5	83.3	65.5	62.9	60.2	59.1	57.4
Average								
Day	57.1	49.0	72.6	64.5	61.5	58.2	55.6	52.6
Night	57.0	52.2	70.2	60.6	58.9	57.6	57.0	55.9



798.8
57.1

Long-Term Noise Measurement Summary

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

Measurement Site: 5037 Patata Street
Measurement Date: 4/20/2023 to 4/21/2023
Project Name: 5037 Patata Street Industrial

Computation of CNEL

Hour of Day (military time)	Sound Level Leq (dBA)	Sound Power =10*Log(dBA /10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
			Day	Evening	Night	Day	Evening	Night
0:00	54.3	269,153	0	0	1	0	0	269,153
1:00	54.1	257,040	0	0	1	0	0	257,040
2:00	55.3	338,844	0	0	1	0	0	338,844
3:00	58.2	660,693	0	0	1	0	0	660,693
4:00	58.6	724,436	0	0	1	0	0	724,436
5:00	59.4	870,964	0	0	1	0	0	870,964
6:00	60.0	1,000,000	0	0	1	0	0	1,000,000
7:00	57.1	512,861	1	0	0	512,861	0	0
8:00	57.2	524,807	1	0	0	524,807	0	0
9:00	57.3	537,032	1	0	0	537,032	0	0
10:00	57.2	524,807	1	0	0	524,807	0	0
11:00	55.7	371,535	1	0	0	371,535	0	0
12:00	56.6	457,088	1	0	0	457,088	0	0
13:00	56.0	398,107	1	0	0	398,107	0	0
14:00	57.7	588,844	1	0	0	588,844	0	0
15:00	56.6	457,088	1	0	0	457,088	0	0
16:00	57.3	537,032	1	0	0	537,032	0	0
17:00	57.2	524,807	1	0	0	524,807	0	0
18:00	57.7	588,844	1	0	0	588,844	0	0
19:00	56.5	446,684	0	1	0	0	446,684	0
20:00	58.7	741,310	0	1	0	0	741,310	0
21:00	57.9	616,595	0	1	0	0	616,595	0
22:00	57.5	562,341	0	0	1	0	0	562,341
23:00	55.7	371,535	0	0	1	0	0	371,535
Sum of Sound Power during Period wo/penalty						6,022,853	1,804,589	5,055,007
Log Factor for CNEL Penalty (i.e., 10*log(x))						1	3	10
Sound Power during Period with penalty						6,022,853	5,413,767	50,550,068
Total Daily Sound Power, with penalties						61,986,688		
Hours per Day						24		
Average Hourly Sound Power, with penalties						2,582,779		
CNEL						64.1		

Ldn computation on next page.

Computation of Ldn

Period of 24-Hour Day (1=included, 0=not)		Sound Power Breakdown by Period of Day	
Day	Night	Day	Night
0	1	0	269,153
0	1	0	257,040
0	1	0	338,844
0	1	0	660,693
0	1	0	724,436
0	1	0	870,964
0	1	0	1,000,000
1	0	512,861	0
1	0	524,807	0
1	0	537,032	0
1	0	524,807	0
1	0	371,535	0
1	0	457,088	0
1	0	398,107	0
1	0	588,844	0
1	0	457,088	0
1	0	537,032	0
1	0	524,807	0
1	0	588,844	0
1	0	446,684	0
1	0	741,310	0
1	0	616,595	0
0	1	0	562,341
0	1	0	371,535

Sum of Sound Power during Period wo/penalty	7,827,442	5,055,007
Log Factor for Penalty (i.e., 10*log(x))	1	10
Sound Power during Period with penalty	7,827,442	50,550,068

Total Daily Sound Power, with penalties	58,377,510
Hours per Day	24
Average Hourly Sound Power, with penalties	2,432,396
Ldn	63.9

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Log factors for the Ldn and CNEL penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Department of Transportation (Caltrans), Division of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement*. Sacramento, CA. Available: <<http://www.dot.ca.gov/hq/env/noise/>>. Accessed September 24, 2010.

Summary

File Name on Meter LxT_Data.142.s
File Name on PC LxT_0003285-20230420 092354-LxT_Data.142.lbin
Serial Number 0003285
Model SoundTrack LxT®
Firmware Version 2.302
User
Location
Job Description **Short-Term (ST) -1, onsite**
Note

Measurement

Description
Start 2023-04-20 09:23:54
Stop 2023-04-20 09:56:19
Duration 00:32:25.1
Run Time 00:32:24.2
Pause 00:00:00.9

Pre-Calibration 2023-04-20 09:22:48
Post-Calibration None
Calibration Deviation ---

Overall Settings

RMS Weight A Weighting
Peak Weight A Weighting
Detector Slow
Preamplifier PRMLxT1L
Microphone Correction Off
Integration Method Linear
Overload 121.9 dB

	A	C	Z
Under Range Peak	78.2	75.2	80.2 dB
Under Range Limit	26.2	25.9	31.1 dB
Noise Floor	16.5	16.8	21.9 dB

Instrument Identification

	First	Second	Third

Results

LAeq 55.8 dB
LAE 88.7 dB
EA 82.129 µPa²h
EA8 1.217 mPa²h
EA40 6.083 mPa²h
LApeak (max) 2023-04-20 09:49:42 89.4 dB
LASmax 2023-04-20 09:49:42 72.0 dB
LASmin 2023-04-20 09:51:34 47.2 dB
SEA -99.9 dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

LCeq 71.2 dB
LAeq 55.8 dB
LCeq - LAeq 15.4 dB
LAlaq 58.6 dB
LAeq 55.8 dB
LAlaq - LAeq 2.8 dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	55.8		71.2			
Ls(max)	72.0	2023/04/20 9:49:42				
Ls(min)	47.2	2023/04/20 9:51:34				
LPeak(max)	89.4	2023/04/20 9:49:42				

Overload Count 0
Overload Duration 0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	3 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results		
Dose	0.05	0.00 %
Projected Dose	0.70	0.04 %
TWA (Projected)	54.2	55.8 dB
TWA (t)	34.8	44.1 dB
Lep (t)	44.1	44.1 dB

Statistics	
LA 3.00	64.0 dB
LA 8.00	60.6 dB
LA 16.00	56.5 dB
LA 25.00	53.8 dB
LA 50.00	50.7 dB
LA 90.00	48.7 dB

Calibration History		
Preamp	Date	dB re. 1V/Pa
PRMLxT1L	2023-04-20 09:22:48	-28.21
PRMLxT1L	2023-04-20 05:53:09	-28.17
PRMLxT1L	2023-04-20 04:58:32	-28.15
PRMLxT1L	2023-02-16 13:52:45	-28.11
PRMLxT1L	2023-02-16 12:38:23	-28.06
PRMLxT1L	2023-02-16 12:11:10	-28.09
PRMLxT1L	2023-02-16 11:47:34	-28.06
PRMLxT1L	2023-02-16 11:17:48	-28.01
PRMLxT1L	2023-02-07 10:49:23	-28.06
PRMLxT1L	2023-02-07 09:46:05	-27.99
PRMLxT1L	2023-02-07 09:45:17	-28.05

6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
59.18	54.35	52.45	60.69	64.37	67.06	58.62	64.49	65.05	64.78	61.55	55.89	54.84	61.91	61.68	62.44	55.31	63.09	56.30	54.84	43.01	35.20	113.94	49.02	22.43	66.03	21.82	62.86	28.55	33.80	21.52	23.06	24.15	25.70	28.11	30.78
46.01	48.06	45.97	45.66	55.38	56.64	54.71	59.17	62.81	56.41	54.52	64.39	58.12	53.75	57.16	50.37	47.92	47.42	46.61	43.74	37.46	31.46	113.96	49.08	18.82	65.82	21.67	62.81	28.55	34.03	21.63	22.64	24.04	25.88	27.96	30.90
65.01	58.46	61.83	56.14	61.83	64.52	68.85	69.38	62.35	57.22	66.34	65.72	60.34	66.34	65.05	62.81	64.43	62.36	63.84	60.92	54.40	40.92	113.94	49.21	27.45	65.89	22.08	62.77	28.56	33.89	21.51	22.91	24.21	26.01	28.12	31.08
59.49	56.37	53.26	54.06	45.60	45.34	43.69	44.27	38.96	36.84	32.73	33.38	33.58	36.19	31.56	32.60	37.52	34.57	36.42	37.45	27.09	29.02	113.94	48.96	18.55	66.38	20.66	60.93	26.90	32.18	21.47	22.53	24.21	25.91	28.37	31.04
50.15	50.86	43.71	41.91	47.59	45.31	46.06	42.52	43.58	44.34	45.64	51.34	57.01	45.48	47.67	45.16	42.51	42.09	42.38	42.25	32.05	29.91	114.01	49.05	18.36	66.75	20.29	60.98	27.64	32.04	21.59	22.66	23.94	25.95	27.82	30.77
48.61	48.85	51.02	50.24	48.48	50.96	50.51	47.68	41.37	36.62	44.83	41.24	43.32	45.24	41.88	41.05	40.87	43.01	43.90	41.60	33.68	30.29	113.96	49.04	18.45	66.48	20.64	60.97	27.27	32.21	21.14	22.18	23.88	25.50	28.11	30.94
66.51	56.84	46.07	46.04	42.77	52.20	52.36	49.37	41.24	46.55	44.31	40.21	44.70	69.20	45.88	57.02	58.97	50.05	59.03	52.91	41.64	33.23	113.94	49.05	19.80	66.35	20.96	60.95	26.86	32.21	21.04	22.44	23.85	25.53	28.04	30.89
47.51	62.25	48.64	52.66	42.53	40.45	43.39	42.14	43.77	41.17	50.14	43.58	50.52	44.43	49.56	46.52	39.18	42.95	37.36	35.29	29.75	28.57	114.03	49.18	17.67	66.52	20.81	60.96	27.41	32.31	21.59	22.89	23.87	25.54	27.94	30.73
45.86	48.16	47.48	43.26	42.73	40.04	34.85	29.68	29.21	26.00	33.25	35.40	26.36	28.52	28.96	32.48	31.89	35.03	32.25	30.46	22.59	28.65	113.92	48.97	18.30	66.52	20.88	60.76	27.35	31.93	21.52	22.77	23.92	25.75	28.40	31.01
40.27	24.78	33.19	46.19	53.54	47.05	55.56	55.68	52.45	56.35	44.42	43.46	45.67	30.06	39.00	39.53	48.05	48.79	45.37	43.94	41.36	32.60	114.05	49.11	18.67	66.56	20.82	60.90	26.86	31.96	21.73	22.73	23.93	26.12	28.15	31.09
45.67	39.96	43.29	42.31	58.49	46.03	50.16	51.85	50.11	66.71	39.93	40.07	38.72	32.68	35.15	31.88	36.99	37.45	37.58	34.26	28.16	29.36	114.04	49.10	18.49	66.51	20.77	60.91	26.34	32.01	21.54	22.86	24.13	25.86	28.23	31.07

Record #	Date	Time	Record Type	Cause	#	TH Record	Sound Record
1	2023-04-20	09:23:54	Run	Key	1	0	
2	2023-04-20	09:56:18	Pause	Key	1	0	
3	2023-04-20	09:56:19	Stop	Key	1	0	

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LApeak (max)	LApeak (max) Time	SPL 1 Count	SPL 1 Duration	SPL 2 Count
1	2023-04-20	09:23:54	00:32:25.1	00:32:24.2	00:00:00.9	55.8	88.7	47.2	09:51:34	72.0	09:49:42	89.4	09:49:42	0	0.0	0

SPL 2 Duration	Peak 1 Count	Peak 1 Duration	Peak 2 Count	Peak 2 Duration	Peak 3 Count	Peak 3 Duration	TWA(Projected) 0	TWA(Projected) 1	LAS3.00	LAS8.00	LAS16.00	LAS25.00
0.0	0	0.0	0	0.0	0	0.0	54.2	55.8	64.0	60.6	56.5	53.8

LAS50.00	LAS90.00	SEA	LCeq	LAeq	LCeq - LAeq	LAeq	LAeq	LAeq - LAeq	Overload Count	Overload Duration	Comments
50.7	48.7	-99.9	71.2	55.8	15.4	58.6	55.8	2.8	0	0.0	

Summary

File Name on Meter LxT_Data.143.s
File Name on PC LxT_0003285-20230420 101239-LxT_Data.143.lbin
Serial Number 0003285
Model SoundTrack LxT®
Firmware Version 2.302
User
Location
Job Description Short-Term (ST)- 2, onsite
Note

Measurement

Description
Start 2023-04-20 10:12:39
Stop 2023-04-20 10:42:44
Duration 00:30:05.0
Run Time 00:30:04.2
Pause 00:00:00.8
Pre-Calibration 2023-04-20 10:12:05
Post-Calibration None
Calibration Deviation ---

Overall Settings

RMS Weight A Weighting
Peak Weight A Weighting
Detector Slow
Preamplifier PRMLxT1L
Microphone Correction Off
Integration Method Linear
Overload 121.9 dB
Under Range Peak 78.2 75.2 80.2 dB
Under Range Limit 26.2 25.9 31.1 dB
Noise Floor 16.5 16.8 22.0 dB

Instrument Identification

Results

LAeq 59.5 dB
LAE 92.1 dB
EA 178.666 µPa²h
EA8 2.852 mPa²h
EA40 14.260 mPa²h
LApeak (max) 2023-04-20 10:40:54 94.9 dB
LASmax 2023-04-20 10:40:59 79.3 dB
LASmin 2023-04-20 10:22:22 48.5 dB
SEA -99.9 dB

Table with 3 columns: Exceedance Counts, Duration, and various noise level thresholds (LAS > 85.0 dB, LApeak > 135.0 dB, etc.)

LCeq 70.2 dB
LAeq 59.5 dB
LCeq - LAeq 10.7 dB
LAleq 61.7 dB
LAeq 59.5 dB

L_Aeq - L_Aeq

2.2 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
59.5		70.2			
79.3	2023/04/20 10:40:59				
48.5	2023/04/20 10:22:22				
94.9	2023/04/20 10:40:54				

L_{eq}

L_S(max)

L_S(min)

L_{Peak}(max)

Overload Count 0
 Overload Duration 0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	3 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results

Dose	0.06	0.01 %
Projected Dose	1.02	0.09 %
TWA (Projected)	56.9	59.5 dB
TWA (t)	36.9	47.5 dB
L _{ep} (t)	47.5	47.5 dB

Statistics

LA 3.00	66.0 dB
LA 8.00	62.4 dB
LA 16.00	59.7 dB
LA 25.00	57.1 dB
LA 50.00	53.1 dB
LA 90.00	50.1 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
PRMLxT1L	2023-04-20 10:12:02	-28.25	50.48	51.81	57.85	55.24	67.59	62.22	59.85	63.05	54.95	55.33	58.78	56.20	82.52	81.18	76.66	69.95	70.93	68.71	67.47	60.64	60.14	64.62	113.93	61.68	49.47	70.16	49.03	66.33	60.17	55.82	53.23	51.90	50.48	48.89	47.72	46.85
PRMLxT1L	2023-04-20 09:22:48	-28.21	59.18	54.35	52.45	60.69	64.37	67.06	58.62	64.49	65.05	64.78	61.55	55.89	54.84	61.91	61.68	62.44	55.31	63.09	56.30	54.84	43.01	35.20	113.94	49.02	22.43	66.03	21.82	62.86	28.55	33.80	21.52	23.06	24.15	25.70	28.11	30.78
PRMLxT1L	2023-04-20 05:53:09	-28.17	46.01	48.06	45.97	45.66	55.38	56.64	54.71	59.17	62.81	56.41	54.52	64.39	58.12	53.75	57.16	50.37	47.92	47.42	46.61	43.74	37.46	31.46	113.96	49.08	18.82	65.82	21.67	62.81	28.55	34.03	21.63	22.64	24.04	25.88	27.96	30.90
PRMLxT1L	2023-04-20 04:58:32	-28.15	65.01	58.46	61.83	56.14	61.83	64.52	68.85	69.38	62.35	57.22	66.34	65.72	60.34	66.34	65.05	62.81	64.43	62.36	63.84	60.92	54.40	40.92	113.94	49.21	27.45	65.89	22.08	62.77	28.56	33.89	21.51	22.91	24.21	26.01	28.12	31.08
PRMLxT1L	2023-02-16 13:52:45	-28.11	59.49	56.37	53.26	54.06	45.60	45.34	43.69	44.27	38.96	36.84	32.73	33.38	33.58	36.19	31.56	32.60	37.52	34.57	36.42	37.45	27.09	29.02	113.94	48.96	18.55	66.38	20.66	60.93	26.90	32.18	21.47	22.53	24.21	25.91	28.37	31.04
PRMLxT1L	2023-02-16 12:38:23	-28.06	50.15	50.86	43.71	41.91	47.59	45.31	46.06	42.52	43.58	44.34	45.64	51.34	57.01	45.48	47.67	45.16	42.51	42.09	42.38	42.25	32.05	29.91	114.01	49.05	18.36	66.75	20.29	60.98	27.64	32.04	21.59	22.66	23.94	25.95	27.82	30.77
PRMLxT1L	2023-02-16 12:11:10	-28.09	48.61	48.85	51.02	50.24	48.48	50.96	50.51	47.68	41.37	36.62	44.83	41.24	43.32	45.24	41.88	41.05	40.87	43.01	43.90	41.60	33.68	30.29	113.96	49.04	18.45	66.48	20.64	60.97	27.27	32.21	21.14	22.18	23.88	25.50	28.11	30.94
PRMLxT1L	2023-02-16 11:47:34	-28.06	66.51	56.84	46.07	46.04	42.77	52.20	52.36	49.37	41.24	46.55	44.31	40.21	44.70	69.20	45.88	57.02	58.97	50.05	59.03	52.91	41.64	33.23	113.94	49.05	19.80	66.35	20.96	60.95	26.86	32.21	21.04	22.44	23.85	25.53	28.04	30.89
PRMLxT1L	2023-02-16 11:17:48	-28.01	47.51	62.25	48.64	52.66	42.53	40.45	43.39	42.14	43.77	41.17	50.14	43.58	50.52	44.43	49.56	46.52	39.18	42.95	37.36	35.29	29.75	28.57	114.03	49.18	17.67	66.52	20.81	60.96	27.41	32.31	21.59	22.89	23.87	25.54	27.94	30.73
PRMLxT1L	2023-02-07 10:49:23	-28.06	45.86	48.16	47.48	43.26	42.73	40.04	34.85	29.68	29.21	26.00	33.25	35.40	26.36	28.52	28.96	32.48	31.89	35.03	32.25	30.46	22.59	28.65	113.92	48.97	18.30	66.52	20.88	60.76	27.35	31.93	21.52	22.77	23.92	25.75	28.40	31.01
PRMLxT1L	2023-02-07 09:46:05	-27.99	40.27	24.78	33.19	46.19	53.54	47.05	55.56	55.68	52.45	56.35	44.42	43.46	45.67	30.06	39.00	39.53	48.05	48.79	45.37	43.94	41.36	32.60	114.05	49.11	18.67	66.56	20.82	60.90	26.86	31.96	21.73	22.73	23.93	26.12	28.15	31.09

Record #	Date	Time	Record Type	Cause	# TH Record	Sound Record
1	2023-04-20	10:12:05	Calibration Change	Key	-0.03 dB	0
2	2023-04-20	10:12:39	Run	Key	1	0
3	2023-04-20	10:42:43	Pause	Key	1	0
4	2023-04-20	10:42:44	Stop	Key	1	0

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LApeak (max)	LApeak (max) Time	SPL 1 Count	SPL 1 Duration	SPL 2 Count	SPL 2 Duration	Peak 1 Count
1	2023-04-20	10:12:39	00:30:05.0	00:30:04.2	00:00:00.8	59.5	92.1	48.5	10:22:22	79.3	10:40:59	94.9	10:40:54	0	0.0	0	0.0	0

Peak 1 Duration	Peak 2 Count	Peak 2 Duration	Peak 3 Count	Peak 3 Duration	TWA(Projected) 0	TWA(Projected) 1	LAS3.00	LAS8.00	LAS16.00	LAS25.00	LAS50.00	LAS90.00	SEA	LCeq	LAeq	LCeq - LAeq	LAeq	LAeq	LAeq - LAeq
0.0	0	0.0	0	0.0	56.9	59.5	66.0	62.4	59.7	57.1	53.1	50.1	-99.9	70.2	59.5	10.7	61.7	59.5	2.2

Overload Count	Overload Duration	Comments
0	0.0	

Summary

File Name on Meter LxT_Data.144.s
File Name on PC LxT_0003285-20230420 104906-LxT_Data.144.ldbin
Serial Number 0003285
Model SoundTrack LxT®
Firmware Version 2.302
User
Location
Job Description **Short-Term (ST) -3, onsite**
Note

Measurement

Description
Start 2023-04-20 10:49:06
Stop 2023-04-20 11:19:41
Duration 00:30:35.2
Run Time 00:30:33.6
Pause 00:00:01.6

Pre-Calibration 2023-04-20 10:48:21
Post-Calibration None
Calibration Deviation ---

Overall Settings

RMS Weight A Weighting
Peak Weight A Weighting
Detector Slow
Preamplifier PRMLxT1L
Microphone Correction Off
Integration Method Linear
Overload 121.8 dB

	A	C	Z
Under Range Peak	78.2	75.2	80.2 dB
Under Range Limit	26.2	25.9	31.0 dB
Noise Floor	16.5	16.8	21.9 dB

Instrument Identification

Results

LAeq 54.6 dB
LAE 87.2 dB
EA 58.757 µPa²h
EA8 922.890 µPa²h
EA40 4.614 mPa²h
LApeak (max) 2023-04-20 10:49:08 84.5 dB
LASmax 2023-04-20 11:02:45 68.0 dB
LASmin 2023-04-20 10:51:01 48.9 dB
SEA -99.9 dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

LCeq 67.9 dB
LAeq 54.6 dB
LCeq - LAeq 13.3 dB
LAlaq 56.3 dB
LAeq 54.6 dB

L_Aeq - L_Aeq

1.7 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
54.6		67.9			
68.0	2023/04/20 11:02:45				
48.9	2023/04/20 10:51:01				
84.5	2023/04/20 10:49:08				

L_{eq}

L_S(max)

L_S(min)

L_{Peak}(max)

Overload Count 0
Overload Duration 0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	3 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results

Dose	0.04	0.00 %
Projected Dose	0.67	0.03 %
TWA (Projected)	53.9	54.6 dB
TWA (t)	34.0	42.6 dB
L _{ep} (t)	42.6	42.6 dB

Statistics

LA 3.00	60.8 dB
LA 8.00	57.4 dB
LA 16.00	55.6 dB
LA 25.00	54.4 dB
LA 50.00	52.6 dB
LA 90.00	50.4 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
PRMLxT1L	2023-04-20 10:48:21	-28.18	93.18	72.86	49.55	58.51	51.92	65.81	65.50	60.96	63.52	58.10	55.36	56.27	54.47	55.20	59.05	51.18	53.11	52.15	52.87	46.95	41.63	39.31	113.95	48.87	22.78	65.90	22.16	63.00	28.29	33.59	22.45	23.20	41.67	25.97	28.68	31.51
PRMLxT1L	2023-04-20 10:48:00	-28.14	57.61	54.82	97.16	96.27	103.89	54.39	63.59	58.27	61.52	55.75	62.67	58.02	56.85	55.59	55.03	52.65	52.05	52.52	46.08	43.22	38.55	37.79	114.10	49.04	24.40	66.01	22.01	63.15	27.84	33.82	22.78	23.47	24.23	26.00	28.49	31.04
PRMLxT1L	2023-04-20 10:12:02	-28.25	50.48	51.81	57.85	55.24	67.59	62.22	59.85	63.05	54.95	55.33	58.78	56.20	82.52	81.18	76.66	69.95	70.93	68.71	67.47	60.64	60.14	64.62	113.93	61.68	49.47	70.16	49.03	66.33	60.17	55.82	53.23	51.90	50.48	48.89	47.72	46.85
PRMLxT1L	2023-04-20 09:22:48	-28.21	59.18	54.35	52.45	60.69	64.37	67.06	58.62	64.49	65.05	64.78	61.55	55.89	54.84	61.91	61.68	62.44	55.31	63.09	56.30	54.84	43.01	35.20	113.94	49.02	22.43	66.03	21.82	62.86	28.55	33.80	21.52	23.06	24.15	25.70	28.11	30.78
PRMLxT1L	2023-04-20 05:53:09	-28.17	46.01	48.06	45.97	45.66	55.38	56.64	54.71	59.17	62.81	56.41	54.52	64.39	58.12	53.75	57.16	50.37	47.92	47.42	46.61	43.74	37.46	31.46	113.96	49.08	18.82	65.82	21.67	62.81	28.55	34.03	21.63	22.64	24.04	25.88	27.96	30.90
PRMLxT1L	2023-04-20 04:58:32	-28.15	65.01	58.46	61.83	56.14	61.83	64.52	68.85	69.38	62.35	57.22	66.34	65.72	60.34	66.34	65.05	62.81	64.43	62.36	63.84	60.92	54.40	40.92	113.94	49.21	27.45	65.89	22.08	62.77	28.56	33.89	21.51	22.91	24.21	26.01	28.12	31.08
PRMLxT1L	2023-02-16 13:52:45	-28.11	59.49	56.37	53.26	54.06	45.60	45.34	43.69	44.27	38.96	36.84	32.73	33.38	33.58	36.19	31.56	32.60	37.52	34.57	36.42	37.45	27.09	29.02	113.94	48.96	18.55	66.38	20.66	60.93	26.90	32.18	21.47	22.53	24.21	25.91	28.37	31.04
PRMLxT1L	2023-02-16 12:38:23	-28.06	50.15	50.86	43.71	41.91	47.59	45.31	46.06	42.52	43.58	44.34	45.64	51.34	57.01	45.48	47.67	45.16	42.51	42.09	42.38	42.25	32.05	29.91	114.01	49.05	18.36	66.75	20.29	60.98	27.64	32.04	21.59	22.66	23.94	25.95	27.82	30.77
PRMLxT1L	2023-02-16 12:11:10	-28.09	48.61	48.85	51.02	50.24	48.48	50.96	50.51	47.68	41.37	36.62	44.83	41.24	43.32	45.24	41.88	41.05	40.87	43.01	43.90	41.60	33.68	30.29	113.96	49.04	18.45	66.48	20.64	60.97	27.27	32.21	21.14	22.18	23.88	25.50	28.11	30.94
PRMLxT1L	2023-02-16 11:47:34	-28.06	66.51	56.84	46.07	46.04	42.77	52.20	52.36	49.37	41.24	46.55	44.31	40.21	44.70	69.20	45.88	57.02	58.97	50.05	59.03	52.91	41.64	33.23	113.94	49.05	19.80	66.35	20.96	60.95	26.86	32.21	21.04	22.44	23.85	25.53	28.04	30.89
PRMLxT1L	2023-02-16 11:17:48	-28.01	47.51	62.25	48.64	52.66	42.53	40.45	43.39	42.14	43.77	41.17	50.14	43.58	50.52	44.43	49.56	46.52	39.18	42.95	37.36	35.29	29.75	28.57	114.03	49.18	17.67	66.52	20.81	60.96	27.41	32.31	21.59	22.89	23.87	25.54	27.94	30.73

Record #	Date	Time	Record Type	Cause	#	TH Record	Sound Record
1	2023-04-20	10:49:05	Run	Key	1	0	
2	2023-04-20	11:19:39	Pause	Key	1	0	
3	2023-04-20	11:19:41	Stop	Key	1	0	

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LApeak (max)	LApeak (max) Time	SPL 1 Count	SPL 1 Duration	SPL 2 Count	SPL 2 Duration	Peak 1 Count	Peak 1 Duration
1	2023-04-20	10:49:06	00:30:35.2	00:30:33.6	00:00:01.6	54.6	87.2	48.9	10:51:01	68.0	11:02:45	84.5	10:49:08	0	0.0	0	0.0	0	0.0

Peak 2 Count	Peak 2 Duration	Peak 3 Count	Peak 3 Duration	TWA(Projected) 0	TWA(Projected) 1	LAS3.00	LAS8.00	LAS16.00	LAS25.00	LAS50.00	LAS90.00	SEA	LCeq	LAeq	LCeq - LAeq	LALeq	LALeq	LALeq - LAeq	Overload Count
0	0.0	0	0.0	53.9	54.6	60.8	57.4	55.6	54.4	52.6	50.4	-99.9	67.9	54.6	13.3	56.3	54.6	1.7	0

Overload Duration Comments

0.0

Summary	
File Name on Meter	LxT_Data.145.s
File Name on PC	LxT_0003285-20230420 112549-LxT_Data.145.ldbin
Serial Number	0003285
Model	SoundTrack LxT*
Firmware Version	2.302
User	
Location	
Job Description	Short-Term (ST)-4, Onsite
Note	

Measurement	
Description	
Start	2023-04-20 11:25:49
Stop	2023-04-20 12:01:17
Duration	00:35:27.8
Run Time	00:35:26.2
Pause	00:00:01.6
Pre-Calibration	2023-04-20 11:25:28
Post-Calibration	None
Calibration Deviation	---

Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamplifier	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
Overload	121.9 dB		
	A	C	Z
Under Range Peak	78.2	75.2	80.2 dB
Under Range Limit	26.2	25.9	31.1 dB
Noise Floor	16.5	16.8	21.9 dB
	First	Second	Third

Instrument Identification	
First	Second Third

Results	
L _{Aeq}	57.8 dB
L _{AE}	91.1 dB
E _A	142.351 μPa ² h
E _B	1.928 mPa ² h
E _{A40}	9.641 mPa ² h
L _{Apeak} (max)	2023-04-20 11:44:30 87.9 dB
L _{ASmax}	2023-04-20 11:44:31 73.3 dB
L _{ASmin}	2023-04-20 11:28:45 49.8 dB
SEA	-99.9 dB

Exceedance Counts	Duration
L _{AS} > 85.0 dB	0 0.0 s
L _{AS} > 115.0 dB	0 0.0 s
L _{Apeak} > 135.0 dB	0 0.0 s
L _{Apeak} > 137.0 dB	0 0.0 s
L _{Apeak} > 140.0 dB	0 0.0 s

L _{Ceq}	69.8 dB
L _{Aeq}	57.8 dB
L _{Ceq} - L _{Aeq}	12.0 dB
L _{A1eq}	60.5 dB
L _{Aeq}	57.8 dB
L _{A1eq} - L _{Aeq}	2.7 dB

	A	C	Z
	dB	Time Stamp	dB
Leq	57.8		69.8
L _S (max)	73.3	2023/04/20 11:44:31	
L _S (min)	49.8	2023/04/20 11:28:45	
L _{peak} (max)	87.9	2023/04/20 11:44:30	

Overload Count	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	3 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results		
Dose	0.07	0.00 %
Projected Dose	0.96	0.06 %
TWA [Projected]	56.5	57.8 dB
TWA (t)	37.7	46.5 dB
Lep (t)	46.5	46.5 dB

Statistics	
L _A 3.00	65.3 dB
L _A 8.00	62.0 dB
L _A 16.00	58.3 dB
L _A 25.00	56.9 dB
L _A 50.00	54.2 dB
L _A 90.00	51.2 dB

Calibration History	
Pramp	Date
PRMLxT1L	2023-04-20 11:25:27
PRMLxT1L	2023-04-20 10:48:21
PRMLxT1L	2023-04-20 10:48:00
PRMLxT1L	2023-04-20 10:12:02
PRMLxT1L	2023-04-20 09:22:48
PRMLxT1L	2023-04-20 05:53:09
PRMLxT1L	2023-04-20 04:58:32
PRMLxT1L	2023-02-16 13:52:45
PRMLxT1L	2023-02-16 12:38:23
PRMLxT1L	2023-02-16 12:11:10
PRMLxT1L	2023-02-16 11:47:34

	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
PRMLxT1L	-28.22	54.11	49.56	51.32	56.01	53.39	51.36	67.26	63.00	56.78	59.34	62.82	52.48	55.59	53.67	49.71	52.87	45.85	46.95	46.32	42.30	37.91	35.16	113.94	48.82	20.17	66.04	22.61	63.03	28.52	33.61	21.90	22.83	24.36	26.04	28.29	30.59
PRMLxT1L	-28.18	93.18	72.86	49.55	58.51	51.92	65.81	65.50	60.96	63.52	58.10	55.36	56.27	54.47	55.20	59.05	51.18	53.11	52.15	52.87	46.95	41.63	39.31	113.95	48.87	22.78	65.90	22.16	63.00	28.29	33.59	22.45	23.20	41.67	25.97	28.68	31.51
PRMLxT1L	-28.14	57.61	54.82	97.16	96.27	103.89	54.39	63.59	58.27	61.52	55.75	62.67	58.02	56.85	55.59	55.03	52.65	52.05	52.52	46.08	43.22	38.55	37.79	114.10	49.04	24.40	66.01	22.01	63.15	27.84	33.82	22.78	23.47	24.23	26.00	28.49	31.04
PRMLxT1L	-28.25	50.48	51.81	57.85	55.24	67.59	62.22	59.85	63.05	54.95	55.33	58.78	56.20	82.52	81.18	76.66	69.95	70.93	68.71	67.47	60.64	60.14	64.62	113.93	61.68	49.47	70.16	49.03	66.33	60.17	55.82	53.23	51.90	50.48	48.89	47.72	46.85
PRMLxT1L	-28.21	59.18	54.35	52.45	60.69	64.37	67.06	58.62	64.49	65.05	64.78	61.55	55.89	54.84	61.91	61.68	62.44	55.31	63.09	56.30	54.84	43.01	35.20	113.94	49.02	22.43	66.03	21.82	62.86	28.55	33.80	21.52	23.06	24.15	25.70	28.11	30.78
PRMLxT1L	-28.17	46.01	48.06	45.97	45.66	55.38	56.64	54.71	59.17	62.81	56.41	54.52	64.39	58.12	53.75	57.16	50.37	47.92	47.42	46.61	43.74	37.46	31.46	113.96	49.08	18.82	65.82	21.67	62.81	28.55	34.03	21.63	22.64	24.04	25.88	27.96	30.90
PRMLxT1L	-28.15	65.01	58.46	61.83	56.14	61.83	64.52	68.85	69.38	62.35	57.22	66.34	65.72	60.34	66.34	65.05	62.81	64.43	62.36	63.84	60.92	54.40	40.92	113.94	49.21	27.45	65.89	22.08	62.77	28.56	33.89	21.51	22.91	24.21	26.01	28.12	31.08
PRMLxT1L	-28.11	59.49	56.37	53.26	54.06	45.60	45.34	43.69	44.27	38.96	36.84	32.73	33.38	33.58	36.19	31.56	32.60	37.52	34.57	36.42	37.45	27.09	29.02	113.94	48.96	18.55	66.38	20.66	60.93	26.90	32.18	21.47	22.53	24.21	25.91	28.37	31.04
PRMLxT1L	-28.06	50.15	50.86	43.71	41.91	47.59	45.31	46.06	42.52	43.58	44.34	45.64	51.34	57.01	45.48	47.67	45.16	42.51	42.09	42.38	42.25	32.05	29.91	114.01	49.05	18.36	66.75	20.29	60.98	27.64	32.04	21.59	22.66	23.94	25.95	27.82	30.77
PRMLxT1L	-28.09	48.61	48.85	51.02	50.24	48.48	50.96	50.51	47.68	41.37	36.62	44.83	41.24	43.32	45.24	41.88	41.05	40.87	43.01	43.90	41.60	33.68	30.29	113.96	49.04	18.45	66.48	20.64	60.97	27.27	32.21	21.14	22.18	23.88	25.50	28.11	30.94
PRMLxT1L	-28.06	66.51	56.84	46.07	46.04	42.77	52.20	52.36	49.37	41.24	46.55	44.31	40.21	44.70	69.20	45.88	57.02	58.97	50.05	59.03	52.91	41.64	33.23	113.94	49.05	19.80	66.35	20.96	60.95	26.86	32.21	21.04	22.44	23.85	25.53	28.04	30.89

Record #	Date	Time	Record Type	Cause	# TH Record	Sound Record
1	2023-04-20	11:25:28	Calibration Change	Key	-0.04 dB	0
2	2023-04-20	11:25:49	Run	Key	1	0
3	2023-04-20	12:01:15	Pause	Key	1	0
4	2023-04-20	12:01:17	Stop	Key	1	0

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LApeak (max)	LApeak (max) Time	SPL 1 Count	SPL 1 Duration	SPL 2 Count	SPL 2 Duration	Peak 1 Count	Peak 1 Duration	Peak 2 Count	Peak 2 Duration	Peak 3 Count
1	2023-04-20	11:25:49	00:35:27.8	00:35:26.2	00:00:01.6	57.8	91.1	49.8	11:28:45	73.3	11:44:31	87.9	11:44:30	0	0.0	0	0.0	0	0.0	0	0.0	0

Peak 3 Duration	TWA(Projected) 0	TWA(Projected) 1	LAS3.00	LAS8.00	LAS16.00	LAS25.00	LAS50.00	LAS90.00	SEA	LCeq	LAeq	LCeq - LAeq	LAlaq	LAeq	LAlaq - LAeq	Overload Count	Overload Duration	Comments
0.0	56.5	57.8	65.3	62.0	58.3	56.9	54.2	51.2	-99.9	69.8	57.8	12.0	60.5	57.8	2.7	0	0.0	

Summary	
File Name on Meter	LxT_Data.140.s
File Name on PC	LxT_0003285-20230420 050055-LxT_Data.140.ldbin
Serial Number	0003285
Model	SoundTrack LxT*
Firmware Version	2.302
User	
Location	
Job Description	Santa Fe Springs, Truck Noise
Note	

Measurement	
Description	
Start	2023-04-20 05:00:55
Stop	2023-04-20 05:51:20
Duration	00:50:24.5
Run Time	00:50:23.1
Pause	00:00:01.4
Pre-Calibration	2023-04-20 04:58:32
Post-Calibration	None
Calibration Deviation	---

Overall Settings	
RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamplifier	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
Overload	121.8 dB
	A C Z
Under Range Peak	78.1 75.1 80.1 dB
Under Range Limit	26.1 25.9 31.0 dB
Noise Floor	16.5 16.7 21.9 dB
	First Second Third

Instrument Identification

Results	
L _{Aeq}	65.8 dB
L _{AE}	100.6 dB
EA	1.277 mPa ² h
E _{A8}	12.166 mPa ² h
E _{A40}	60.830 mPa ² h
L _{Apeak} (max)	2023-04-20 05:28:58 98.9 dB
L _{ASmax}	2023-04-20 05:12:43 81.4 dB
L _{ASmin}	2023-04-20 05:41:09 50.4 dB
SEA	-99.9 dB

Exceedance Counts	Duration
L _{AS} > 85.0 dB	0 0.0 s
L _{AS} > 115.0 dB	0 0.0 s
L _{Apeak} > 135.0 dB	0 0.0 s
L _{Apeak} > 137.0 dB	0 0.0 s
L _{Apeak} > 140.0 dB	0 0.0 s

L _{Ceq}	72.5 dB
L _{Aeq}	65.8 dB
L _{Ceq} - L _{Aeq}	6.7 dB
L _{LAeq}	68.6 dB
L _{Aeq}	65.8 dB
L _{LAeq} - L _{Aeq}	2.8 dB

	A	C	Z			
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	65.8		72.5			
L _s (max)	81.4	2023/04/20 5:12:43				
L _s (min)	50.4	2023/04/20 5:41:09				
L _{peak} (max)	98.9	2023/04/20 5:28:58				

Overload Count	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	3 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results		
Dose	0.26	0.04 %
Projected Dose	2.50	0.38 %
TWA [Projected]	63.4	65.8 dB
TWA (t)	47.1	56.0 dB
Lep (t)	56.0	56.0 dB

Statistics	
LA 3.00	73.9 dB
LA 8.00	70.8 dB
LA 16.00	67.0 dB
LA 25.00	66.2 dB
LA 50.00	56.3 dB
LA 90.00	52.0 dB

Calibration History																																						
Pramp	Date	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
PRMLxT1L	2023-04-20 04:58:32	-28.15	65.01	58.46	61.83	56.14	61.83	64.52	68.85	69.38	62.35	57.22	66.34	65.72	60.34	66.34	65.05	62.81	64.43	62.36	63.84	60.92	54.40	40.92	113.94	49.21	27.45	65.89	22.08	62.77	28.56	33.89	21.51	22.91	24.21	26.01	28.12	31.08
PRMLxT1L	2023-02-16 13:52:45	-28.11	59.49	56.37	53.26	54.06	45.60	45.34	43.69	44.27	38.96	36.84	32.73	33.38	33.58	36.19	31.56	32.60	37.52	34.57	36.42	37.45	27.09	29.02	113.94	48.96	18.55	66.38	20.66	60.93	26.90	32.18	21.47	22.53	24.21	25.91	28.37	31.04
PRMLxT1L	2023-02-16 12:38:23	-28.06	50.15	50.86	43.71	41.91	47.59	45.31	46.06	42.52	43.58	44.34	45.64	51.34	57.01	45.48	47.67	45.16	42.51	42.09	42.38	42.25	32.05	29.91	114.01	49.05	18.36	66.75	20.29	60.98	27.64	32.04	21.59	22.66	23.94	25.95	27.82	30.77
PRMLxT1L	2023-02-16 12:11:10	-28.09	48.61	48.85	51.02	50.24	48.48	50.96	50.51	47.68	41.37	36.62	44.83	41.24	43.32	45.24	41.88	41.05	40.87	43.01	43.90	41.60	33.68	30.29	113.96	49.04	18.45	66.48	20.64	60.97	27.27	32.21	21.14	22.18	23.88	25.50	28.11	30.94
PRMLxT1L	2023-02-16 11:47:34	-28.06	66.51	56.84	46.07	46.04	42.77	52.20	52.36	49.37	41.24	46.55	44.31	40.21	44.70	69.20	45.88	57.02	58.97	50.05	59.03	52.91	41.64	33.23	113.94	49.05	19.80	66.35	20.96	60.95	26.86	32.21	21.04	22.44	23.85	25.53	28.04	30.89
PRMLxT1L	2023-02-16 11:17:48	-28.01	47.51	62.25	48.64	52.66	42.53	40.45	43.39	42.14	43.77	41.17	50.14	43.58	50.52	44.43	49.56	46.52	39.18	42.95	37.36	35.29	29.75	28.57	114.03	49.18	17.67	66.52	20.81	60.96	27.41	32.31	21.59	22.89	23.87	25.54	27.94	30.73
PRMLxT1L	2023-02-07 10:49:23	-28.06	47.48	43.26	42.73	40.04	34.85	29.68	29.21	26.00	33.25	35.40	26.36	28.52	28.96	32.48	31.89	35.03	32.25	30.46	22.59	28.65	113.92	48.97	18.30	66.52	20.88	60.76	27.35	31.93	21.52	22.77	23.92	25.75	28.40	31.01		
PRMLxT1L	2023-02-07 09:46:05	-27.99	33.19	46.19	53.54	47.05	55.56	55.68	52.45	56.35	44.42	43.46	45.67	30.06	39.00	39.53	48.05	48.79	45.37	43.94	41.36	32.60	114.05	49.11	18.67	66.56	20.82	60.90	26.86	31.96	21.73	22.73	23.93	26.12	28.15	31.09		
PRMLxT1L	2023-02-07 09:45:17	-28.05	45.67	39.96	43.29	42.31	58.49	46.03	50.16	51.85	50.11	66.71	39.93	40.07	38.72	32.68	35.15	31.88	36.99	37.45	37.58	34.26	28.16	29.36	114.04	49.10	18.49	66.51	20.77	60.91	26.34	32.01	21.54	22.86	24.13	25.86	28.23	31.07
PRMLxT1L	2022-12-20 13:00:31	-28.11	56.99	50.48	48.43	50.90	44.52	44.00	48.77	47.12	48.33	52.27	46.60	44.27	43.13	44.43	48.00	48.38	46.83	43.84	47.50	49.07	39.72	33.75	114.05	49.26	22.86	66.19	21.60	62.93	28.74	34.08	22.01	22.97	24.18	25.85	28.01	31.05
PRMLxT1L	2022-12-20 11:05:47	-28.18	56.09	61.73	62.72	49.75	53.13	45.26	41.24	50.37	49.80	50.82	50.86	45.12	46.82	46.90	46.89	48.66	44.76	46.31	43.44	47.95	46.71	36.86	113.96	49.02	21.40	66.01	22.23	62.86	28.87	34.29	21.74	22.52	23.92	25.61	27.92	30.77

1	2023-04-20 05:00:55	Run	Key	1	0
2	2023-04-20 05:51:18	Pause	Key	1	0
3	2023-04-20 05:51:20	Stop	Key	1	0

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LApeak (max)	LApeak (max) Time	SPL 1 Count	SPL 1 Duration	SPL 2 Count	SPL 2 Duration	Peak 1 Count	Peak 1 Duration	Peak 2 Count	Peak 2 Duration	Peak 3 Count
1	2023-04-20	05:00:55	00:50:24.5	00:50:23.1	00:00:01.4	65.8	100.6	50.4	05:41:09	81.4	05:12:43	98.9	05:28:58	0	0.0	0	0.0	0	0.0	0	0.0	0

Peak 3 Duration	TWA(Projected) 0	TWA(Projected) 1	LAS3.00	LAS8.00	LAS16.00	LAS25.00	LAS50.00	LAS90.00	SEA	LCeq	LAeq	LCeq - LAeq	LALeq	LAeq	LALeq - LAeq	Overload Count	Overload Duration	Comments
0.0	63.4	65.8	73.9	70.8	67.0	66.2	56.3	52.0	-99.9	72.5	65.8	6.7	68.6	65.8	2.8	0	0.0	

Summary

File Name on Meter LxT_Data.141.s
File Name on PC LxT_0003285-20230420 055417-LxT_Data.141.ldbin
Serial Number 0003285
Model SoundTrack LxT®
Firmware Version 2.302
User
Location
Job Description **Santa Fe Springs, Loading Dock**
Note

Measurement

Description
Start 2023-04-20 05:54:17
Stop 2023-04-20 06:55:40
Duration 01:01:22.8
Run Time 01:01:20.9
Pause 00:00:01.9

Pre-Calibration 2023-04-20 05:53:11
Post-Calibration None
Calibration Deviation ---

Overall Settings

RMS Weight A Weighting
Peak Weight A Weighting
Detector Slow
Preamplifier PRMLxT1L
Microphone Correction Off
Integration Method Linear
Overload 121.8 dB

	A	C	Z
Under Range Peak	78.1	75.1	80.1 dB
Under Range Limit	26.1	25.9	31.0 dB
Noise Floor	16.5	16.8	21.9 dB

	First	Second	Third
--	--------------	---------------	--------------

Instrument Identification

Results

LAeq 59.3 dB
LAE 95.0 dB
EA 348.106 $\mu\text{Pa}^2\text{h}$
EA8 2.724 mPa^2h
EA40 13.618 mPa^2h
LApeak (max) 2023-04-20 06:41:29 96.5 dB
LASmax 2023-04-20 06:41:29 79.6 dB
LASmin 2023-04-20 06:32:45 48.8 dB
SEA -99.9 dB

	Exceedance Counts	Duration
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LApeak > 135.0 dB	0	0.0 s
LApeak > 137.0 dB	0	0.0 s
LApeak > 140.0 dB	0	0.0 s

LCeq 68.8 dB
LAeq 59.3 dB
LCeq - LAeq 9.5 dB
LAIeq 61.9 dB

LAeq 59.3 dB
 LA1eq - LAeq 2.6 dB

A		C		Z	
dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
59.3		68.8			
79.6	2023/04/20 6:41:29				
48.8	2023/04/20 6:32:45				
96.5	2023/04/20 6:41:29				

Overload Count 0
 Overload Duration 0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	3 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h

Results

Dose	0.14	0.01 %
Projected Dose	1.12	0.09 %
TWA (Projected)	57.6	59.3 dB
TWA (t)	42.8	50.4 dB
Lep (t)	50.4	50.4 dB

Statistics

LA 3.00	64.2 dB
LA 8.00	63.4 dB
LA 16.00	61.3 dB
LA 25.00	58.8 dB
LA 50.00	54.7 dB
LA 90.00	50.4 dB

Calibration History

Preamp	Date	dB re. 1V/Pa	6.3	8.0	10.0	12.5	16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
PRMLxT1L	2023-04-20 05:53:09	-28.17	46.01	48.06	45.97	45.66	55.38	56.64	54.71	59.17	62.81	56.41	54.52	64.39	58.12	53.75	57.16	50.37	47.92	47.42	46.61	43.74	37.46	31.46	113.96	49.08	18.82	65.82	21.67	62.81	28.55	34.03	21.63	22.64	24.04	25.88	27.96	30.90
PRMLxT1L	2023-04-20 04:58:32	-28.15	65.01	58.46	61.83	56.14	61.83	64.52	68.85	69.38	62.35	57.22	66.34	65.72	60.34	66.34	65.05	62.81	64.43	62.36	63.84	60.92	54.40	40.92	113.94	49.21	27.45	65.89	22.08	62.77	28.56	33.89	21.51	22.91	24.21	26.01	28.12	31.08
PRMLxT1L	2023-02-16 13:52:45	-28.11	59.49	56.37	53.26	54.06	45.60	45.34	43.69	44.27	38.96	36.84	32.73	33.38	33.58	36.19	31.56	32.60	37.52	34.57	36.42	37.45	27.09	29.02	113.94	48.96	18.55	66.38	20.66	60.93	26.90	32.18	21.47	22.53	24.21	25.91	28.37	31.04
PRMLxT1L	2023-02-16 12:38:23	-28.06	50.15	50.86	43.71	41.91	47.59	45.31	46.06	42.52	43.58	44.34	45.64	51.34	57.01	45.48	47.67	45.16	42.51	42.09	42.38	42.25	32.05	29.91	114.01	49.05	18.36	66.75	20.29	60.98	27.64	32.04	21.59	22.66	23.94	25.95	27.82	30.77
PRMLxT1L	2023-02-16 12:11:10	-28.09	48.61	48.85	51.02	50.24	48.48	50.96	50.51	47.68	41.37	36.62	44.83	41.24	43.32	45.24	41.88	41.05	40.87	43.01	43.90	41.60	33.68	30.29	113.96	49.04	18.45	66.48	20.64	60.97	27.27	32.21	21.14	22.18	23.88	25.50	28.11	30.94
PRMLxT1L	2023-02-16 11:47:34	-28.06	66.51	56.84	46.07	46.04	42.77	52.20	52.36	49.37	41.24	46.55	44.31	40.21	44.70	69.20	45.88	57.02	58.97	50.05	59.03	52.91	41.64	33.23	113.94	49.05	19.80	66.35	20.96	60.95	26.86	32.21	21.04	22.44	23.85	25.53	28.04	30.89
PRMLxT1L	2023-02-16 11:17:48	-28.01	47.51	62.25	48.64	52.66	42.53	40.45	43.39	42.14	43.77	41.17	50.14	43.58	50.52	44.43	49.56	46.52	39.18	42.95	37.36	35.29	29.75	28.57	114.03	49.18	17.67	66.52	20.81	60.96	27.41	32.31	21.59	22.89	23.87	25.54	27.94	30.73
PRMLxT1L	2023-02-07 10:49:23	-28.06	45.86	48.16	47.48	43.26	42.73	40.04	34.85	29.68	29.21	26.00	33.25	35.40	26.36	28.52	28.96	32.48	31.89	35.03	32.25	30.46	22.59	28.65	113.92	48.97	18.30	66.52	20.88	60.76	27.35	31.93	21.52	22.77	23.92	25.75	28.40	31.01
PRMLxT1L	2023-02-07 09:46:05	-27.99	40.27	24.78	33.19	46.19	53.54	47.05	55.56	55.68	52.45	56.35	44.42	43.46	45.67	30.06	39.00	39.53	48.05	48.79	45.37	43.94	41.36	32.60	114.05	49.11	18.67	66.56	20.82	60.90	26.86	31.96	21.73	22.73	23.93	26.12	28.15	31.09
PRMLxT1L	2023-02-07 09:45:17	-28.05	45.67	39.96	43.29	42.31	58.49	46.03	50.16	51.85	50.11	66.71	39.93	40.07	38.72	32.68	35.15	31.88	36.99	37.45	37.58	34.26	28.16	29.36	114.04	49.10	18.49	66.51	20.77	60.91	26.34	32.01	21.54	22.86	24.13	25.86	28.23	31.07
PRMLxT1L	2022-12-20 13:00:31	-28.11	56.99	50.48	48.43	50.90	44.52	44.00	48.77	47.12	48.33	52.27	46.60	44.27	43.13	44.43	48.00	48.38	46.83	43.84	47.50	49.07	39.72	33.75	114.05	49.26	22.86	66.19	21.60	62.93	28.74	34.08	22.01	22.97	24.18	25.85	28.01	31.05

Record #	Date	Time	Record Type	Cause	# TH Record	Sound Record
1	2023-04-20	05:53:11	Calibration Change	Key	-0.01 dB	0
2	2023-04-20	05:54:17	Run	Key	1	0
3	2023-04-20	06:55:38	Pause	Key	1	0
4	2023-04-20	06:55:40	Stop	Key	1	0

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LAE	LASmin	LASmin Time	LASmax	LASmax Time	LApeak (max)	LApeak (max) Time	SPL 1 Count	SPL 1 Duration	SPL 2 Count	SPL 2 Duration	Peak 1 Count	Peak 1 Duration
1	2023-04-20	05:54:17	01:00:00.0	01:00:00.0	00:00:00.0	59.2	94.8	48.8	06:32:45	79.6	06:41:29	96.5	06:41:29	0	0.0	0	0.0	0	0.0
2	2023-04-20	06:54:17	00:01:22.8	00:01:20.9	00:00:01.9	60.4	79.5	49.8	06:55:36	76.0	06:54:30	92.9	06:54:29	0	0.0	0	0.0	0	0.0

Peak 2 Count	Peak 2 Duration	Peak 3 Count	Peak 3 Duration	TWA(Projected) 0	TWA(Projected) 1	LAS3.00	LAS8.00	LAS16.00	LAS25.00	LAS50.00	LAS90.00	SEA	LCeq	LAeq	LCeq - LAeq	LALeq	LAeq	LALeq - LAeq	Overload Count	Overload Duration	Comments
0	0.0	0	0.0	57.6	59.2	64.2	63.4	61.3	58.9	54.7	50.4	-99.9	68.8	59.2	9.6	61.8	59.2	2.6	0	0.0	
0	0.0	0	0.0	57.2	60.4	69.4	59.0	57.9	57.0	52.9	50.3	-99.9	67.8	60.4	7.4	65.7	60.4	5.3	0	0.0	

Date: August 24, 2023
To: Chad Beckstrom, Senior Environmental Director
Dimitri Antoniou, Air Quality and Noise Practice Lead
Ascent Environmental
455 Capitol Mall, Suite 300
Sacramento, CA 95814
From: Alejandro Garcia, INCE-USA, Noise and Vibration Consultant
Subject: Noise Memorandum: Summary of the Noise Monitoring Conducted at Harbor
Distributing, Los Angeles California.
Project Number: 20220103.01

This concise noise memorandum presents an overview of the noise assessments carried out on Tuesday, August 22, 2023, at the Harbor Distributing warehouse situated at 13344 S Main St, Los Angeles, California. The primary objective of the noise monitoring survey was to record the noise levels produced by the loading sliding door.

The noise measurements were executed using a Soft dB Piccolo sound level meter (SLM), which conforms to the standards set by the American National Standards Institute for both Type 2 and Class 2 instrumentation. The SLM was configured with a "slow" response, "A" weighting (dBA), and recorded at one-second intervals. To ensure accuracy, the SLM underwent calibration both before and after the noise monitoring survey, employing the high precision Larson Davis CAL 200 calibrator.

Throughout the measurements, the microphone was positioned at a minimum height of 5 feet above ground level, maintaining a distance of at least 5 feet from any reflective surfaces. Additionally, the microphone was outfitted with a windscreen to mitigate wind interference and ensure reliable readings

Noise Monitoring Results

Due to the sliding door briefly pausing before its automatic closure (resulting in no noise generation), distinct measurements were conducted. The initial measurement recorded noise emanating from the door's opening, while the subsequent one captured the noise produced during the door's closure.

Table 1 presents the measurements at one-second intervals during the door opening, including the overall average L_{eq} and L_{max} of these intervals. Similarly, Table 2 details the measurements at one-second intervals during the door closing, along with the average L_{eq} and L_{max} of these intervals.

For detailed measurement data, field notes, and visual references, please consult Attachment A in this Memorandum.

Table 1. Door Opening Sound Levels

SLM Record Number	1-Second Interval L_{eq} , dBA	1-Second Interval L_{max} , dBA
311	62.7	62.7
312	62.6	62.7
313	62.6	62.7
314	62.2	62.7

SLM Record Number	1-Second Interval L_{eq} , dBA	1-Second Interval L_{max} , dBA
315	63.3	63.2
316	74.8*	73.4
317	69.8	73.5*
318	64.7	71.2
319	63.2	68.2
Sum Average Noise Level	67.8	69.1
<i>Notes</i>		
<i>*Maximum level measured during 1-second interval.</i>		

Table 1. Door Closing Sound Levels

SLM Record Number	1-Second Interval L_{eq} , dBA	1-Second Interval L_{max} , dBA
320	62.9	63.7
321	63.9	63.7
322	65.0	64.7
323	65.4	65.1
324	64.4	65.1
325	64.1	64.7
326	65.2	65.2
327	63.2	65.1
328	65.2	65.3
329	62.9	64.8
330	63.7	64.1
331	69.7*	66.7*
Sum Average Noise Level	65.1	64.9
<i>Notes</i>		
<i>*Maximum level measured during 1-second interval.</i>		

ATTACHMENT A

FIELD NOTES, MEASUREMENT DATA, & PHOTOS

August, 22, 2023

Staff/Personnel: Alejandro Garcia

Harbor Distributing Warehouse Noise Monitoring Field Notes

Calibrator Model: CAL200, Serial Number: 19249

Calibration before 8:44 AM ± 0.0 dB

Calibration after 9:22 AM ± 0.0 dB

Sound Level Meter: Piccolo II, Serial Number:P0223071701

Records 311-319: Observed SLM at 74 dBA when door opens making a "zip" like noise.

Records 320-331: Observed SLM at 68 dBA when door shuts and comes in contact with ground while closing. Relatively quiet compared to the existing ambient of 62-63 dBA.

Project: Harbor Distributing Sliding Door Noise Measurements

Day	Date	Time	Duration	Leq	Lmax		
Records 311-319			Seconds	Avg Leq	Energy	Avg Lmax	Energy
Door Opening Measurement				67.8		69.1	
Tuesday	2023-08-22	09:06:55	0:00:01	62.7	1862087	62.7	1862087
	2023-08-22	09:06:56	0:00:01	62.6	1819701	62.7	1862087
	2023-08-22	09:06:57	0:00:01	62.6	1819701	62.7	1862087
	2023-08-22	09:06:58	0:00:01	62.2	1659587	62.7	1862087
	2023-08-22	09:06:59	0:00:01	63.3	2137962	63.2	2089296
	2023-08-22	09:07:00	0:00:01	74.8	30199517	73.4	21877616
	2023-08-22	09:07:01	0:00:01	69.8	9549926	73.5	22387211
	2023-08-22	09:07:02	0:00:01	64.7	2951209	71.2	13182567
	2023-08-22	09:07:02	0:00:01	63.2	2089296	68.2	6606934

Table Summary

Source at 5 feet	Leq	Lmax
Door Open	67.8	69.1
Door Close	65.1	64.9
Truck Movements	75.9	91.5

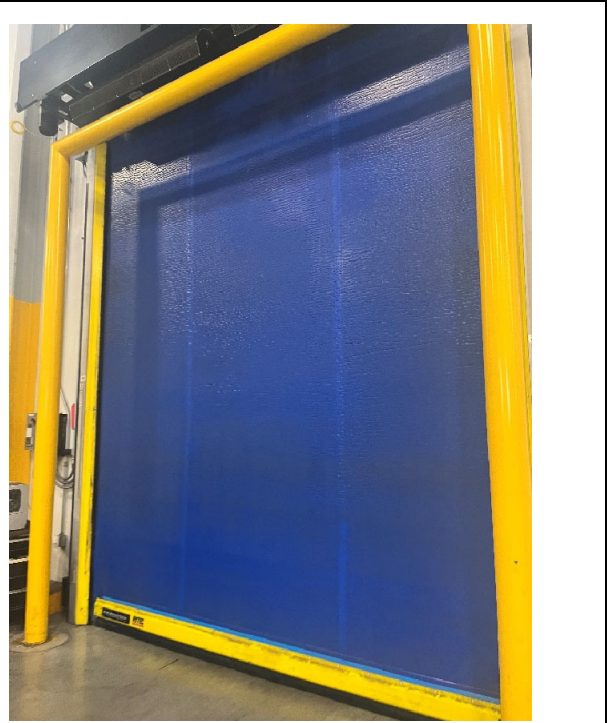
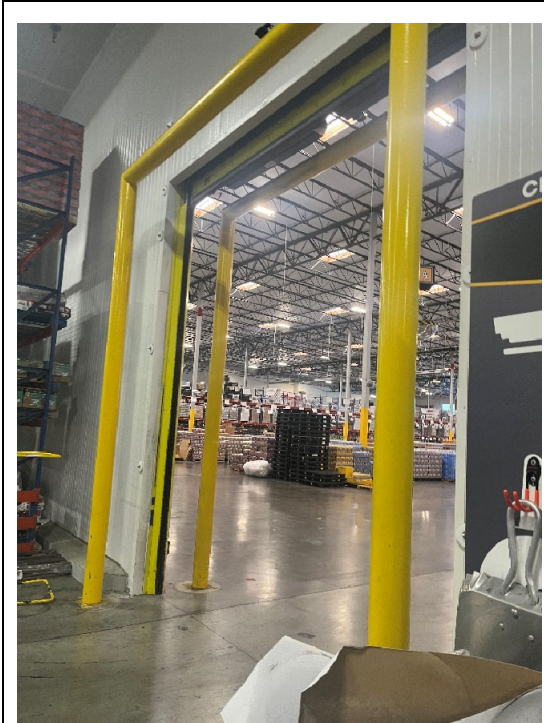
Records 320-331			Avg Leq	Energy	Avg Lmax	Energy	
Door Closing Measurement				65.1		64.9	
Tuesday	2023-08-22	09:07:09	0:00:01	62.9	1949845	63.7	2344229
	2023-08-22	09:07:10	0:00:01	63.9	2454709	63.7	2344229
	2023-08-22	09:07:11	0:00:01	65.0	3162278	64.7	2951209
	2023-08-22	09:07:12	0:00:01	65.4	3467369	65.1	3235937
	2023-08-22	09:07:13	0:00:01	64.4	2754229	65.1	3235937
	2023-08-22	09:07:14	0:00:01	64.1	2570396	64.7	2951209
	2023-08-22	09:07:15	0:00:01	65.2	3311311	65.2	3311311
	2023-08-22	09:07:16	0:00:01	63.2	2089296	65.1	3235937
	2023-08-22	09:07:17	0:00:01	65.2	3311311	65.3	3388442
	2023-08-22	09:07:18	0:00:01	62.9	1949845	64.8	3019952
	2023-08-22	09:07:19	0:00:01	63.7	2344229	64.1	2570396
	2023-08-22	09:07:21	0:00:01	69.7	9332543	66.7	4677351

Truck movement at 16 feet

Leq	Lmax
65.8	81.4

Truck movement noise adjusted for 5 feet

Leq	Lmax
75.9	91.5



Parking Lot Noise, Squaw Valley

Day	Time	Duration	Location	Distance to POI	Leq	Lmax	Lmin	L10	L50	L90	Major Noise Sources	
1	3/30/2012	9:42 AM	15 min	Funitel Lift	18 yds to bldg	69.2	74/80.8	66.6	70.6	68.7	67.6	Funitel lift is primary noise source with an Lmax of 74 @ 18 yds. Person dropped snow snowboard about 15 feet away with an Lmax of 80.8. Other sources include people talking nearby noise meter.
2	3/30/2012	11:42 AM	15 min	Squaw Entrance	31 yds to sign	61.3	65	48.9	63.3	55.7	51.5	Primary noise sources include mobile sources from delivery trucks (e.g., fed ex, restaurant supplies) unloading, closing doors, and brakes, and passanger vehicles entering the parking lot and Squaw Village. Other sources include people talking. Max occured 13 times and can be attributed to vehicle drive by at approximately 15 ft from meter.
3	3/30/2012	3:29 PM	15 min	Far East Express	18 yds from lift	69.6	73.5	66.8	71	69.3	67.8	Primary noise source is far east express lift with an Lmax of 73.5 @ 18 yds. Other noise sources include typical parking lot noises such as people walking/talking around cars, car doors opening and closing, cars driving by, and engines turning on.
4	3/30/2012	4:00 PM	15 min	Residential Area	119 yds from CL of	53.4	63.7	44.5	56.5	51	48.3	Primary: Traffic from Squaw Creek Road, Christy Ln, and Christy Hill Rd. Other noise sources: people talking
5	3/30/2012	4:30 PM	15 mi	Christy Hill/Squaw	11 yds from CL	67.9	80.1	49.6	71.5	66.2	59.2	Traffic Count Data on Squaw Creek Road: Peak Hour Friday Afternoon 4:30-5:30 PM. Leaving Squaw-828 passanger, 8 Busses. Entering Squaw 232 passanger, 4 Buses.
2	3/30/2012	10:30 PM	15 min	Squaw Entrance	31 yds to sign	53.9	72.3	45.2	55.7	49.4	46.7	Primary Noise: Cars driving by. Other noise sources- people talking/yelling. Groomers on the slopes in the background
6	4/1/2012	9:00 AM	15 min	Red Dog	44 yds	63.7	75.8	61.9	64.2	63.4	62.7	Primary Noise- Red Dog Building. Other noise sources-cars/shuttles driving by and avalanch blasting in the background. Max-shuttle drive by meter
	4/1/2012	9:00 AM	15 min	Red Dog BLD	19 yds	71.3	71.3	71.3				Snowmaking building
7	4/1/2012	10:30 AM	15 min	Olympic Village Inn	67 yds	59.8	78.1	40.5	61.6	50.3	43.4	Primary Noise: Typical parking lot sounds (doors slamming, car alarms, engines starting).
8	4/1/2012	11:45 AM	15 min	East Parking Lot	71 yds Squaw Village Entrance	54.6	73	44.8	57.5	50	46.6	Primary Noise: Typical parking lot sounds (doors slamming, car alarms, engines starting). Background noise from race announcer and music at the Village. Max-car door slamming 15' away
9	4/1/2012	2:00 PM	15 min	Residence near Squaw Resort	107 yds from residence on bridge	57.9	72.7	39.9	62.1	47.3	42.4	Traffic County Data at Squaw Creek Resort: 2PM Sunday. 92 passanger, 12 Shutt;e bus Noise Sources: Primary-mobile, other environmental- birds, wind
5	4/1/2012	2:30 PM	15 min	Christy Hill/Squaw	11 yds from CL	65.5	78.8	46.1	68.6	62.7	56.6	Traffic Count Data on Squaw Creek Road: Peak Hour Sunday Afternoon 2:30-3:30 PM. Leaving Squaw- 720 passanger, 12 Busses. Entering Squaw 380 passanger, 16 Busses.
10	4/1/2012	5:00 PM	15 min	Inside Squaw Village	Lunch table in front	67.8	80.6	61.5	70.2	66.2	63.9	End of high activity ski day on Sunday afternoon. Many people in village eating, walking, kids playing/yelling. Max-kids screaminf 12 yds away.
4	4/1/2012	8:00 PM	15 min	Residential Area	119 yds from CL of	46.5	60	37.1	49.3	41.8	35.6	Primary: Traffic from Squaw Creek Road, Christy Ln, and Christy Hill Rd. Other noise sources: people talking. Max-SUV driving by
11	4/2/2012	9:30 AM	15 min	Residential Area 410	Adjacent to	53.4	71.3	42.3	53.9	45.5	43.5	Primary noise: cars driving by. Max- SUV drive by.

Day	Time	Duration	Location	Distance to POI	Leq	Lmax	Lmin	L10	L50	L90	Major Noise Sources	
2013												
12	4/11/2013	10:56 PM	10 min	Squaw-South Side	1000 feet to snow cat	48.3	58.4	40.6	51.5	46	43	Primary noise source was snow cat working on the slopes 1000 feet away. Max was from beeping.
13	4/12/2013	10:00 AM	5 min	red dog parking lot	72 feet from	82.4	91.5	65.1	87	78.7	70.3	Primary noise source was dozer running and dozer scraping. Max occurred from scraper @ 27 feet from SLM. The dozer came as close as 27 and went as far as 144 feet. Therefore distance to acoustical center was approx 72 f feet
	4/12/2013	10:05 AM	5 min	red dog parking lot	45 feet from	82	93	65.1	85.9	77.8	69.3	Primary noise source was snow plower with augers running. Max occurred from plow @ 18 feet from SLM. The dozer came as close as 18 feet and went as far as 30 yards. Therefore distance to acoustical center was approx 45 ft
14	4/12/2013	11:10 AM	15 min	Squaw Village Lodge-Facing South		55.5	64.2	53.7	56.2	55.2	54.5	south facing-primary noise from lift. Other noise sources included running water from nearby house, people walking and talking. XX feet north of squaw lodge
15	4/12/2013	11:52 AM	15 min	Red Wolf Lodge	29 feet north of building	53	62.6	51.2	53.8	52.3	51.9	next to wooden walking path and small storage shed. Primary noise from people walking by in skis.
16	4/12/2013	1:45 PM	15 min	Nearest residence	105 feet from	59.5	71.5	39.2	64.3	52.8	43.5	primary noise from traffic on squaw village road.
17	4/12/2013	2:26 PM	15 min	Lot 4	XX feet from	44.3	63	40.7	45	43	41.5	traffic noise in background from squaw village road and frogs
18	4/12/2013	3:03 PM	15 min	olympic village courtyard		42.1	55.8	38.1	43.8	40.4	39.2	generally very quiet. A few cars pass by resulted in the max. A few people talking

Equipment Measurements

	Lmax	Reference Distance
1 Funitel	71.7	14 yards
2 Far East Express Lift	73.5	18 yards
3 Red Dog	71.3	19 yards

Notes: Matching colored cells indicate measurements taken at the same location but different times of the day

Noise Propagation Calculations

- Construction and Vibration Noise
- Operational Stationary Noise
- Operational Traffic Noise

5037 Patata Street (Demolition)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	509	65.0	Tractor	84	0.4
Residential - Fostoria Street	350	68.2	Excavator	85	0.4
Businesses	750	61.6	Dump Truck	84	0.4

Ground Type	hard
Source Height	8
Receiver Height	5
Ground Factor ²	0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Tractor	80.0
Excavator	81.0
Dump Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

85.2

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

5037 Patata Street (Grading)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	558	65.0	Tractor	84	0.4
Residential - Fostoria Street	350	69.0	Excavator	85	0.4
Businesses	750	62.4	Grader	85	0.4
			Front End Loader	80	0.4

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Tractor	80.0
Excavator	81.0
Grader	81.0
Front End Loader	76.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

85.9

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

5037 Patata Street (Construction)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	322	70.0	Man Lift	85	0.2
Residential - Fostoria Street	350	69.3	Concrete Saw	90	0.2
Businesses	750	62.7	Crane	85	0.16
			Dump Truck	84	0.4

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Man Lift	78.0
Concrete Saw	83.0
Crane	77.0
Dump Truck	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

86.2

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

5037 Patata Street (Paving)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	12	100.0	Paver	85	0.5
Residential - Fostoria Street	350	70.5	Concrete Saw	90	0.2
Businesses	750	63.9	Roller	85	0.2
			Grader	85	0.4

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Paver	82.0
Concrete Saw	83.0
Roller	78.0
Grader	81.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

87.4

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

5037 Patata Street (Demolition)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	804	65.0	Tractor	84	1
Residential - Fostoria Street	350	72.2	Excavator	85	1
Businesses	750	65.6	Dump Truck	84	1

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Tractor	84.0
Excavator	85.0
Dump Truck	84.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

89.1

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

5037 Patata Street (Grading)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	882	65.0	Tractor	84	1
Residential - Fostoria Street	350	73.0	Excavator	85	1
Businesses	750	66.4	Grader	85	1
			Front End Loader	80	1

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Tractor	84.0
Excavator	85.0
Grader	85.0
Front End Loader	80.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

89.9

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

5037 Patata Street (Construction)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	686	70.0	Man Lift	85	1
Residential - Fostoria Street	350	75.8	Concrete Saw	90	1
Businesses	750	69.2	Crane	85	1
			Dump Truck	84	1

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Man Lift	85.0
Concrete Saw	90.0
Crane	85.0
Dump Truck	84.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

92.7

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$$L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$$

Where: E.L. = Emission Level;

U.F. = Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

5037 Patata Street (Paving)



Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L _{eq} dBA)	Equipment	Reference Emission	
				Noise Levels (L _{max}) at 50 feet ¹	Usage Factor ¹
threshold	1,241	65.0	Paver	85	1
Residential - Fostoria Street	350	76.0	Concrete Saw	90	1
Businesses	750	69.4	Roller	85	1
			Grader	85	1

Ground Type hard
Source Height 8
Receiver Height 5
Ground Factor² 0.00

Predicted Noise Level ³	L _{eq} dBA at 50 feet ³
Paver	85.0
Concrete Saw	90.0
Roller	85.0
Grader	85.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)

92.9

Sources:

¹ Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.
² Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).
³ Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).
 $L_{eq}(\text{equip}) = E.L. + 10 \cdot \log(U.F.) - 20 \cdot \log(D/50) - 10 \cdot G \cdot \log(D/50)$

Where: E.L. = Emission Level;
 U.F. = Usage Factor;
 G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and
 D = Distance from source to receiver.

Equipment Description	Acoustical Usage Factor (%)	Spec 721.560 Lmax @ 50ft (dBA slow)	Actual Measured Lmax @ 50ft (dBA slow)	No. of Actual Data Samples (count)	Spec 721.560 LmaxCalc	Spec 721.560 Leq	Distance	Actual Measured LmaxCalc	Actual Measured Leq
Auger Drill Rig	20	85	84	36	79.0	72.0	100	78.0	71.0
Backhoe	40	80	78	372	74.0	70.0	100	72.0	68.0
Bar Bender	20	80	na	0	74.0	67.0	100		
Blasting	na	94	na	0	88.0		100		
Boring Jack Power Unit	50	80	83	1	74.0	71.0	100	77.0	74.0
Chain Saw	20	85	84	46	79.0	72.0	100	78.0	71.0
Clam Shovel (dropping)	20	93	87	4	87.0	80.0	100	81.0	74.0
Compactor (ground)	20	80	83	57	74.0	67.0	100	77.0	70.0
Compressor (air)	40	80	78	18	74.0	70.0	100	72.0	68.0
Concrete Batch Plant	15	83	na	0	77.0	68.7	100		
Concrete Mixer Truck	40	85	79	40	79.0	75.0	100	73.0	69.0
Concrete Pump Truck	20	82	81	30	76.0	69.0	100	75.0	68.0
Concrete Saw	20	90	90	55	84.0	77.0	100	84.0	77.0
Crane	16	85	81	405	79.0	71.0	100	75.0	67.0
Dozer	40	85	82	55	79.0	75.0	100	76.0	72.0
Drill Rig Truck	20	84	79	22	78.0	71.0	100	73.0	66.0
Drum Mixer	50	80	80	1	74.0	71.0	100	74.0	71.0
Dump Truck	40	84	76	31	78.0	74.0	100	70.0	66.0
Excavator	40	85	81	170	79.0	75.0	100	75.0	71.0
Flat Bed Truck	40	84	74	4	78.0	74.0	100	68.0	64.0
Front End Loader	40	80	79	96	74.0	70.0	100	73.0	69.0
Generator	50	82	81	19	76.0	73.0	100	75.0	72.0
Generator (<25KVA, VMS s	50	70	73	74	64.0	61.0	100	67.0	64.0
Gradall	40	85	83	70	79.0	75.0	100	77.0	73.0
Grader	40	85	na	0	79.0	75.0	100		
Grapple (on Backhoe)	40	85	87	1	79.0	75.0	100	81.0	77.0
Horizontal Boring Hydr. Jac	25	80	82	6	74.0	68.0	100	76.0	70.0
Hydra Break Ram	10	90	na	0	84.0	74.0	100		
Impact Pile Driver	20	95	101	11	89.0	82.0	100	95.0	88.0
Jackhammer	20	85	89	133	79.0	72.0	100	83.0	76.0
Man Lift	20	85	75	23	79.0	72.0	100	69.0	62.0
Mounted Impact Hammer (20	90	90	212	84.0	77.0	100	84.0	77.0
Pavement Scarafier	20	85	90	2	79.0	72.0	100	84.0	77.0
Paver	50	85	77	9	79.0	76.0	100	71.0	68.0
Pickup Truck	40	55	75	1	49.0	45.0	100	69.0	65.0
Pneumatic Tools	50	85	85	90	79.0	76.0	100	79.0	76.0
Pumps	50	77	81	17	71.0	68.0	100	75.0	72.0
Refrigerator Unit	100	82	73	3	76.0	76.0	100	67.0	67.0
Rivit Buster/chipping gun	20	85	79	19	79.0	72.0	100	73.0	66.0
Rock Drill	20	85	81	3	79.0	72.0	100	75.0	68.0
Roller	20	85	80	16	79.0	72.0	100	74.0	67.0
Sand Blasting (Single Nozzl	20	85	96	9	79.0	72.0	100	90.0	83.0
Scraper	40	85	84	12	79.0	75.0	100	78.0	74.0
Shears (on backhoe)	40	85	96	5	79.0	75.0	100	90.0	86.0
Slurry Plant	100	78	78	1	72.0	72.0	100	72.0	72.0
Slurry Trenching Machine	50	82	80	75	76.0	73.0	100	74.0	71.0
Soil Mix Drill Rig	50	80	na	0	74.0	71.0	100		
Tractor	40	84	na	0	78.0	74.0	100		
Vacuum Excavator (Vac-tru	40	85	85	149	79.0	75.0	100	79.0	75.0
Vacuum Street Sweeper	10	80	82	19	74.0	64.0	100	76.0	66.0
Ventilation Fan	100	85	79	13	79.0	79.0	100	73.0	73.0
Vibrating Hopper	50	85	87	1	79.0	76.0	100	81.0	78.0
Vibratory Concrete Mixer	20	80	80	1	74.0	67.0	100	74.0	67.0
Vibratory Pile Driver	20	95	101	44	89.0	82.0	100	95.0	88.0
Warning Horn	5	85	83	12	79.0	66.0	100	77.0	64.0
Welder / Torch	40	73	74	5	67.0	63.0	100	68.0	64.0

Source:

FHWA Roadway Construction Noise Model, January 2006. Table 9.1

U.S. Department of Transportation

CA/T Construction Spec. 721.560

Distance Propagation Calculations for Stationary Sources of Ground Vibration



KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Determine units in which to perform calculation.

- If vibration decibels (VdB), then use Table A and proceed to Steps 2A and 3A.
- If peak particle velocity (PPV), then use Table B and proceed to Steps 2B and 3B.

STEP 2A: Identify the vibration source and enter the reference vibration level (VdB) and distance.

STEP 3A: Select the distance to the receiver.

Table A. Propagation of vibration decibels (VdB) with distance

Noise Source/ID	Reference Noise Level		
	vibration level (VdB)	@	distance (ft)
Vibratory Roller (to project site)	94	@	25
Vibratory Roller (at 80 dBA threshold)	94	@	25
Truck	63.0	@	50

Attenuated Noise Level at Receptor		
vibration level (VdB)	@	distance (ft)
85.0	@	50
80.0	@	73
67.6	@	35

The Lv metric (VdB) is used to assess the likelihood for vibration to result in human annoyance.

STEP 2B: Identify the vibration source and enter the reference peak particle velocity (PPV) and distance.

STEP 3B: Select the distance to the receiver.

Table B. Propagation of peak particle velocity (PPV) with distance

Noise Source/ID	Reference Noise Level		
	vibration level (PPV)	@	distance (ft)
Vibratory Roller	0.210	@	25
Vibratory Roller (at 0.2 PPV threshold)	0.210	@	25
Loaded Trucks	0.076	@	25

Attenuated Noise Level at Receptor		
vibration level (PPV)	@	distance (ft)
0.074	@	50
0.198	@	26
0.229	@	12

The PPV metric (in/sec) is used for assessing the likelihood for the potential of structural damage.

Table C. PPV to Displacement Conversion

Truck PPV	Frequency	pi	Displacement
0.229	500	3.14	7.2893E-05
0.229	1000	3.14	3.64465E-05

Notes:

Computation of propagated vibration levels is based on the equations presented on pg. 185 of FTA 2018. Estimates of attenuated vibration levels do not account for reductions from intervening underground barriers or other underground structures of any type, or changes in soil type.

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

[https://www.linkedin.com/pulse/basic-vibration-theory-acceleration-velocity-franklin-pereny-pmp#:~:text=where%20f%20is%20the%20frequency,\(2%20*%20pi%20*%20f\)](https://www.linkedin.com/pulse/basic-vibration-theory-acceleration-velocity-franklin-pereny-pmp#:~:text=where%20f%20is%20the%20frequency,(2%20*%20pi%20*%20f))



Traffic Noise Spreadsheet Calculator
Existing Conditions

Project: 5037 Patata Street

Noise Level Descriptor: CNEL
Site Conditions: Hard
Traffic Input: ADT
Traffic K-Factor:

Segment Description and Location				Input										Output				
Number	Name	From	To	ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
						Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	75 dBA	70 dBA	65 dBA	60 dBA
#####																		
1	Patata	Wilcox	Atlantic	2,020	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	58.2	1	3	10	31
2	Firestone	Rayo	Atlantic	22,370	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	68.6	11	35	110	348
3	Atlantic	Southern ave	Firestone	9,050	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	64.7	4	14	45	141
4	Atlantic	Firestone	Azalea West	16,110	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	67.2	8	25	79	251
5	Atlantic	Azalea West	Patata St	15,910	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	67.2	8	25	78	248
6	Atlantic	Patata	Cecelia St	8,220	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	64.3	4	13	40	128
7	Atlantic	Cecelia St	Santa Anana	3,060	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	60.0	2	5	15	48
8	Wilcox	Patata St	Cecelia St	2,000	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	58.2	1	3	10	31
9	Wilcox	Patata	Santa Ana	2,830	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	59.7	1	4	14	44



Traffic Noise Spreadsheet Calculator
Existing Plus Project Conditions

Project: 5037 Patata Street

Noise Level Descriptor: CNEL
Site Conditions: Hard
Traffic Input: ADT
Traffic K-Factor:

Segment Description and Location				Input										Output				
Number	Name	From	To	ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃				
						Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve		% Night	70 dBA	65 dBA	60 dBA	55 dBA
#####																		
1	Patata	Wilcox	Atlantic	3,963	35	35	65	97.0%	1.5%	1.5%	85.0%	7.5%	7.5%	61.4	7	21	66	209
2	Firestone	Rayo	Atlantic	24,313	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	69.0	38	120	379	1198
3	Atlantic	Southern ave	Firestone	10,993	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	65.6	17	54	171	541
4	Atlantic	Firestone	Azalea West	18,053	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	67.7	28	89	281	889
5	Atlantic	Azalea West	Patata St	17,853	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	67.7	28	88	278	879
6	Atlantic	Patata	Cecelia St	10,163	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	65.2	16	50	158	501
7	Atlantic	Cecelia St	Santa Anana	5,003	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	62.1	8	25	78	246
8	Wilcox	Patata St	Cecelia St	3,943	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	61.1	6	19	61	194
9	Wilcox	Patata	Santa Ana	4,773	35	35	65	97.5%	1.5%	1.0%	85.0%	7.5%	7.5%	61.9	7	24	74	235

Traffic Noise Spreadsheet Calculator
Onsite Truck Route



Project: 5037 Patata Street

Noise Level Descriptor: CNEL
Site Conditions: Hard
Traffic Input: ADT
Traffic K-Factor:

Segment Description and Location				Input										Output					
Number	Name	From	To	ADT	Speed (mph)	Distance to Directional Centerline, (feet) ₄		Traffic Distribution Characteristics					CNEL, (dBA) _{5,6,7}	Distance to Contour, (feet) ₃					
						Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night		70 dBA	65 dBA	60 dBA	55 dBA	
#####																			
1	Onsite truck route			150	15	42	54	0.0%	0.0%	100.0%	34.0%	33.0%	33.0%	62.3	8	26	81	257	
														55.8	(6.5)				
														50.3	(12)				

<u>Increase in Noise</u>						
#	Segment	From	To	Exist	Plus Project	Change
1	Patata	Wilcox	Atlantic	58.2	61.4	3.2
2	Firestone	Rayo	Atlantic	68.6	69.0	0.4
3	Atlantic	Southern ave	Firestone	64.7	65.6	0.8
4	Atlantic	Firestone	Azalea West	67.2	67.7	0.5
5	Atlantic	Azalea West	Patata St	67.2	67.7	0.5
6	Atlantic	Patata	Cecelia St	64.3	65.2	0.9
7	Atlantic	Cecelia St	Santa Anana	60.0	62.1	2.1
8	Wilcox	Patata St	Cecelia St	58.2	61.1	2.9
9	Wilcox	Patata	Santa Ana	59.7	61.9	2.3

Truck Attenuation and EV Comparison Calculation

	Noise Level		<u>Wall</u> <u>Reduction</u>	<u>Residual</u> <u>Noise dBA</u>
	dBA SEL	FT		
FHWA Truck @ 15 mph				
Reference Noise Level ¹	75	50		
Calculated noise level (attenuation to nearest bld.)	76.9	32	12	64.9
EV Truck @ 18 mph				
Reference Noise Level ²	71.6	24.6		
Calculated noise level (adjusted dist. for comparison to FHWA reference level)	68.5	50		
Calculated noise level (diff. between EV and FHWA truck)	70.5	32	12	58.5
	<u>EV:Diesel Delta</u>	<u>6.5</u>		

Sources

Attenuation Formula

$$Lp(R2)=Lp(R1)-10*\text{Log}10^{(R2/R1)}$$

Lp(R1)	=	reference noise level at known distance
Lp(R2)	=	noise level at second location
R1	=	reference level distance
R2	=	distance to second location

1 Federal Highway Administration. 2019. (December). TECHNICAL MANUAL. Traffic Noise Model 3.0, Figure 6.. U.S. Department of Transportation. Office of Natural Environment. Washington, D.C.

2 Personal communication. Email from Michael Johnson to Ascent. February 2, 2023 (attached)

Raw Traffic Data

	Street	From	to	speed limit	Existing		Added		+ Project	
					Peak	ADT	Trucks	assenger Ca	Peak	ADT
1	Patata	Wilcox	Atlantic	35	202	2,020	1,267	676	396	3,963
2	Firestone	Rayo	Atlantic	35	2237	22,370	1,267	676	2,431	24,313
3	Atlantic	Southern ave	Firestone	35	905	9,050	1,267	676	1,099	10,993
4	Atlantic	Firestone	Azalea West	35	1611	16,110	1,267	676	1,805	18,053
5	Atlantic	Azalea West	Patata St	35	1591	15,910	1,267	676	1,785	17,853
6	Atlantic	Patata	Cecelia St	35	822	8,220	1,267	676	1,016	10,163
7	Atlantic	Cecelia St	Santa Anana	35	306	3,060	1,267	676	500	5,003
8	Wilcox	Patata St	Cecelia St	35	200	2,000	1,267	676	394	3,943
9	Wilcox	Patata	Santa Ana	35	283	2,830	1,267	676	477	4,773

Citation # Citations

- | | | |
|----|--|--|
| 1 | Caltrans Technical Noise Supplement. 2009 (November). Table (5-11), Pg 5-60. | Caltrans Technical Noise Supplement. 2013 (September). Table (4-2), Pg 4-17. |
| 2 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-26), Pg 5-60. | Caltrans Technical Noise Supplement. 2013 (September). Equation (4-5), Pg 4-17. |
| 3 | Caltrans Technical Noise Supplement. 2009 (November). Equation (2-16), Pg 2-32. | FHWA 2004 TNM Version 2.5 |
| 4 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-11), Pg 5-47, 48. | FHWA 2004 TNM Version 2.5 |
| 5 | Caltrans Technical Noise Supplement. 2009 (November). Equation (2-26), Pg 2-55, 56. | Caltrans Technical Noise Supplement. 2013 (September). Equation (2-23), Pg 2-51, 52. |
| 6 | Caltrans Technical Noise Supplement. 2009 (November). Equation (2-27), Pg 2-57. | Caltrans Technical Noise Supplement. 2013 (September). Equation (2-24), Pg 2-53. |
| 7 | Caltrans Technical Noise Supplement. 2009 (November). Pg 2-53. | Caltrans Technical Noise Supplement. 2013 (September). Pg 2-57. |
| 8 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-7), Pg 5-45. | FHWA 2004 TNM Version 2.5 |
| 9 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-8), Pg 5-45. | FHWA 2004 TNM Version 2.5 |
| 10 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-9), Pg 5-45. | FHWA 2004 TNM Version 2.5 |
| 11 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-13), Pg 5-49. | FHWA 2004 TNM Version 2.5 |
| 12 | Caltrans Technical Noise Supplement. 2009 (November). Equation (5-14), Pg 5-49. | FHWA 2004 TNM Version 2.5 |
| 13 | Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (16), Pg 67 | |
| 14 | Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (20), Pg 69 | |
| 15 | Federal Highway Administration Traffic Noise Model Technical Manual. Report No. FHWA-PD-96-010. 1998 (January). Equation (18), Pg 69 | |

References

California Department of Transportation (Caltrans). 2009 (November). Technical Noise Supplement. Available: http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf. Accessed August 17, 2017.

California Department of Transportation (Caltrans). 2013 (September). Technical Noise Supplement. Available: http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013A.pdf. Accessed August 17, 2017.

Federal Highway Administration. 2004. Traffic Noise Model Version 2.5. Available: https://www.fhwa.dot.gov/environment/noise/traffic_noise_model/tnm_v25/. Accessed August 17, 2017.

FW: Truck noise



Michael Johnson <Michael@omprop.com>

To: Yalini Siva; Chad Beckstrom

Hi Michael, see the answer below

Exterior noise test results

Microphone height from ground (mm) : 1200.0					Distance from microphone to origin (mm) : 7500.0				
Speed	Location	Measurement times	Speed (km/h)		Test Results dB(A)	Average of each side dB(A)	Intermediate results dB(A)	Final result dB(A)	
			Inline	Outline					
30km/h	left side	1	30	/	71.8	71.3	71.6	74.2	
		2	30	/	70.6				
		3	30	/	71.2				
		4	30	/	71.4				
	right side	1	30	/	71.1	71.6			
		2	30	/	71.7				
		3	30	/	71.7				
		4	30	/	71.8				
40km/h	left side	1	40	/	72.9	72.0			
		2	40	/	71.4				
		3	40	/	71.4				
		4	40	/	72.3				
	right side	1	40	/	72.3	72.2			
		2	40	/	72.5				
		3	40	/	71.3				
		4	40	/	72.7				
50km/h	left side	1	50	/	73.8	74.2			
		2	50	/	74.2				
		3	50	/	74.6				
		4	50	/	74.3				
	right side	1	50	/	73.4	73.8			
		2	50	/	73.1				
		3	50	/	74.7				
		4	50	/	73.8				

Attenuation Calculations for Stationary Noise Sources

KEY: Orange cells are for input.
 Grey cells are intermediate calculations performed by the model.
 Green cells are data to present in a written analysis (output).

STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor		
	noise level (dBA)	@	distance (ft)	Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	noise level (dBA)	@	distance (ft)
Roll Up Door (Leq)	72.6	@	5	hard	8	5	0.00	48.0	@	85
Roll Up Door (Lmax)	78.3	@	5	hard	8	5	0.00	53.7	@	85
Trucks entering/leaving (leq)	65.8	@	16	hard	8	5	0.00	51.3	@	85
Trucks entering/leaving (lmax)	81.4	@	16	hard	8	5	0.00	66.9	@	85
Loading/Unloading (leq)	59.3	@	100	hard	8	5	0.00	58.5	@	110
Loading/unloading (lmax)	79.6	@	100	hard	8	5	0.00	78.8	@	110
Loading/Unloading (leq) (outside)	59.3	@	100	hard	8	5	0.00	47.8	@	375
Loading/unloading (lmax) (outside)	79.6	@	100	hard	8	5	0.00	68.1	@	375
HVAC	75.0	@	3	hard	8	5	0.00	37.7	@	220
Parking Lot Lmax	78.1	@	15	hard	8	5	0.00	49.9	@	385
HVAC Mitigation (Leq)	43.7	@	220	hard	8	5	0.00	39.7	@	350
HVAC Mitigation (Lmax)	46.7	@	220	hard	8	5	0.00	44.0	@	300
Battery Storage Unit (Leq)	75.0	@	3	hard	8	5	0.00	36.2	@	260
Battery Storage Unit (Lmax)	78.0	@	3	hard	8	5	0.00	39.2	@	260

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 176 and 177 of FTA 2018.

Computation of the ground factor is based on the equation presented in Table 4-26 on pg. 86 of FTA 2018, where the distance of the reference noise level can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Roll up door: 73.5 lmax/67.8 leq added 3X, assuming 3 doors at same time

Sources:

Federal Transit Association (FTA). 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available: <http://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf>Accessed: March 5, 2020.

Parking lot reference Lmax level obtained by Ascent Environmental in 2014 during preparation of the Village At Squaw Valley Specific Plan EIR (Placer County 2014)

Parking Lot Noise Calculation



KEY: Orange cells are for input.
Green cells are data to present in a written analysis (output).

Number of automobiles per hour	338	
Number of buses per hour	0	170
Distance to sensitive receptor (feet)	385	
	<u>distance</u>	<u>sound level</u>
Leq @	50	57.7
Leq @	385	39.9

Source

Federal Transit Administration. 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed February 4, 2019. See pages 45–47, including Equation 4-14.

Parking Lot Noise Calculation

KEY: Orange cells are for input.
Green cells are data to present in a written analysis (output).

Number of automobiles per hour	193	
Number of buses per hour	0	170
Distance to sensitive receptor (feet)	385	

	<u>distance</u>	<u>sound level</u>
Leq @	50	55.2
Leq @	385	37.5

Source

Federal Transit Administration. 2018 (September). Transit Noise and Vibration Impact Assessment. Washington, D.C. Available: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed February 4, 2019. See pages 45–47, including Equation 4-14.

CNEL Calculation: This sheet combines the hourly noise levels from individual stationary sources, based on anticipated operational activity, to compute a combined 24-hour CNEL Level



KEY:
 Orange cells are for input.
 Grey cells are intermediate calculations performed by the model.
 Green cells are data to present in a written analysis (output).

Project Name: 5037 Patata Street Industrial

Computation of CNEL

Hour of Day (24-HR time)	Noise Source (Leq) By Operating Hour					Sound Level Leq (dBA)	Sound Power =10*Log(dBA/10)	Period of 24-Hour Day (1=included, 0=not)			Sound Power Breakdown by Period of Day		
	HVAC/Battery	Parking	Loading	Truck Ops	Roll-Up Door			Day	Evening	Night	Day	Evening	Night
0:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
1:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
2:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
3:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
4:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
5:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
6:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
7:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
8:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
9:00	44.4	40.0	BREAK in Activities			45.8	37,663	1	0	0	37,663	0	0
10:00	44.4	40.0	BREAK in Activities			45.8	37,666	1	0	0	37,666	0	0
11:00	44.4	40.0	BREAK in Activities			45.8	37,666	1	0	0	37,666	0	0
12:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
13:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
14:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
15:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
16:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
17:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
18:00	44.4	40.0	58.5	51.3	48.0	59.7	938,759	1	0	0	938,759	0	0
19:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	1	0	0	934,412	0
20:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	1	0	0	934,412	0
21:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	1	0	0	934,412	0
22:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
23:00	44.4	37.5	58.5	51.3	48.0	59.7	934,412	0	0	1	0	0	934,412
							Sum of Sound Power during Period wo/penalty	8,599,489	2,803,236	8,409,709			
							Log Factor for CNEL Penalty (i.e., 10*log(x))	1	3	10			
							Sound Power during Period with penalty	8,599,489	8,409,709	84,097,093			
							Total Daily Sound Power, with penalties	101,106,292					
							Hours per Day	24					
							Average Hourly Sound Power, with penalties	4,212,762					
							CNEL	66.2					

Notes:

Computation of the CNEL based on 1-hour Leq measurements for each hour of a day are based on equation 2-27 on pg. 2-57 of Caltrans 2009.

Computation of the Ldn based on 1-hour Leq measurements for each hour of a day are based on equation 2-26 on pg. 2-56 of Caltrans 2009.

Penalties are provided in Table 2-12 on pg. 2-52 of Caltrans 2009.

Source:

California Department of Transportation (Caltrans), Division of Environmental Analysis. 2009 (November). *2009 Technical Noise Supplement*. Sacramento, CA. Available: <<http://www.dot.ca.gov/hq/env/noise/>>. Accessed September 24, 2010.

Addition of Noise Levels from Multiple Sources at a Discrete Receptor

OBJECTIVE: This work sheet is designed to estimate the combined level of noise exposure at a single discrete receptor from multiple point sources.

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

Receptor Name: Houses on Fostoria Street, North of the project site

STEP 1: Identify the noise sources and enter the reference noise levels (dBA and distance).

Hour of Day (24-HR time)

STEP 3: Select the distance to the receptor and the reduction provided by any intervening barrier.

Step 1.

Step 2.

Step 3.

Noise Source	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor			
	Reference Noise Level (dBA)	Reference Distance (@ (ft))		Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	Noise Level (dBA)	Distance to Receptor (@ (ft))	Reduction Provided by Barrier, if any (dBA)	
HVAC Unit	75.0	@ 3		hard	35	5	0.00	37.7	@ 220	0	
HVAC Unit	75.0	@ 3		hard	35	5	0.00	37.7	@ 220	0	
HVAC Unit	75.0	@ 3		hard	35	5	0.00	37.7	@ 220	0	
HVAC Unit	75.0	@ 3		hard	35	5	0.00	37.7	@ 220	0	
Battery	75.0	@ 3		hard	35	5	0.00	36.2	@ 260		

Combined level of noise exposure at receptor from all noise sources (dBA): 44.4

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presented in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise level can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Summation of noise levels from different stationary noise sources at the same receptor is based on the equation presented on page 2-3 of FTA 2006.

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: March 5, 2020.

Addition of Noise Levels from Multiple Sources at a Discrete Receptor

OBJECTIVE: This work sheet is designed to estimate the combined level of noise exposure at a single discrete receptor from multiple point sources.

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

Receptor Name: Houses on Fostoria Street, North of the project site

STEP 1: Identify the noise sources and enter the reference noise levels (dBA and distance).

Hour of Day (24-HR time)

STEP 3: Select the distance to the receptor and the reduction provided by any intervening barrier.

Step 1.

Step 2.

Step 3.

Noise Source	Reference Noise Level			Attenuation Characteristics				Attenuated Noise Level at Receptor			
	Reference Noise Level (dBA)	Reference Distance @ (ft)		Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	Noise Level (dBA)	Distance to Receptor @ (ft)	Reduction Provided by Barrier, if any (dBA)	
Parking Lot (Daytime)	57.7	@ 50		hard	8	5	0.00	40.0	@ 385	0	
Parking Lot (Night)	55.2	50		hard	8	5	0.00	37.5	@ 385		
roll up door	72.6	5		hard	8	5	0.00	48.0	@ 85		
Trucks	65.8	16		hard	8	5	0.00	51.3	@ 85		
Loading	59.3	100		hard	8	5	0.00	58.5	@ 110		

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presented in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise level can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Summation of noise levels from different stationary noise sources at the same receptor is based on the equation presented on page 2-3 of FTA 2006.

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: March 5, 2020.