Vista Rose

ON-SITE NOISE ANALYSIS

CITY OF PLACENTIA

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
L_{min}	Minimum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Vista Rose
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

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EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure from adjacent oil field operations within the development of the proposed Vista Rose, TTM 19250 (Project). The Project site is located on the north of Alta Vista Street, east of Rose Drive, and west of Placentia Champions Sports complex in the City of Placentia. This study has been prepared to assess the noise impacts of the Project consistent with applicable City of Placentia noise standards.

ON-SITE NOISE ANALYSIS

This noise analysis is intended to describe noise levels associated with the typical of daytime and nighttime activities at the adjacent oil field. Based on noise measurements of operations at the oil field, the proposed residential development is expected to be exposed to uncontrolled noise levels ranging from 46.2 to 69.3 dBA L_{eq} during the daytime and nighttime. These noise levels would exceed the City's noise ordinance property line noise level limits during the daytime and evening and at Lots adjacent to the oil field would be exposed to excessive noise levels at outdoor use areas without shielding.

EXTERIOR NOISE LEVELS

To reduce and control noise levels from the oil field, a wall was modeled along the highpoint of the terrain along the eastern Project boundary line between the Project lots and the oil field as shown in Exhibit ES-A. With consideration of wall shown on Exhibit ES-A, the hourly noise levels at the on-site receiver locations are expected to range from 41.5 to 54.4 dBA L_{eq}. Thus, daytime noise levels from oil field operations with the barrier would comply with the City of Placentia exterior noise level limits, however, noise levels at outdoor exterior locations associated with R5 and R6 would exceed nighttime noise level limits by 1.5 to 4.4 dBA L_{eq}. However, noise levels on this order are not generally considered harmful or annoying in residential settings.

In addition to the single wall option, an alternate noise abatement approach was also evaluated. The alternate noise abatement would include use of a second barrier near to the oil field pump equipment as shown in Exhibit ES-B. Under this scenario, the 20-foot barrier modeled along the eastern boundary of the Project site was reduced to a maximum of 10 feet adjacent to lots 77, 78, and 81. Thus, daytime noise levels from oil field operations with the barrier would comply with the City of Placentia exterior noise level limits, however, noise levels at outdoor exterior locations associated with R5 would exceed nighttime noise level limits by 0.5 dBA L_{eq}. As with the wall only option, noise levels on this order are not generally considered harmful or annoying in residential settings.

Based on the modeling results, it is recommended Lots 77, 78 81 and 82 be provided with a disclosure notice or statement relating to noise exposure from oil field operation. These disclosure statements should inform prospective homebuyers that the location may be subject to noise exposure in excess of the City of Placentia exterior noise level limits. The disclosure

statement should prospective homebuyers notice of potential noise exposure and allow them to make informed decisions about the suitability of the home site for their individual needs.

INTERIOR NOISE LEVELS

To ensure that the Project provides an acceptable interior noise environment, this analysis relies on the City of Placentia 45 dBA CNEL interior noise limit for new residential construction.

Based on the single wall option, first-floor residential building façades are estimated to range from 49.0 to 60.9 dBA CNEL and the interior noise levels would range from 24.0 to 35.9 dBA CNEL. Second-floor façades are estimated to range from 53.5 to 65.2 dBA CNEL and the interior noise levels are anticipated to range from 28.5 to 40.2 dBA CNEL. These interior noise level would comply with City and State interior noise level standards.

Under the alternative abatement option, first-floor residential building façades are estimated to range from 46.4 to 59.3 dBA CNEL and the interior noise levels would range from 21.4 to 34.3 dBA CNEL. Second-floor façades are estimated to range from 46.4 to 65.2 dBA CNEL and the interior noise levels would range from 21.4 to 37.5 dBA CNEL. These interior noise level would comply with City and State interior noise level standards.

SUMMARY

The Project is located adjacent to an oil field and may expose future residents nearest the oil field to the continuous generation of noise levels in excess of 69 dBA L_{eq}. Therefore, noise abatement has been identified that reduces noise levels to the maximum extent feasible. While the noise levels from the oil filed would likely still exceed the City of Placentia property line noise level limits during the evening hours, the noise levels are not considered excessive. Furthermore, as shown in the analysis, the interior noise levels at the adjacent residences are anticipated to be less than City of Placentia interior noise level standard of 45 dBA CNEL.

EXHIBIT ES-A: SINGLE WALL ABATEMENT

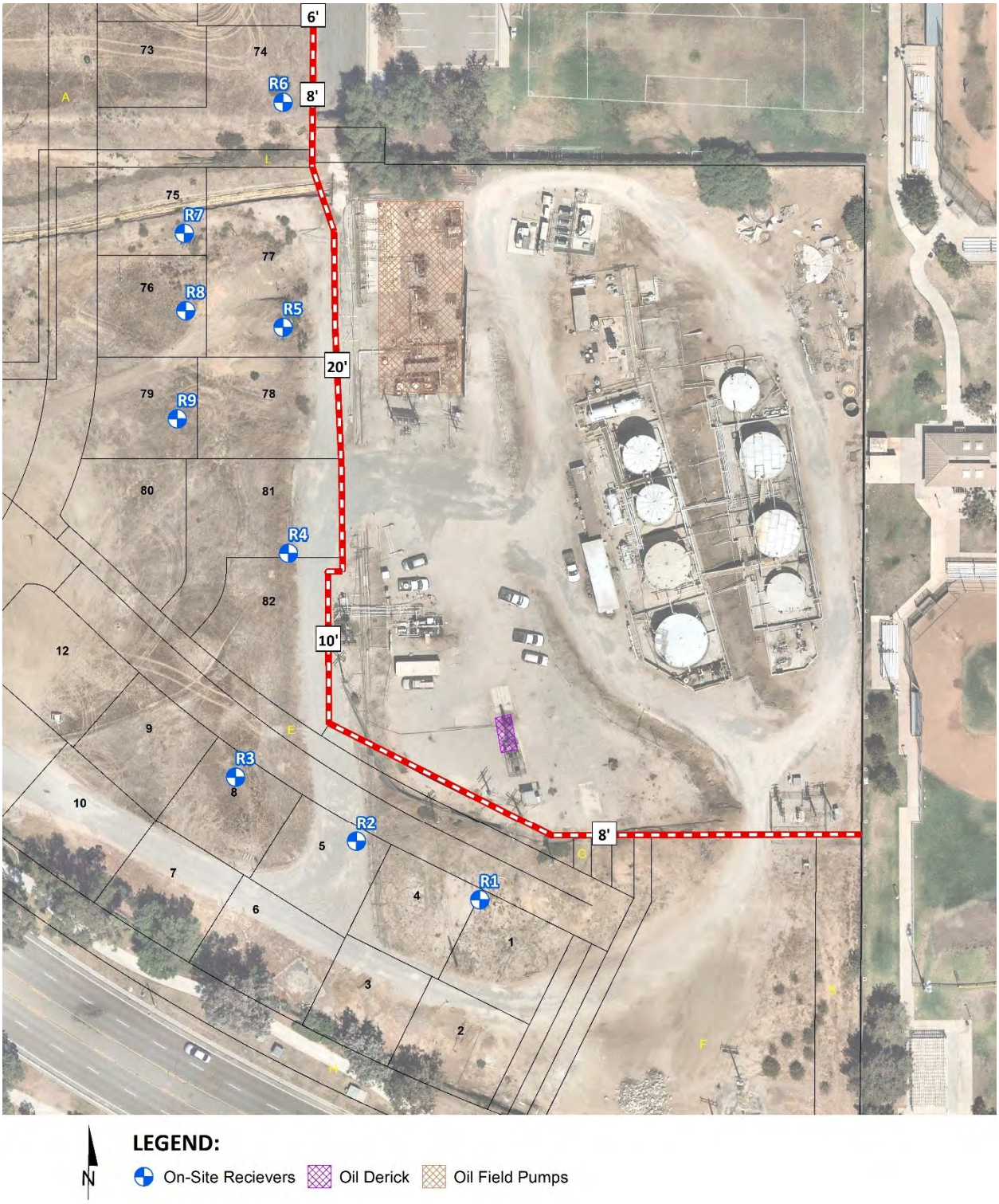
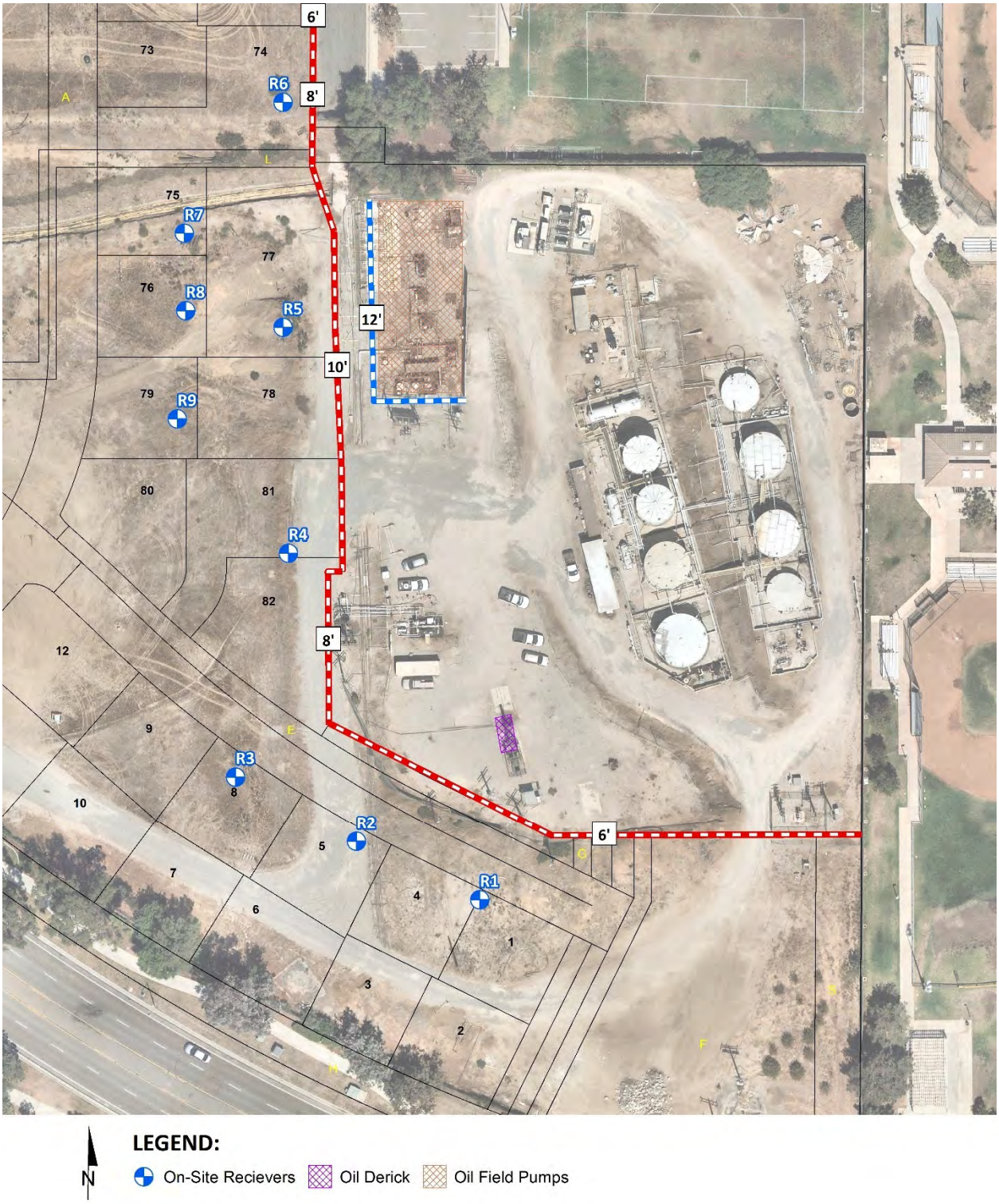


EXHIBIT ES-B: ALTERNATIVE ABATEMENT



1 INTRODUCTION

This noise analysis has been completed to determine the noise exposure from adjacent oil field operations within the development of the proposed Vista Rose, TTM 19250 (Project). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, describes the local regulatory setting, provides the study methods and procedures for noise analysis, and evaluates the future on-site exterior and interior noise environment.

1.1 SITE LOCATION

The proposed Project is located north of Alta Vista Street, east of Rose Drive, and west of Jefferson Drive in the City of Placentia, as shown on Exhibit 1-A. The proposed Project is located approximately 2.2 miles east of State Route 57, and roughly 7.7 miles east of the Fullerton Municipal Airport.

The Project site is currently vacant. Existing single-family residential uses in the Project study area are located adjacent to the eastern and southern Project site boundaries, and west across Rose Drive. Existing commercial uses and Bridgemark Corporation oil drilling facilities (oil field) are located east and adjacent to the Project site. Existing land uses to the west, north and east are shielded from the Project site by an 6-8-foot-high masonry wall. The Village Center of Rose is located adjacent to and west of the Project site at the corner of Alta Vista Street and Rose Drive.

1.2 PROJECT DESCRIPTION

The City of Placentia previously prepared an initial study/mitigated negative declaration (IS/MND) and approved a vesting tentative subdivision map for 74 single family residences, Tract 15700. The prior property owner recorded a final subdivision map for a total of 62 single-family lots with a remainder parcel covering the existing oil operations area. The proposed Project (Vesting TTM 19250) adds 26 additional residential units to the original approved 74-unit subdivision, for a total of 100 lots.

EXHIBIT 1-A: LOCATION MAP

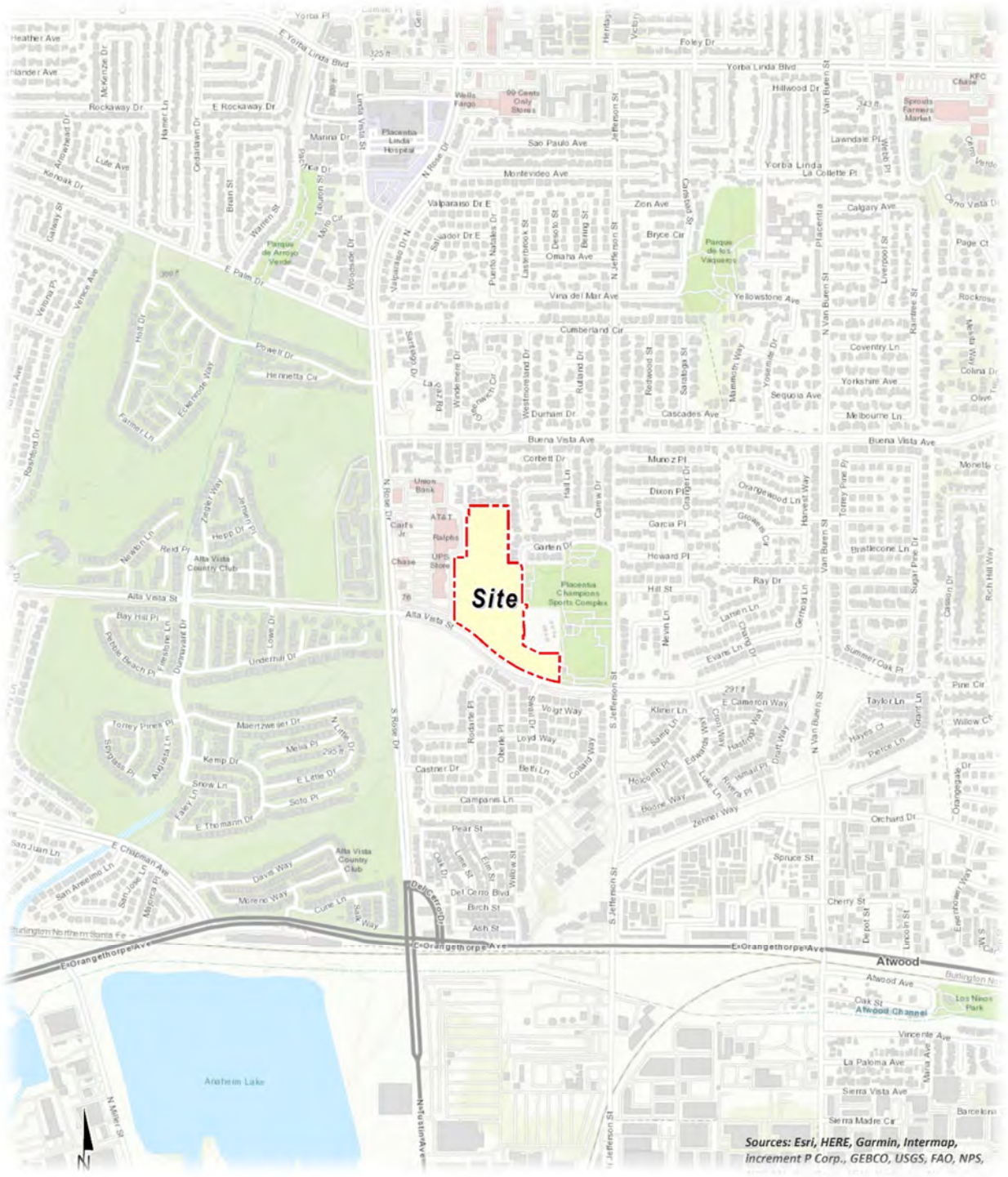
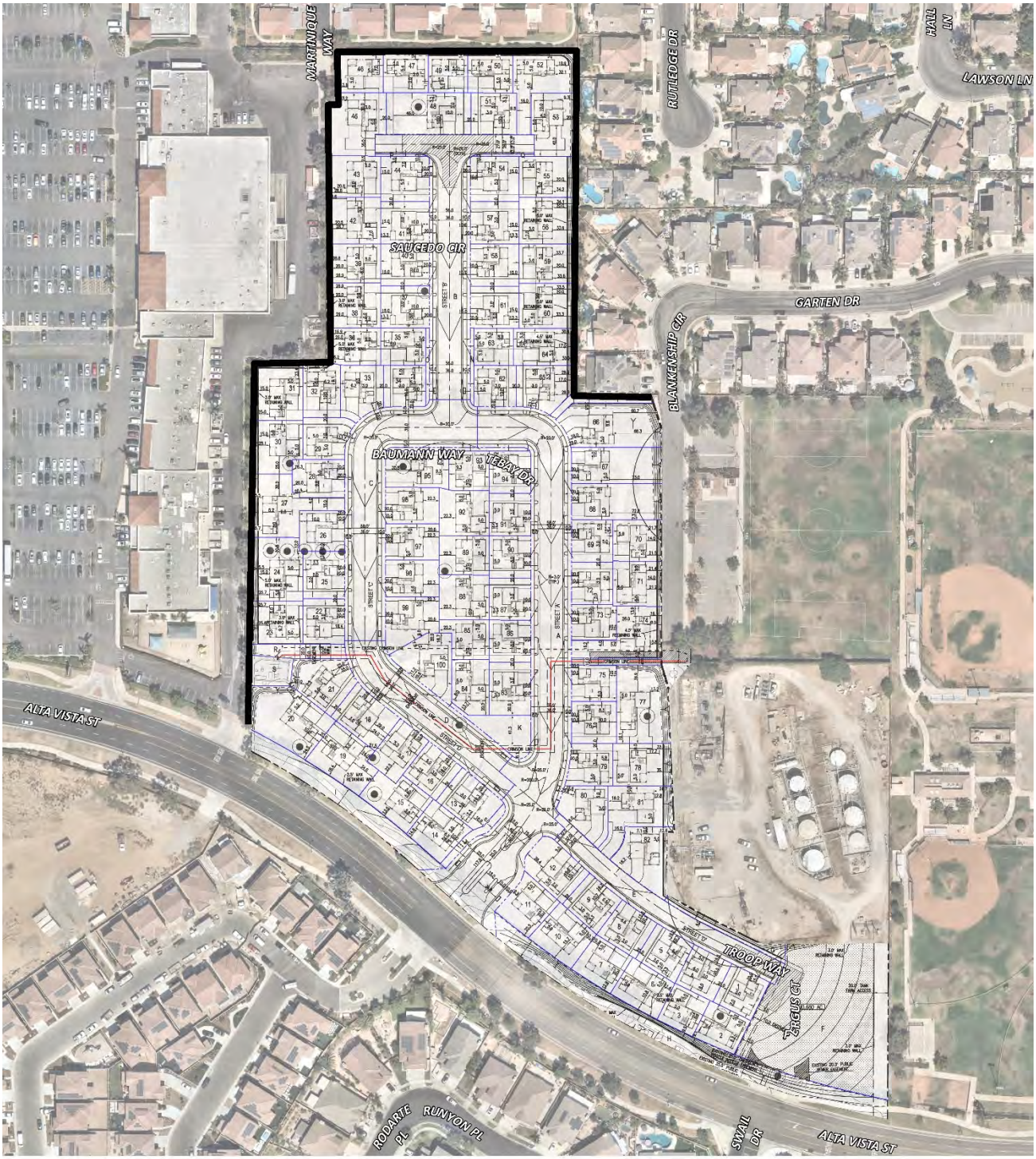


EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise has been simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (1) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (2) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Placentia relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary 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. 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. 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. (1)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess 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 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, 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 receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (3)

2.3.3 ATMOSPHERIC EFFECTS

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (1)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby resident. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The FHWA does not consider the planting of vegetation to be a noise abatement measure. (3)

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receptor by controlling the noise source, transmission path, receptor, or all three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (3)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (4)

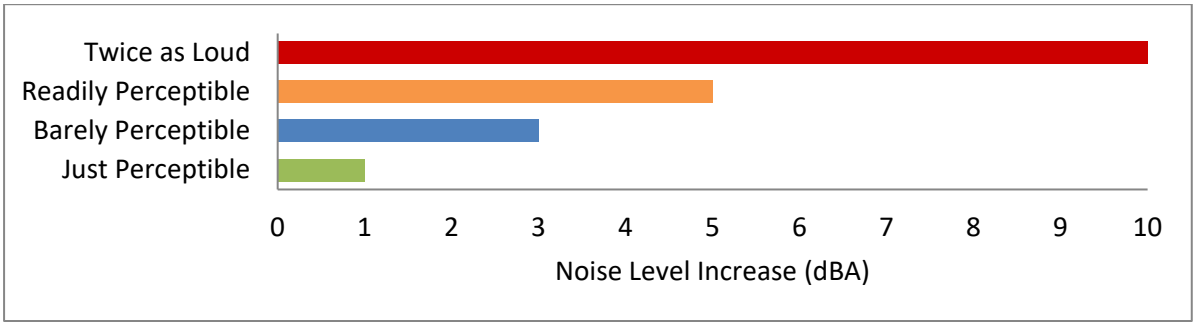
2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (5) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (5) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (3)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 EXPOSURE TO HIGH NOISE LEVELS

The Occupational Safety and Health Administration (OSHA) sets legal limits on noise exposure in the workplace. The permissible exposure limit (PEL) for a worker over an eight-hour day is 90 dBA. The OSHA standard uses a 5 dBA exchange rate. This means that when the noise level is increased by 5 dBA, the amount of time a person can be exposed to a certain noise level to receive the same dose is cut in half. The National Institute for Occupational Safety and Health (NIOSH) has recommended that all worker exposures to noise should be controlled below a level equivalent to 85 dBA for eight hours to minimize occupational noise induced hearing loss. NIOSH also recommends a 3 dBA exchange rate so that every increase by 3 dBA doubles the amount of the noise and halves the recommended amount of exposure time. (6)

OSHA has implemented requirements to protect all workers in general industry (e.g. the manufacturing and the service sectors) for employers to implement a Hearing Conservation Program where workers are exposed to a time weighted average noise level of 85 dBA or higher over an eight-hour work shift. Hearing Conservation Programs require employers to measure noise levels, provide free annual hearing exams and free hearing protection, provide training, and conduct evaluations of the adequacy of the hearing protectors in use unless changes to tools, equipment and schedules are made so that they are less noisy and worker exposure to noise is less than the 85 dBA. This noise study does not evaluate the noise exposure of workers within a project or construction site based on CEQA requirements, and instead, evaluates Project-related operational and construction noise levels at the nearby sensitive receiver locations in the Project study area. Further, periodic exposure to high noise levels in short duration, such as Project construction, is typically considered an annoyance and not impactful to human health. It would take several years of exposure to high noise levels to result in hearing impairment. (7)

2.9 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such

as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

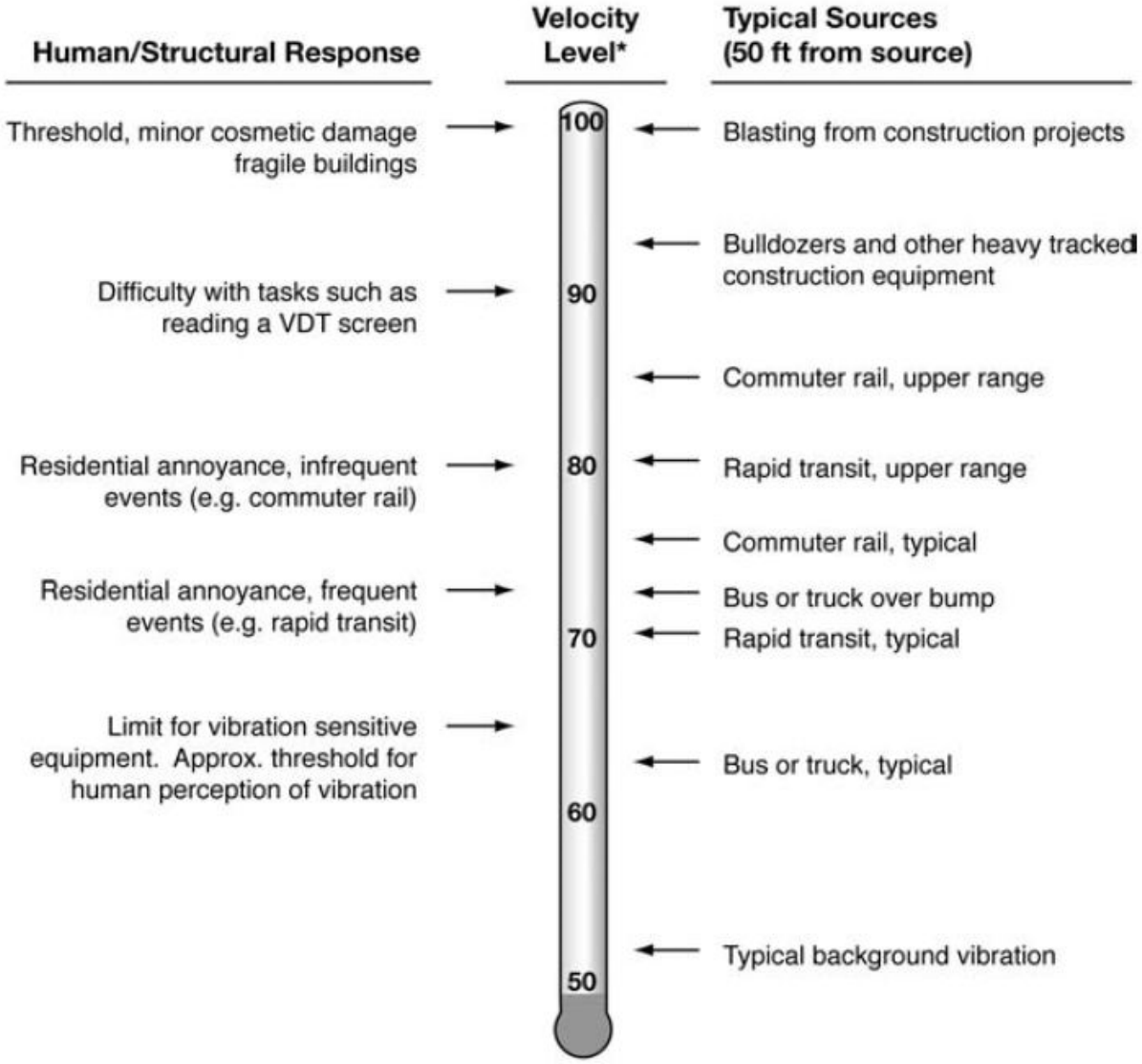
Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon (8). Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (8). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structurers reduce vibration levels due to the coupling of the building to the soil.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal (8). The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body (8). However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude of equipment is typically calculated from the PPV reference level. The RMS amplitude is approximately 70% of the PPV (9). Thus, either can be used on the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits (10). Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels.

As stated in the FTA guidance manual, the background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne 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. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne 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 in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



** RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise Impact and Vibration Assessment.

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3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA BUILDING STANDARDS

The State of California's noise insulation standards for all residential units are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Chapter 12, Section 1206. These noise standards are applied to new construction that contains dwelling units or sleeping units, such as residential and hotel or motel uses, in California for controlling interior noise levels resulting from exterior noise sources. For new buildings, the acceptable interior noise limit is 45 dBA CNEL in habitable rooms (11).

3.2 PROPERTY LINE NOISE STANDARDS

To analyze stationary-source (operational) noise compatibility with the existing oil field operations, the measured and modeled noise levels are evaluated against standards established under a City's Municipal Code. The City of Placentia Municipal Code, Section 23.76.050 establishes the permissible noise level that may be received at nearby sensitive uses (e.g., residential). Noise ordinance limits generally apply to "stationary" sources such as mechanical equipment. The City of Placentia noise level limits are presented in Table 3-1 and included in Appendix 3.1.

TABLE 3-1: CITY OF PLACENTIA NOISE LEVEL LIMITS

Noise Zone	Noise Level Limits dBA L_{eq}-1-Hour average	Time Period
Exterior Noise Standard		
1	55	7:00 a.m. – 10:00 p.m.
	50	10:00 p.m. – 7:00 a.m.
2	65	Anytime
3	70	Anytime
Interior Noise Standard		
1	55	7:00 a.m. – 10:00 p.m.
	45	10:00 p.m. – 7:00 a.m.
Noise Zone 1: All Residential Property Noise Zone 2: All Commercial Property Noise Zone 3: All Industrial Property		

Source: City of Placentia, City of Placentia Municipal Code Sections 23.76.050 and 23.76.060, March 2018.

For noise-sensitive residential properties, the exterior noise level shall not exceed 55 dBA L_{50} during daytime hours (7:00 a.m. to 10:00 p.m.) and shall not exceed 50 dBA L_{50} during the nighttime hours (10:00 p.m. to 7:00 a.m.), as defined by the Municipal Code. (12) These standards shall apply for a cumulative period of 30 minutes in any hour (L_{50}), as well as plus 5 dBA cannot be exceeded for a cumulative period of more than 15 minutes in any hour (L_{25}), or the standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour (L_8), or the standard plus 15 dBA for a cumulative period of more than 1 minute in any hour (L_2), or the standard plus 20 dBA for any period of time (L_{max}). The City of Placentia Municipal Code noise limits are shown on Table 3-1 and included in Appendix 3.1.

4 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, five 24-hour noise level measurements were taken at sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Friday, November 4th, 2022. Appendix 5.1 includes study area photos.

4.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate longer term metrics, such as the 24-hour CNEL. The noise levels were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (13)

4.2 NOISE MEASUREMENT LOCATIONS

To evaluate the compatibility of the Project with the adjacent oil field and identify potential noise control measures, reference noise level measurements were collected from the existing activities to represent the potential noise exposure expected due to the development of the proposed Project. Thus, locations were chosen to isolate the oil field noise sources from the ambient noise environment. To limit the influence of other noise sources, oil field operations noise level measurements were taken at a distance where the active source being measured dominated the ambient environment. It should be noted that due to the nature of most of the sources, the noise level generated was relatively constant throughout the day and night at these locations.

4.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (L_{eq}). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

Table 5-1 provides the (energy average) noise levels used to describe the daytime and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the

average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each hour as well as the minimum, maximum, L_1, L_2, L_5, L_8, L_{25}, L_{50}, L_{90}, L_{95}, and L_{99} percentile noise levels observed during the daytime and nighttime periods.

The 24-hour existing noise level measurements shown on Table 4-1 present the existing noise conditions due to the oil field operations. Table 4-2 presents the acoustic spectrum of the noise generated by the oil field. The sound frequency spectrum represents the tonal content of the noise source and is critical to selecting appropriate sound abatement materials. As shown in Table 4-2, the oil field operations are dominant in the higher frequencies ranging from 1,000 to 8,000 Hz, which corresponds to the most sensitive frequencies to human hearing.

TABLE 4-1: 24-HOUR AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]	
		Daytime	Nighttime
L1	Located 45 feet west of the injection well and pipping at the boundary with Lot 77	84.0	84.8
L2	Located 10 feet north of Western Facility Entrance at the boundary with Lot 78	83.7	83.6
L3	Located 62 feet southeast of the well derrick at the approximate boundary with Lot 77	57.3	53.1

[1] See Exhibit 4-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 4.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 4-2: SOUND FREQUENCY SPECTRUM

Hz	31.5	64	125	250	500	1,000	2,000	4,000	8,000
dBA	21.1	48.7	60.7	71	71.6	73.5	78.3	81.4	76.3

EXHIBIT 4-A: NOISE MEASUREMENT LOCATIONS

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5 EXTERIOR OIL FIELD NOISE

This section analyzes the stationary-source operational noise impacts from the adjacent oil field at the nearest on-site receiver locations, identified as Lots 1, 4, 5, 8, 77, 78, 81, and 82 as shown in Exhibit 5-A.

5.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise levels associated with the typical of daytime and nighttime activities at the adjacent oil field. Based on noise measurements of operations at the oil field, the proposed residential development is expected to be exposed to uncontrolled noise levels ranging from 46.2 to 69.3 dBA L_{eq} during the daytime and nighttime. These noise levels would exceed the City's noise ordinance property line noise level limits during the daytime and evening of 55 and 50 dBA L_{eq}, respectively.

5.2 REFERENCE NOISE LEVELS

While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The L_w is used for modeling a noise source and designing noise control measures. The reference sound power levels are summarized in Table 5-1.

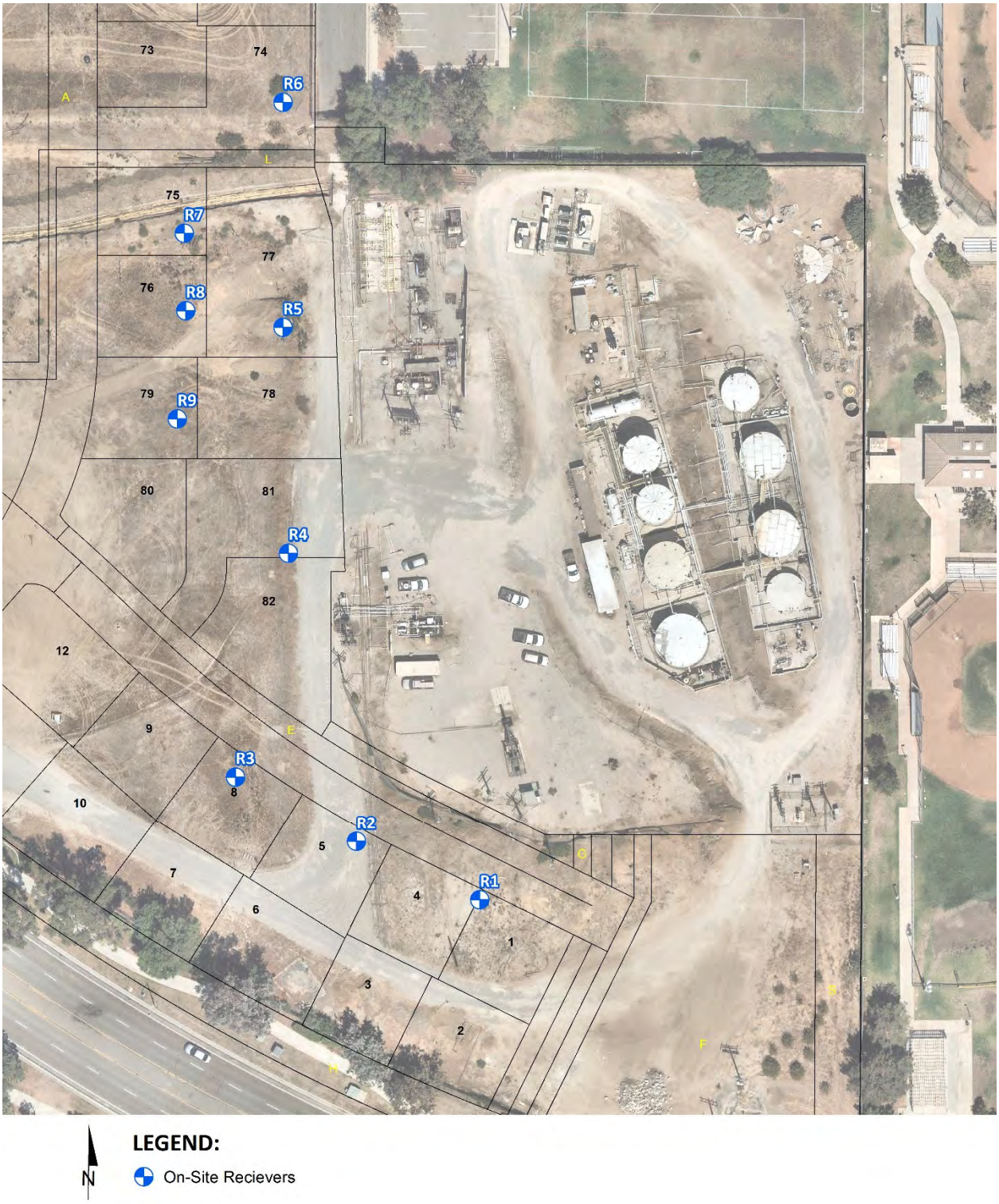
TABLE 5-1: REFERENCE NOISE LEVELS

Noise Source	Noise Source Height (Feet)	Source Type	Min./Hour[1]		Reference Noise Level (dBA L_{eq}) @ 50 Feet	Sound Power Level (dBA)[2]
			Day	Night		
Injection Well	5	Point	60	60	84.8	115.5
Oil Derrick	5	Point	60	60	56.5	90.0

5.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels.

EXHIBIT 5-A: ON-SITE RECEIVER LOCATIONS



Using the ISO 9613 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. Consistent with the ISO 9613 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment.

The operational noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 1.0 was used in the noise analysis to account for the soft ground present on-site. Appendix 10.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

5.4 OIL FIELD OPERATIONAL NOISE LEVELS

Using the reference noise levels to represent the oil field, Urban Crossroads, Inc. modeled the unmitigated operational source noise levels that are expected to be experienced at each of the sensitive receiver locations. Table 5-2 shows the Project operational noise levels (daytime and nighttime). The hourly noise levels at the on-site receiver locations shown in Exhibit 5-A, are expected to range from 46.2 to 69.3 dBA L_{eq}. Appendix 10.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

TABLE 5-2: DAYTIME/NIGHTTIME UNCONTROLLED NOISE LEVELS

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)								
	R1	R2	R3	R4	R5	R6	R7	R8	R9
Injection Pump	43.5	47.0	52.2	58.8	69.3	58.3	62.5	63.4	62.2
Oil Derrick	42.8	41.6	37.2	31.8	23.6	21.6	25.9	27.5	31.3
Total (All Noise Sources)	**46.2**	**48.1**	**52.3**	**58.8**	**69.3**	**58.3**	**62.5**	**63.4**	**62.2**

[1] See Exhibit 5-A for the noise source locations. CadnaA noise model calculations are included in Appendix 5.1.

To reduce noise levels from the oil field at the Project site, a wall was modeled along the highpoint of the terrain along the eastern Project boundary line between the Project lots and the oil field. The wall was modeled as high as 25 feet high, however, it was reduced to a maximum of 20 feet as the additional 5 feet provided no greater noise level reductions.

An effective barrier requires a weight of at least 4 pounds per square foot of face area with no decorative cutouts or line-of-sight openings between shielded areas and the source. The barrier material should also be durable, examples of wall material include masonry block, stucco veneer

over wood framing (or foam core), or 1-inch-thick tongue and groove wood paneling, 1/4-inch-thick glass, or sound blankets capable of providing a minimum sound transmission loss (STC) of 33 or a Noise Reduction Coefficient (NRC) of 0.95.

Based on the modeling section of the wall were lowered until the height achieved the necessary reduction at affect receiver locations. The modeled wall locations and heights are shown in Exhibit 5-A.

Tables 5-3 shows the abated noise levels. The hourly noise levels at the on-site receiver locations are expected to range from 41.5 to 54.4 dBA L_{eq}. Appendix 10.1 includes the detailed noise model inputs including the proposed perimeter walls used to estimate the Project operational noise levels presented in this section.

TABLE 5-3: DAYTIME/NIGHTTIME NOISE LEVELS WITH SINGLE BARRIER

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)								
	R1	R2	R3	R4	R5	R6	R7	R8	R9
Injection Pump	39.9	42.8	41.1	48.9	54.4	51.5	48.0	49.0	47.9
Oil Derrick	36.4	35.3	36.1	25.6	18.9	17.2	18.1	19.2	27.5
Total (All Noise Sources)	**41.5**	**43.5**	**42.3**	**48.9**	**54.4**	**51.5**	**48.0**	**49.0**	**47.9**

[1] See Exhibit 5-A for the noise source locations. CadnaA noise model calculations are included in Appendix 5.1.x

In addition to the single wall option, an alternate noise abatement approach was also evaluated. The alternate noise abatement would include use of a second barrier near to the oil field pump equipment. Under this scenario, the 20-foot barrier modeled along the eastern boundary of the Project site was reduced to a maximum of 10 feet adjacent to lots 77, 78, and 81. A second barrier was modeled within the oil field as shown on Exhibit 5-B. For this location the barrier was assumed to be sound blanket type of barrier to allow for mobility and access during maintenance of the equipment. It should be noted the sound blanket barrier would be most effective if it is selected based on the sound frequency spectrum shown in Table 5-2. Generally suitable sound blankets will by 2 pounds per square foot or greater and have a minimum STC rating of 32, examples are provided in Appendix 5.2.

Tables 5-4 shows the anticipated oil field operational noise levels with the alternative abatement. The nighttime hourly noise levels at the off-site receiver locations are expected to range from 33.8 to 50.5 dBA L_{eq}. Appendix 10.1 includes the detailed noise model inputs including the existing perimeter walls used to estimate the Project operational noise levels presented in this section.

TABLE 5-4: DAYTIME/NIGHTTIME NOISE LEVELS WITH ALTERNATIVE ABATEMENT

Noise Source[1]	Operational Noise Levels by Receiver Location (dBA Leq)								
	R1	R2	R3	R4	R5	R6	R7	R8	R9
Injection Pump	34.5	36.1	39.4	46.7	50.5	44.5	47.6	47.3	46.1
Oil Derrick	38.4	37.3	37.0	26.8	22.0	14.9	21.5	22.8	28.7
Total (All Noise Sources)	**39.9**	**39.8**	**41.4**	**46.7**	**50.5**	**44.5**	**47.6**	**47.3**	**46.2**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

5.5 PROJECT OPERATIONAL NOISE LEVEL COMPLIANCE

Tables 5-5 shows the Project operational noise levels during the daytime and nighttime hours. The hourly noise levels at the on-site receiver locations are expected to range from 41.5 to 54.4 dBA $L_{eq.}$ As shown in Table 5-5, daytime noise levels from oil field operations with the barrier would comply with the City of Placentia exterior noise level limits, however, noise levels at outdoor exterior locations associated with R5 and R6 would exceed nighttime noise level limits by 1.5 to 4.4 dBA L_{eq}. Appendix 10.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

TABLE 5-5: NOISE LEVEL COMPLIANCE WITH SINGLE BARRIER

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	41.5	41.5	55	50	No	No
R2	43.5	43.5	55	50	No	No
R3	42.3	42.3	55	50	No	No
R4	48.9	48.9	55	50	No	No
R5	54.4	54.4	55	50	No	**Yes**
R6	51.5	51.5	55	50	No	**Yes**
R7	48.0	48.0	55	50	No	No
R8	49.0	49.0	55	50	No	No
R9	47.9	47.9	55	50	No	No

Tables 5-6 shows the Project oil field operations noise levels with the alternative noise abatement during the daytime and nighttime hours. The hourly noise levels at the on-site receiver locations are expected to range from 39.8 to 50.5 dBA $L_{eq.}$ As shown in Table 5-6, with the daytime noise levels from oil field operations with the alternative abatement would comply with the City of Placentia exterior noise level limits, however, noise levels at outdoor exterior locations associated with R5 would exceed nighttime noise level limits by 0.5 dBA L_{eq}. Appendix 10.1 includes the detailed noise model inputs used to estimate the Project operational noise levels presented in this section.

TABLE 5-6: NOISE LEVEL COMPLIANCE WITH ALTERNATE ABATMENT

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]		Noise Level Standards (dBA Leq)[3]		Noise Level Standards Exceeded?[4]	
	Daytime	Nighttime	Daytime	Nighttime	Daytime	Nighttime
R1	39.9	39.9	55	50	No	No
R2	39.8	39.8	55	50	No	No
R3	41.4	41.4	55	50	No	No
R4	46.7	46.7	55	50	No	No
R5	50.5	50.5	55	50	No	**Yes**
R6	44.5	44.5	55	50	No	No
R7	47.6	47.6	55	50	No	No
R8	47.3	47.3	55	50	No	No
R9	46.2	46.2	55	50	No	No

5.6 INTERIOR NOISE ANALYSIS

To ensure that the Project provides an acceptable interior noise environment, this analysis relies on the City of Placentia 45 dBA CNEL interior noise limit for new residential construction.

5.6.1 NOISE REDUCTION METHODOLOGY

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Typical residential building construction will provide a Noise Reduction (NR) of approximately 12 dBA with “windows open” and a minimum 25 dBA noise reduction with “windows closed.” (14) (15) Similarly, typical commercial building construction will provide a NR of approximately 12 dBA with “windows open” and a minimum 30 dBA noise reduction with "window” closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise through structures. Several methods are used to improve interior noise reduction, including: [1] weather-stripped solid core exterior doors; [2] upgraded dual glazed windows; [3] mechanical ventilation/air conditioning; and [4] exterior wall/roof assembles free of cut outs or openings.

5.6.2 INTERIOR NOISE LEVEL ASSESSMENT

Tables 5-7 to 5-8 shows interior noise levels are for each floor at each receiver location. Table 5-7 shows that the future noise levels at the potential first-floor residential building façades are estimated to range from 49.0 to 60.9 dBA CNEL. Based on 25 dBA CNEL reduction, the interior noise levels would range from 24.0 to 35.9 dBA CNEL.

Table 5-8 shows that the future noise levels at the potential second-floor façades are estimated to range from 53.5 to 65.2 dBA CNEL. Based on 25 dBA CNEL reduction, the interior noise levels would range from 28.5 to 40.2 dBA CNEL. Thus, interior noise levels would comply with the City of Placentia interior noise level limits with the consideration of the single barrier.

TABLE 5-7: FIRST FLOOR INTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Noise Level at Façade	Minimum Calculated Interior NR	Interior Noise Level	Threshold	Threshold Exceeded?
R1	48.2	25	23.2	45	No
R2	50.2	25	25.2	45	No
R3	49	25	24	45	No
R4	57	25	32	45	No
R5	60.9	25	35.9	45	No
R6	58.2	25	33.2	45	No
R7	54.7	25	29.7	45	No
R8	55.5	25	30.5	45	No
R9	54.6	25	29.6	45	No

"NR" = Noise Reduction

TABLE 5-8: FIRST FLOOR INTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Noise Level at Façade	Minimum Calculated Interior NR3	Interior Noise Level	Threshold	Threshold Exceeded?
R1	55.7	25	30.7	45	No
R2	58.8	25	33.8	45	No
R3	53.5	25	28.5	45	No
R4	59.6	25	34.6	45	No
R5	63.4	25	38.4	45	No
R6	65.2	25	40.2	45	No
R7	58.1	25	33.1	45	No
R8	58.7	25	33.7	45	No
R9	57.9	25	32.9	45	No

"NR" = Noise Reduction

Tables 5-9 to 5-10 shows interior noise levels are for each floor at each receiver location. Table 5-9 shows that the future noise levels at the potential first-floor residential building façades are estimated to range from 46.4 to 59.3 dBA CNEL. Based on 25 dBA CNEL reduction, the interior noise levels would range from 21.4 to 34.3 dBA CNEL.

Table 5-10 shows that the future noise levels at the potential second-floor façades are estimated to range from 46.4 to 65.2 dBA CNEL. Based on 25 dBA CNEL reduction, the interior noise levels would range from 21.4 to 37.5 dBA CNEL. Thus, interior noise levels would comply with the City of Placentia interior noise level limits with consideration of the alternative noise abatement.

TABLE 5-9: SECOND FLOOR INTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Noise Level at Façade	Minimum Calculated Interior NR3	Interior Noise Level	Threshold	Threshold Exceeded?
R1	46.5	25	21.5	45	No
R2	46.4	25	21.4	45	No
R3	48	25	23	45	No
R4	53.4	25	28.4	45	No
R5	59.3	25	34.3	45	No
R6	51.1	25	26.1	45	No
R7	54.3	25	29.3	45	No
R8	54	25	29	45	No
R9	52.9	25	27.9	45	No

"NR" = Noise Reduction

TABLE 5-10: SECOND FLOOR INTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Noise Level at Façade	Minimum Calculated Interior NR3	Interior Noise Level	Threshold	Threshold Exceeded?
R1	46.5	25	21.5	45	No
R2	46.4	25	21.4	45	No
R3	48.5	25	23.5	45	No
R4	55.1	25	30.1	45	No
R5	62.5	25	37.5	45	No
R6	53.2	25	28.2	45	No
R7	56.3	25	31.3	45	No
R8	57.1	25	32.1	45	No
R9	56.2	25	31.2	45	No

"NR" = Noise Reduction

6 REFERENCES

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7 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Vista Rose Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (619) 778-1971.

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EDUCATION

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California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
INCE – Institute of Noise Control Engineers

PROFESSIONAL CERTIFICATIONS

Approved Acoustical Consultant • County of San Diego
FHWA Traffic Noise Model of Training • November 2004
CadnaA Basic and Advanced Training Certificate • October 2008.

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APPENDIX 3.1:

CITY OF PLACENTIA MUNICIPAL CODE

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Placentia, California Municipal Code

Title 23 ZONING

Chapter 23.76 NOISE CONTROL

Note

* For provisions regarding music and sound amplifying systems, see Ch. 10.32 of this code.

23.76.010 Declaration of policy.

In order to control unnecessary, excessive and annoying sounds emanating from incorporated areas of the city, it is declared to be the policy of the city to prohibit such sounds generated from all sources as specified in this chapter.

It is determined that certain noise levels are detrimental to the public health, welfare and safety and contrary to public interest, therefore, the city council declares that creating, maintaining, causing or allowing to create, maintain or cause any noise in a manner prohibited by or not in conformity with the provisions of this chapter is a public nuisance and shall be punishable as such. (Ord. 75-O-105 § 1, 1975)

23.76.020 Definitions.

The following words, phrases and terms as used in this chapter shall have the meaning as indicated below:

(1) “Ambient noise level” means the all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

(2) “Commercial property” means a parcel of real property which is zoned for or developed and used either in part or in whole for commercial purposes including but not limited to retail and wholesale businesses and professional offices.

(3) “Cumulative period” means an additive period of time composed of individual time segments which may be continuous or interrupted.

(4) “Decibel (dB)” means a unit which denotes the ratio between two (2) quantities which are proportional to power: The number of decibels corresponding to the ratio of two (2) amounts of power is ten (10) times the logarithm to the base ten (10) of this ratio.

(5) “Dwelling unit” means a single unit providing complete independent living facilities for one (1) or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

(6) “Emergency machinery, vehicle or work” means any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private utilities when restoring utility service.

(7) “Fixed noise source” means a stationary device which creates sounds while fixed or motionless including but not limited to industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

(8) “Grading” means any excavating or filling of earth material, or any combination thereof, conducted at a site to prepare said site for construction or other improvements thereon.

(9) “Impact noise” means the noise produced by the collision of one (1) mass in motion with a second mass which may be either in motion or at rest.

(10) “Industrial property” means a parcel of real property which is zoned for or developed and used either in part or in whole for manufacturing purposes.

(11) “Mobile noise source” means any noise source other than a fixed noise source.

(12) “Noise level” means the “A” weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of twenty (20) micronewtons per square meter. The unit of measurement shall be designated as dB(A).

(13) “Noise variance board” means an administrative board of five (5) members appointed by the city council of the city of Placentia.

(14) “Person” means a person, firm, association, copartnership, joint venture, corporation of any entity, public or private in nature.

(15) “Residential property” means a parcel of real property which is developed and used either in part or in whole for residential purposes, other than transient uses such as hotels and motels.

(16) “Simple tone noise” means a noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished.

(17) “Sound level meter” means an instrument meeting American National Standard Institute’s Standard S1.4-1971 for Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

(18) “Sound pressure level” of a sound, in decibels, means twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound to a reference pressure, which reference pressure shall be explicitly stated. (Ord. 75-O-105 § 2, 1975)

23.76.030 Noise level measurement criteria.

Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in Section 23.76.020(17). (Ord. 75-O-105 § 3, 1975)

23.76.040 Designated noise zones.

The properties hereinafter described, whether incorporated or unincorporated, are assigned to the following noise zones:

Noise Zone 1	All residential property
Noise Zone 2	All commercial property
Noise Zone 3	All industrial property.

(Ord. 75-O-105 § 4, 1975)

23.76.050 Exterior noise standards.

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all real property within a designated noise zone:

Noise Standards

Noise Zone	Noise Level	Time Period
1	55 dB(A)	7:00 a.m.—10:00 p.m.
	50 dB(A)	10:00 p.m.—7:00 a.m.
2	65 dB(A)	Anytime
3	70 dB(A)	Anytime

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by 5 dB(A).

(b) It is unlawful for any person at any location within the incorporated area of the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential, commercial, or industrial property, either incorporated or unincorporated to exceed:

(1) The noise standards for a cumulative period of time more than thirty (30) minutes in any hour; or

(2) The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

(4) The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one (1) minute in any hour; or

(5) The noise standard plus twenty (20) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

(d) In the event that the noise source and the affected property are within different noise zones, the noise standard applicable to the affected property shall apply. (Ord. 75-O-105 § 5, 1975)

23.76.060 Interior noise standards.

(a) The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Interior Noise Standards

Noise Zone	Noise Level	Time Period
1	55 dB(A)	7:00 a.m.—10:00 p.m.
	45 dB(A)	10:00 p.m.—7:00 a.m.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by 5 dB(A).

(b) It is unlawful for any person at any location within the incorporated area of the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level when measured within any other dwelling unit on any residential property, either incorporated or unincorporated, to exceed:

(1) The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or

(2) The interior noise standard plus five (5) dB(A) for a cumulative period of more than one (1) minute in any hour; or

(3) The interior noise standard plus ten (10) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds either of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level. (Ord. 75-O-105 § 6, 1975)

23.76.070 Activities—Special provisions.

The following activities shall be exempted from the provisions of this chapter:

(1) Regularly scheduled school bands, school athletic and school entertainment events between the hours of seven a.m. and eleven p.m., provided a parade permit is also submitted from the police department for band activities on city streets, applying the standards of Sections 13.60.010 through 13.60.130 of this code;

(2) Outdoor gatherings, including outdoor public dances and outdoor entertainment events, provided said events are conducted pursuant to an activity permit issued by the city recreation division pursuant to Chapters 6.52 and 6.56 of this code and are limited to between the hours of nine-thirty a.m. and eleven p.m.;

(3) Regularly scheduled activities conducted on public parks, public playgrounds, and public or private school grounds. However, the use of public address or amplified music systems is not permitted to exceed the exterior noise standard of adjacent property at the property line;

(4) Any mechanical devices, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work;

(5) All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions;

(6) Mobile noise sources associated with agricultural operations provided such operations do not take place between the hours of six p.m. and seven a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday;

(7) Mobile noise sources associated with agricultural pest control through pesticide application; provided, that the application is made in accordance with restricted material permits issued by or regulations enforced by the agricultural commissioner;

(8) Noise sources associated with grading, construction and the maintenance of real property shall not be subject to the provisions of this chapter. However, grading, construction and maintenance activities are prohibited at all times other than the permitted hours indicated in Section 23.81.170 of this code;

(9) Any activity to the extent regulation thereof has been preempted by state or federal law. (Ord. 94-O-141 § 1, 1994; Ord. 94-O-119 § 1, 1994; Ord. 75-O-105 § 7, 1975)

23.76.080 Schools, hospitals and churches—Special provisions.

It is unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise limits as specified in Section 23.76.050 prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital; provided conspicuous signs are displayed in three (3) separate locations within one-tenth (1/10) of a mile of the institution indicating the presence of a school, church, or hospital. (Ord. 75-O-105 § 8, 1975)

23.76.085 Use of locomotive whistle.

Generally. The use of locomotive bell, air siren, steam or air whistle within the city at all gate-protected grade crossings shall be prohibited.

Exception. Any locomotive engineer shall be permitted to use his bell, air siren, steam or air whistle, if, in his opinion, it is necessary to avert an immediate threat to life or property. (Ord. 76-O-120 § 1, 1976)

23.76.090 Air conditioning and refrigeration—Special provisions.

Until January 19, 1979, the noise standards enumerated in Sections 23.76.050 and 23.76.060 shall be increased eight (8) dB(A) where the alleged offensive noise source is an air-conditioning or refrigeration system or associated equipment which was installed prior to the effective date of the ordinance codified in this chapter. (Ord. 75-O-105 § 9, 1975)

23.76.100 Noise level measurement.

The location selected for measuring exterior noise levels shall be at any point on the affected residential, commercial or industrial property. Interior noise measurements shall be made within the affected residential unit. The measurement shall be made at a point at least four (4) feet from the wall, ceiling or floor nearest the noise source and may be made with the windows of the affected dwelling unit open. (Ord. 75-O-105 § 10, 1975)

23.76.110 Manner of enforcement.

The city’s authorized agent and his duly authorized representatives are directed to enforce the provisions of this chapter. The city’s authorized agent and his duly authorized representatives are authorized, pursuant to Penal Code Section 836.5, to arrest any person without a warrant when they have reasonable cause to believe that such person has committed a misdemeanor in their presence.

No person shall interfere with, oppose or resist any authorized person charged with enforcement of this chapter while such person is engaged in the performance of his duty. (Ord. 75-O-105 § 11, 1975)

23.76.120 Variance procedure.

The owner or operator of a noise source which violates any of the provisions of this chapter may file an application with the city's authorized agent for a variance from the provisions thereof wherein said owner or operator shall set forth all actions taken to comply with said provisions, the reasons why immediate compliance cannot be achieved, a proposed method of achieving compliance, and a proposed time schedule for its accomplishment. Said application shall be accompanied by a fee in the amount of seventy-five dollars ($75.00). A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one (1) application. Upon receipt of said application fee, the city's authorized agent shall refer it with his recommendation thereon within thirty (30) days to the noise variance board for action thereon in accordance with the provisions of this chapter.

An applicant for a variance shall remain subject to prosecution under the terms of this chapter until a variance is granted. (Ord. 75-O-105 § 12, 1975)

23.76.130 Noise variance board.

The noise variance board shall evaluate all applications for variance from the requirements of this chapter and may grant said variances with respect to time for compliance, subject to such terms, conditions and requirements as it may deem reasonable to achieve maximum compliance with the provisions of this chapter. Said terms, conditions and requirements may include, but shall not be limited to limitations on noise levels and operating hours. Each such variance shall set forth in detail the approved method of achieving maximum compliance and a time schedule for its accomplishment.

In its determinations, said board shall consider the magnitude of nuisance caused by the offensive noise; the uses of property within the area of impingement by the noise; the time factors related to study, design, financing and construction of remedial work; the economic factors related to age and useful life of equipment; and the general public interest and welfare. Any variance granted by said board shall be by resolution and shall be transmitted to the city's authorized agent for enforcement. Any violation of the terms of said variance shall be unlawful. (Ord. 75-O-105 § 13, 1975)

23.76.140 Appeals.

Within fifteen (15) calendar days following the decision of the variance board on an application, the applicant, the city's authorized agent, or any member of the city council, may appeal the decision to the city council, by filing a notice of appeal with the secretary of the variance board. In the case of an appeal by the applicant for a variance, the notice of appeal shall be accompanied by a fee to be computed by the secretary on the basis of the estimated cost of preparing the materials required to be forwarded to the city council as discussed hereafter. If the actual cost of such preparation differs from the estimated cost, appropriate payments shall be made either to or by the secretary.

Within fifteen (15) days following receipt of a notice of appeal and the appeal fee, the secretary of the variance board shall forward to the city council copies of the application for variance; the recommendation of the city's authorized agent; the notice of appeal; all evidence concerning said application received by the variance board and its decision thereon. In addition, any person may file with the city council written arguments supporting or attaching said decision and the city council may, in its discretion, hear oral arguments thereon. The city clerk shall mail to the applicant a notice of the date set for hearing of the appeal. The notice shall be mailed at least ten (10) days prior to the hearing date.

Within sixty (60) days following its receipt of the notice of the appeal, the city council shall either affirm, modify or reverse the decision of the variance board. Such decision shall be based upon the city council's evaluation of the matters submitted to the city council in light of the powers conferred on the variance board and the factors to be considered. Both as enumerated in Sections 23.76.120 and 23.76.130.

As part of its decision, the council may direct the variance board to conduct further proceedings on said application. Failure of the city council to affirm, modify or reverse the decision of the variance board within said sixty (60) day period shall constitute an affirmance of the decision. (Ord. 75-O-105 § 14, 1975)

23.76.150 Violations—Misdemeanors.

Any person violating any of the provisions of this chapter is guilty of a misdemeanor. Each day such violation is committed or permitted to continue shall constitute a separate offense and shall be punishable as such. The provisions of this chapter shall not be construed as permitting conduct not prescribed herein and shall not affect the enforcement of any other applicable provisions of law. (Ord. 75-O-105 § 15, 1975)

Contact:

City Clerk: 714-993-8231

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APPENDIX 4.1:

NOISE LEVEL MEASUREMENT WORKSHEETS

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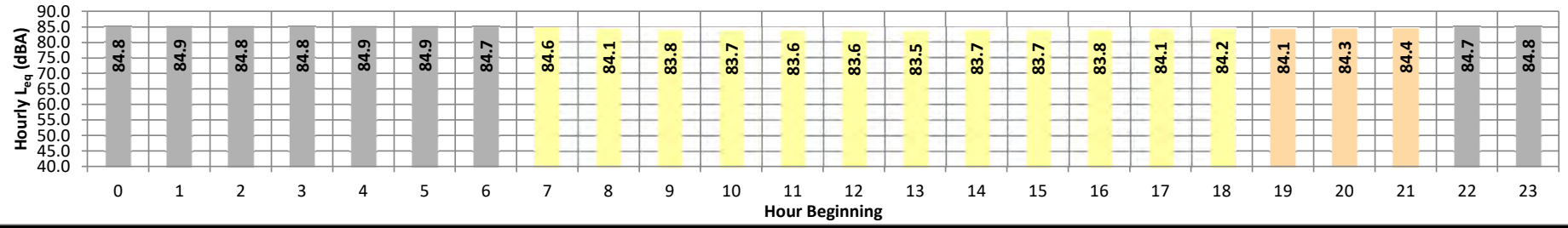
24-Hour Noise Level Measurement Summary

Date: Friday, November 4, 2022 *Location:* L1 - *Meter:* Piccolo II *JN:* 14919

Project: *Analyst:* P. Mara

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	84.8	85.6	84.1	85.5	85.4	85.3	85.2	85.0	84.8	84.4	84.3	84.2	84.8	10.0	94.8
	1	84.9	85.7	84.2	85.6	85.5	85.4	85.3	85.1	84.9	84.5	84.4	84.3	84.9	10.0	94.9
	2	84.8	85.7	84.1	85.6	85.5	85.3	85.3	85.0	84.8	84.4	84.3	84.2	84.8	10.0	94.8
	3	84.8	85.6	84.0	85.5	85.4	85.3	85.2	85.0	84.7	84.4	84.2	84.1	84.8	10.0	94.8
	4	84.9	85.7	84.2	85.6	85.5	85.4	85.3	85.1	84.9	84.5	84.5	84.3	84.9	10.0	94.9
	5	84.9	85.8	84.0	85.6	85.6	85.4	85.3	85.1	84.8	84.4	84.3	84.1	84.9	10.0	94.9
	6	84.7	85.6	83.8	85.5	85.4	85.2	85.1	84.9	84.6	84.2	84.1	83.9	84.7	10.0	94.7
Day	7	84.6	85.6	83.8	85.4	85.3	85.2	85.1	84.9	84.6	84.2	84.1	83.9	84.6	0.0	84.6
	8	84.1	85.1	83.2	85.0	84.9	84.8	84.7	84.4	84.1	83.6	83.5	83.3	84.1	0.0	84.1
	9	83.8	84.8	82.8	84.6	84.6	84.4	84.3	84.0	83.7	83.2	83.1	82.9	83.8	0.0	83.8
	10	83.7	84.8	82.6	84.7	84.6	84.4	84.3	84.0	83.7	83.1	82.9	82.7	83.7	0.0	83.7
	11	83.6	85.0	82.2	84.8	84.7	84.5	84.4	84.0	83.6	82.8	82.6	82.4	83.6	0.0	83.6
	12	83.6	85.0	82.1	84.9	84.8	84.6	84.4	84.0	83.5	82.7	82.5	82.2	83.6	0.0	83.6
	13	83.5	85.0	81.9	84.9	84.8	84.6	84.4	84.0	83.5	82.6	82.4	82.1	83.5	0.0	83.5
	14	83.7	85.2	82.2	85.0	84.9	84.7	84.6	84.1	83.7	82.9	82.6	82.4	83.7	0.0	83.7
	15	83.7	85.0	82.4	84.9	84.8	84.6	84.5	84.1	83.7	83.0	82.8	82.6	83.7	0.0	83.7
	16	83.8	85.1	82.5	85.0	84.9	84.7	84.5	84.1	83.8	83.2	83.0	82.7	83.8	0.0	83.8
	17	84.1	85.1	83.2	84.9	84.8	84.7	84.6	84.3	84.1	83.6	83.5	83.3	84.1	0.0	84.1
	18	84.2	85.0	83.4	84.9	84.8	84.7	84.6	84.3	84.1	83.8	83.7	83.5	84.2	0.0	84.2
Evening	19	84.1	85.0	83.4	84.8	84.7	84.6	84.5	84.3	84.1	83.7	83.6	83.5	84.1	5.0	89.1
	20	84.3	85.0	83.6	84.9	84.8	84.7	84.6	84.4	84.3	83.9	83.8	83.7	84.3	5.0	89.3
	21	84.4	85.1	83.7	85.0	84.9	84.8	84.7	84.5	84.3	84.0	83.9	83.8	84.4	5.0	89.4
Night	22	84.7	85.5	84.0	85.4	85.3	85.2	85.1	84.9	84.7	84.3	84.2	84.1	84.7	10.0	94.7
	23	84.8	85.5	84.0	85.4	85.3	85.2	85.1	84.9	84.7	84.4	84.3	84.1	84.8	10.0	94.8

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	83.5	84.8	81.9	84.6	84.6	84.4	84.3	84.0	83.5	82.6	82.4	82.1
(7am-7pm)	Max	84.6	85.6	83.8	85.4	85.3	85.2	85.1	84.9	84.6	84.2	84.1	83.9
Energy Average		83.9	Average:		84.9	84.8	84.6	84.5	84.2	83.9	83.2	83.1	82.8
Evening	Min	84.1	85.0	83.4	84.8	84.7	84.6	84.5	84.3	84.1	83.7	83.6	83.5
(7pm-10pm)	Max	84.4	85.1	83.7	85.0	84.9	84.8	84.7	84.5	84.3	84.0	83.9	83.8
Energy Average		84.3	Average:		84.9	84.8	84.7	84.6	84.4	84.2	83.9	83.8	83.7
Night	Min	84.7	85.5	83.8	85.4	85.3	85.2	85.1	84.9	84.6	84.2	84.1	83.9
(10pm-7am)	Max	84.9	85.8	84.2	85.6	85.6	85.4	85.3	85.1	84.9	84.5	84.5	84.3
Energy Average		84.8	Average:		85.5	85.4	85.3	85.2	85.0	84.8	84.4	84.3	84.1

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
84.3	**84.0**	**84.8**

24-Hour CNEL (dBA)

91.3

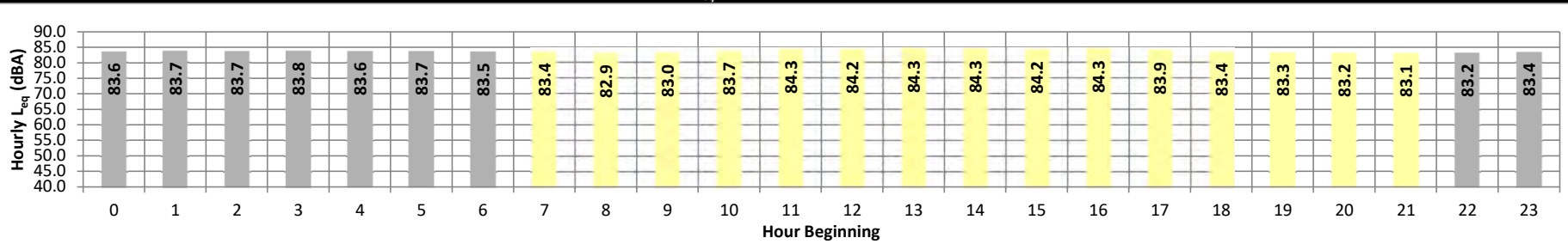
URBAN CROSSROADS

24-Hour Noise Level Measurement Summary

Date: Friday, November 4, 2022 *Location:* L2 - Oil Well Facility West Entrance *Meter:* Piccolo II *JN:* 14919

Project: Alta Vista *Source:* *Analyst:* B. Maddux

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	83.6	84.1	83.1	84.0	84.0	83.9	83.8	83.7	83.5	83.3	83.2	83.1	83.6	10.0	93.6
	1	83.7	84.2	83.2	84.1	84.1	84.0	84.0	83.8	83.7	83.4	83.4	83.2	83.7	10.0	93.7
	2	83.7	84.3	83.2	84.2	84.2	84.1	84.0	83.8	83.7	83.4	83.3	83.2	83.7	10.0	93.7
	3	83.8	84.4	83.2	84.3	84.2	84.1	84.1	83.9	83.7	83.4	83.4	83.3	83.8	10.0	93.8
	4	83.6	84.2	83.2	84.1	84.1	84.0	83.9	83.8	83.6	83.4	83.3	83.2	83.6	10.0	93.6
	5	83.7	84.4	83.1	84.3	84.2	84.1	84.0	83.8	83.6	83.3	83.3	83.2	83.7	10.0	93.7
	6	83.5	84.1	83.0	84.1	84.0	83.9	83.9	83.7	83.5	83.2	83.2	83.0	83.5	10.0	93.5
Day	7	83.4	84.1	82.9	84.0	83.9	83.8	83.7	83.5	83.4	83.1	83.0	82.9	83.4	0.0	83.4
	8	82.9	83.5	82.3	83.4	83.4	83.3	83.2	83.0	82.9	82.5	82.5	82.3	82.9	0.0	82.9
	9	83.0	83.8	82.4	83.7	83.6	83.5	83.4	83.2	83.0	82.6	82.5	82.4	83.0	0.0	83.0
	10	83.7	84.9	82.7	84.8	84.7	84.5	84.4	84.0	83.7	83.1	82.9	82.8	83.7	0.0	83.7
	11	84.3	85.6	82.9	85.5	85.4	85.2	85.1	84.6	84.2	83.4	83.2	83.0	84.3	0.0	84.3
	12	84.2	85.5	82.6	85.4	85.3	85.1	85.0	84.6	84.1	83.3	83.1	82.7	84.2	0.0	84.2
	13	84.3	85.8	82.7	85.7	85.5	85.3	85.2	84.7	84.3	83.4	83.2	82.9	84.3	0.0	84.3
	14	84.3	85.7	82.8	85.6	85.5	85.3	85.1	84.7	84.3	83.5	83.3	82.9	84.3	0.0	84.3
	15	84.2	85.5	82.8	85.4	85.3	85.1	85.0	84.5	84.1	83.4	83.2	82.9	84.2	0.0	84.2
	16	84.3	85.5	83.0	85.4	85.3	85.2	85.1	84.7	84.3	83.6	83.4	83.1	84.3	0.0	84.3
	17	83.9	85.0	82.9	84.9	84.8	84.6	84.5	84.2	83.9	83.3	83.2	83.0	83.9	0.0	83.9
	18	83.4	84.1	82.8	84.0	84.0	83.9	83.8	83.6	83.4	83.1	83.0	82.9	83.4	0.0	83.4
	19	83.3	83.9	82.8	83.8	83.8	83.7	83.6	83.5	83.3	83.0	82.9	82.8	83.3	5.0	88.3
	20	83.2	83.7	82.8	83.6	83.6	83.5	83.5	83.3	83.2	83.0	82.9	82.8	83.2	5.0	88.2
	21	83.1	83.5	82.7	83.4	83.4	83.3	83.3	83.2	83.1	82.9	82.8	82.7	83.1	5.0	88.1
Night	22	83.2	83.7	82.8	83.6	83.6	83.5	83.5	83.3	83.2	83.0	82.9	82.8	83.2	10.0	93.2
	23	83.4	83.9	82.9	83.8	83.7	83.7	83.6	83.5	83.4	83.1	83.0	83.0	83.4	10.0	93.4

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	82.9	83.5	82.3	83.4	83.4	83.3	83.2	83.0	82.9	82.5	82.5	82.3
	Max	84.3	85.8	83.0	85.7	85.5	85.3	85.2	84.7	84.3	83.6	83.4	83.1
Energy Average		83.7	Average:		84.6	84.5	84.4	84.3	84.0	83.7	83.1	83.0	82.8
Night	Min	83.2	83.7	82.8	83.6	83.6	83.5	83.5	83.3	83.2	83.0	82.9	82.8
	Max	83.8	84.4	83.2	84.3	84.2	84.1	84.1	83.9	83.7	83.4	83.4	83.3
Energy Average		83.6	Average:		84.1	84.0	83.9	83.9	83.7	83.5	83.3	83.2	83.1

L_{eq} (dBA)

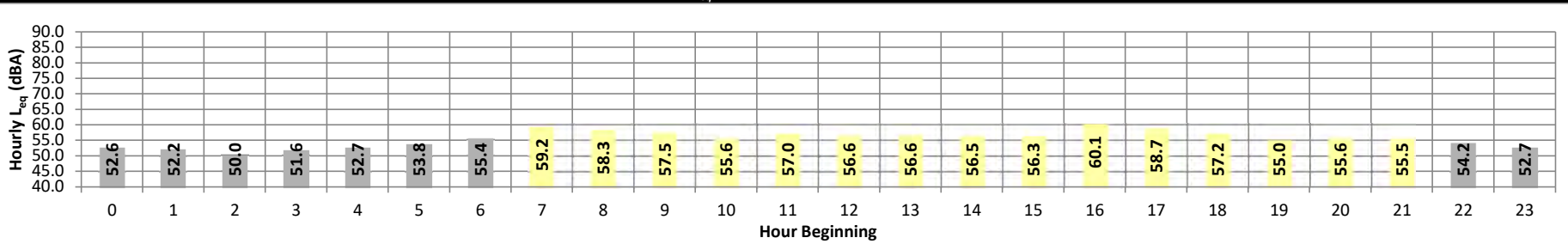
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
83.7	**83.7**	**83.6**

24-Hour Noise Level Measurement Summary

Date: Friday, November 4, 2022 *Location:* L3 - South of Oil Well Derick *Meter:* Piccolo II *JN:* 14919

Project: Alta Vista *Source:* *Analyst:* B. Maddux

Hourly L_{eq} dBA Readings (unadjusted)



Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%	L_{eq}	Adj.	Adj. L_{eq}
Night	0	52.6	56.8	50.4	56.6	56.4	56.0	55.3	53.1	51.7	50.7	50.6	50.5	52.6	10.0	62.6
	1	52.2	56.0	50.1	55.7	55.6	54.9	54.4	52.5	51.6	50.6	50.5	50.2	52.2	10.0	62.2
	2	50.0	52.3	48.7	52.2	52.0	51.7	51.4	50.4	49.8	48.9	48.8	48.7	50.0	10.0	60.0
	3	51.6	55.2	50.1	54.9	54.7	54.2	53.7	51.8	51.0	50.3	50.2	50.1	51.6	10.0	61.6
	4	52.7	56.1	50.8	56.0	55.8	55.4	54.9	53.0	52.1	51.1	51.0	50.9	52.7	10.0	62.7
	5	53.8	58.1	50.9	57.9	57.7	57.2	56.7	54.6	52.7	51.4	51.2	51.0	53.8	10.0	63.8
	6	55.4	59.1	52.9	58.9	58.7	58.2	57.8	56.3	54.7	53.3	53.2	53.0	55.4	10.0	65.4
Day	7	59.2	63.5	55.3	63.3	63.0	62.5	62.0	60.1	58.4	56.1	55.7	55.4	59.2	0.0	59.2
	8	58.3	63.4	53.2	63.1	62.7	62.0	61.4	59.5	57.2	54.1	53.7	53.4	58.3	0.0	58.3
	9	57.5	63.2	53.2	62.9	62.4	61.1	60.5	58.5	56.2	53.9	53.6	53.3	57.5	0.0	57.5
	10	55.6	60.5	50.7	60.1	59.8	59.2	58.7	56.7	54.9	51.5	51.1	50.8	55.6	0.0	55.6
	11	57.0	62.5	51.0	62.3	62.0	61.2	60.7	58.4	55.8	51.9	51.4	51.1	57.0	0.0	57.0
	12	56.6	62.3	50.0	61.9	61.6	60.6	60.1	57.7	55.4	51.5	50.9	50.2	56.6	0.0	56.6
	13	56.6	62.5	48.9	62.1	61.8	61.0	60.4	57.7	55.4	50.5	49.7	49.1	56.6	0.0	56.6
	14	56.5	62.8	50.3	62.4	62.0	61.1	60.1	57.5	55.1	51.5	50.9	50.4	56.5	0.0	56.5
	15	56.3	61.5	49.9	61.2	61.1	60.4	59.9	57.4	55.1	51.0	50.5	50.1	56.3	0.0	56.3
	16	60.1	65.8	51.4	65.5	65.3	64.7	64.1	62.0	58.2	52.9	52.1	51.5	60.1	0.0	60.1
	17	58.7	64.0	51.2	63.7	63.3	62.7	62.2	60.2	58.2	52.6	51.9	51.4	58.7	0.0	58.7
	18	57.2	62.5	51.0	62.2	62.0	61.4	60.7	58.5	56.1	52.1	51.6	51.1	57.2	0.0	57.2
	19	55.0	60.9	49.3	60.6	60.3	59.4	58.7	56.1	53.8	50.2	49.8	49.3	55.0	5.0	60.0
	20	55.6	61.7	50.1	61.4	61.2	59.9	59.2	56.6	54.1	50.9	50.5	50.2	55.6	5.0	60.6
	21	55.5	62.6	49.9	62.4	62.0	60.7	60.1	56.0	53.5	50.5	50.2	49.9	55.5	5.0	60.5
Night	22	54.2	59.5	49.5	59.2	59.0	58.5	57.9	55.4	52.6	49.8	49.7	49.6	54.2	10.0	64.2
	23	52.7	58.2	49.6	57.9	57.8	56.8	56.0	53.1	51.4	50.0	49.9	49.7	52.7	10.0	62.7

Timeframe	Hour	L_{eq}	L_{max}	L_{min}	L1%	L2%	L5%	L8%	L25%	L50%	L90%	L95%	L99%
Day	Min	55.0	60.5	48.9	60.1	59.8	59.2	58.7	56.0	53.5	50.2	49.7	49.1
	Max	60.1	65.8	55.3	65.5	65.3	64.7	64.1	62.0	58.4	56.1	55.7	55.4
Energy Average		57.3	Average:		62.3	62.0	61.2	60.6	58.2	55.8	52.1	51.6	51.1
Night	Min	50.0	52.3	48.7	52.2	52.0	51.7	51.4	50.4	49.8	48.9	48.8	48.7
	Max	55.4	59.5	52.9	59.2	59.0	58.5	57.9	56.3	54.7	53.3	53.2	53.0
Energy Average		53.1	Average:		56.6	56.4	55.9	55.3	53.3	52.0	50.7	50.6	50.4

L_{eq} (dBA)		
24-Hour	Daytime (7am-10pm)	Nighttime (10pm-7am)
56.1	**57.3**	**53.1**

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APPENDIX 5.1:

OPERATIONAL NOISE LEVEL CALCULATIONS

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14919 - Vista Rose - Oil Field - Uncontrolled

CadnaA Noise Prediction Model: 14919-02_Oil_Pumps_NoMit.cna
Date: 03.01.23
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Reference Time Day (min)	**960.00**
Reference Time Night (min)	**480.00**
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**85.34**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**1.00**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	46.2	46.2	52.9	0.0	0.0	0.0		x	Total	5.00	r	6079239.59	2265607.33	946.60
R2		R2	48.1	48.1	54.8	0.0	0.0	0.0		x	Total	5.00	r	6079169.36	2265640.70	949.88
R3		R3	52.3	52.3	59.0	0.0	0.0	0.0		x	Total	5.00	r	6079100.41	2265677.68	953.16
R4		R4	58.8	58.8	65.5	0.0	0.0	0.0		x	Total	5.00	r	6079130.57	2265805.11	958.29
R5		R5	69.3	69.3	76.0	0.0	0.0	0.0		x	Total	5.00	r	6079127.45	2265933.72	968.12
R6		R6	58.3	58.3	64.9	0.0	0.0	0.0		x	Total	5.00	r	6079127.56	2266061.92	972.85
R7		R7	62.5	62.5	69.1	0.0	0.0	0.0		x	Total	5.00	r	6079071.23	2265987.30	967.05
R8		R8	63.4	63.4	70.1	0.0	0.0	0.0		x	Total	5.00	r	6079072.02	2265943.20	963.86
R9		R9	62.2	62.2	68.9	0.0	0.0	0.0		x	Total	5.00	r	6079067.21	2265881.59	961.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
PUMPS		P1	115.2	115.2	115.2	Lw	115.2					1.50	r	6079186.16	2265866.60	979.19
PUMPS		P2	115.2	115.2	115.2	Lw	115.2					1.50	r	6079181.83	2265968.34	982.47
PUMPS		P3	115.2	115.2	115.2	Lw	115.2					1.50	r	6079178.74	2265915.69	980.57
PUMPS		P4	115.2	115.2	115.2	Lw	115.2					1.50	r	6079707.87	2265496.09	313.47
Derrick		D1	90.0	90.0	90.0	Lw	90					8.00	r	6079254.29	2265694.37	972.57

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin		End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIERPLANNED			0						0.00	r		6078584.00	2265935.91	969.06	969.06
												6078588.40	2265933.46	969.96	969.96
												6078589.15	2265933.04	969.79	969.79
												6078597.69	2265928.28	969.90	969.90
												6078608.89	2265922.03	968.71	968.71
												6078609.40	2265921.75	968.63	968.63
												6078615.72	2265918.22	967.85	967.85
												6078616.80	2265917.62	967.77	967.77
												6078624.29	2265913.44	964.57	964.57
												6078629.14	2265910.74	964.57	964.57
												6078638.70	2265904.26	964.57	964.57
												6078656.05	2265892.51	964.57	964.57
												6078691.27	2265871.24	961.95	961.95
												6078702.06	2265864.73	961.53	961.53
												6078707.40	2265860.58	961.29	961.29
												6078714.63	2265854.95	961.29	961.29
												6078726.22	2265845.94	961.29	961.29
												6078730.73	2265842.43	961.29	961.29
												6078734.00	2265839.89	960.86	960.86
												6078760.52	2265819.26	959.05	959.05
												6078781.31	2265803.09	958.78	958.78
												6078793.08	2265793.93	958.01	958.01
												6078795.81	2265791.81	958.01	958.01
												6078808.87	2265779.80	958.01	958.01
												6078811.43	2265777.45	958.01	958.01
												6078811.85	2265777.05	958.01	958.01
												6078816.65	2265772.64	958.01	958.01
												6078820.13	2265769.43	958.01	958.01
												6078822.67	2265767.10	958.01	958.01
												6078824.60	2265765.33	958.01	958.01
												6078832.82	2265757.77	958.01	958.01
												6078834.02	2265756.66	958.01	958.01
												6078834.62	2265756.10	957.21	957.21
												6078836.32	2265754.54	954.72	954.72
												6078839.21	2265751.88	950.72	950.72
												6078868.72	2265785.74	958.01	958.01
BARRIERPLANNED			0						0.00	r		6078939.04	2265712.82	944.97	944.97
												6078914.73	2265686.78	944.88	944.88
												6078918.65	2265683.66	948.16	948.16
												6078920.46	2265682.22	950.31	950.31
												6078921.44	2265681.44	951.44	951.44
												6078921.84	2265681.12	951.44	951.44
												6078933.79	2265671.60	951.44	951.44
												6078961.61	2265649.45	950.94	950.94
												6078972.36	2265641.66	950.30	950.30
												6078990.67	2265628.39	948.25	948.25
												6078990.72	2265628.35	948.24	948.24
												6078992.64	2265626.96	948.16	948.16
												6079016.30	2265609.82	948.16	948.16
												6079021.50	2265606.05	948.16	948.16
												6079033.44	2265598.82	948.16	948.16
												6079038.09	2265596.00	947.71	947.71
												6079049.39	2265589.16	946.43	946.43
												6079064.43	2265580.04	946.00	946.00
												6079073.86	2265574.33	944.88	944.88
												6079085.35	2265567.37	942.33	942.33
												6079089.05	2265565.13	941.60	941.60

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin		End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
												6079102.71	2265556.85	938.33	938.33
												6079102.72	2265556.85	938.32	938.32
												6079102.82	2265556.79	938.31	938.31
												6079135.42	2265537.04	935.04	935.04
												6079140.43	2265534.00	934.53	934.53
												6079143.85	2265532.51	935.04	935.04
												6079151.13	2265529.32	936.11	936.11
												6079165.72	2265522.95	938.32	938.32
												6079166.40	2265522.65	939.22	939.22
												6079180.35	2265516.56	940.51	940.51
												6079183.98	2265514.97	941.35	941.34
												6079185.07	2265514.50	941.60	941.60
												6079219.82	2265499.32	941.60	941.60
												6079223.90	2265497.53	941.60	941.60
												6079229.84	2265494.94	941.60	941.60
												6079237.75	2265492.44	941.60	941.60
												6079246.33	2265489.73	941.60	941.60
												6079259.35	2265515.15	941.60	941.60
												6079264.56	2265525.32	941.60	941.60
BARRIERPLANNED			0						0.00	r		6079156.46	2265988.47	979.19	979.19
												6079156.60	2265982.96	978.98	978.98
												6079157.28	2265955.96	978.44	978.44
												6079157.34	2265953.72	978.58	978.58
												6079157.37	2265952.26	978.44	978.44
												6079157.47	2265948.16	977.89	977.89
												6079157.51	2265946.72	977.69	977.69
												6079157.63	2265941.97	977.69	977.69
												6079157.70	2265939.32	977.81	977.81
												6079157.79	2265935.75	977.97	977.97
												6079158.03	2265925.87	978.01	978.01
												6079158.05	2265925.26	977.94	977.94
												6079158.14	2265921.55	977.69	977.69
												6079158.37	2265912.49	977.69	977.69
												6079158.37	2265912.36	977.69	977.69
												6079158.49	2265907.55	977.69	977.69
												6079158.73	2265898.01	977.69	977.69
												6079159.17	2265880.49	977.69	977.69
												6079159.53	2265866.24	977.69	977.69
												6079159.54	2265865.89	977.69	977.69
												6079159.69	2265860.06	977.69	977.69
												6079159.89	2265851.79	977.69	977.69
												6079160.03	2265846.36	977.69	977.69
												6079160.19	2265839.76	977.69	977.69
												6079160.26	2265837.09	977.69	977.69
												6079160.41	2265831.01	975.97	975.97
												6079160.56	2265825.02	974.41	974.41
												6079160.60	2265823.54	974.41	974.41
												6079160.71	2265819.10	974.41	974.41
												6079160.72	2265818.76	974.41	974.41
												6079160.81	2265815.16	972.07	972.07
												6079160.83	2265814.48	971.13	971.13
												6079160.86	2265813.10	971.13	971.13
												6079161.02	2265806.77	971.13	971.13
												6079161.03	2265806.55	971.03	971.03
												6079161.06	2265805.08	967.85	967.85
												6079161.11	2265803.19	967.85	967.85
												6079161.32	2265794.72	967.12	967.12
BARRIERPLANNED			0						0.00	r		6079153.69	2265707.22	960.18	960.18
												6079159.72	2265704.16	960.82	960.82
												6079164.19	2265701.90	961.29	961.29
												6079193.87	2265686.86	959.69	959.69
												6079196.24	2265685.66	961.29	961.29
												6079200.34	2265683.58	963.24	963.24
												6079214.52	2265676.40	964.03	964.03
												6079217.86	2265674.71	964.01	964.01
												6079227.32	2265669.91	962.18	962.18
												6079233.69	2265666.69	961.56	961.56
												6079234.42	2265666.32	961.49	961.49
												6079234.89	2265666.08	961.50	961.50
												6079236.25	2265665.39	961.63	961.63
												6079270.86	2265647.85	961.43	961.43
												6079271.49	2265647.54	961.37	961.37
												6079271.65	2265647.45	961.33	961.33
												6079271.88	2265647.34	961.29	961.29
												6079280.62	2265642.91	958.88	958.88
												6079286.44	2265642.97	958.52	958.52
												6079298.68	2265643.11	958.36	958.36

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin		End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
												6079301.53	2265643.14	958.01	958.01
												6079301.56	2265643.14	958.01	958.01
												6079301.64	2265643.14	958.05	958.05
												6079304.68	2265643.17	960.04	960.04
												6079314.02	2265643.28	958.01	958.01
												6079318.96	2265643.33	957.73	957.73
BARRIERPLANNED			0						0.00	r		6079161.32	2265794.72	967.12	967.12
												6079156.98	2265794.72	966.03	966.03
												6079152.99	2265794.72	965.64	965.64
												6079153.62	2265715.34	964.72	964.72
												6079153.65	2265711.34	964.42	964.42
												6079153.65	2265711.24	964.20	964.20
												6079153.66	2265711.02	964.57	964.57
												6079153.69	2265707.22	960.18	960.18
BARRIERPLANNED			0						0.00	r		6079143.96	2266025.28	978.71	978.71
												6079152.03	2266001.52	980.97	980.97
												6079152.03	2266001.52	980.97	980.97
												6079152.03	2266001.52	980.97	980.97
												6079152.42	2266000.37	980.97	980.97
												6079152.80	2265999.25	980.97	980.97
												6079153.40	2265997.49	980.97	980.97
												6079154.97	2265992.86	978.67	978.67
												6079156.46	2265988.47	979.19	979.19
BARRIERPLANNED			0						0.00	r		6079144.66	2266105.14	983.46	983.46
												6079144.35	2266069.38	980.97	980.97
												6079144.34	2266068.73	980.97	980.97
												6079144.34	2266068.03	980.97	980.97
												6079144.24	2266057.50	980.97	980.97
												6079144.24	2266057.50	980.97	980.97
												6079144.15	2266046.47	980.36	980.36
												6079143.96	2266025.28	978.71	978.71

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates			
							Begin	x	y	z	Ground
							(ft)	(ft)	(ft)	(ft)	(ft)

14919 - Vista Rose 1st flr - Oil Field - Single Barrier

CadnaA Noise Prediction Model: 14919-02_Oil_Pumps_1st_Flr.cna
Date: 03.01.23
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Reference Time Day (min)	**960.00**
Reference Time Night (min)	**480.00**
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**85.34**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**1.00**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	41.5	41.5	48.2	0.0	0.0	0.0		x	Total	5.00	r	6079239.59	2265607.33	946.60
R2		R2	43.5	43.5	50.2	0.0	0.0	0.0		x	Total	5.00	r	6079169.36	2265640.70	949.88
R3		R3	42.3	42.3	49.0	0.0	0.0	0.0		x	Total	5.00	r	6079100.41	2265677.68	953.16
R4		R4	50.3	50.3	57.0	0.0	0.0	0.0		x	Total	5.00	r	6079130.57	2265805.11	958.29
R5		R5	54.2	54.2	60.9	0.0	0.0	0.0		x	Total	5.00	r	6079110.23	2265928.88	967.04
R6		R6	51.5	51.5	58.2	0.0	0.0	0.0		x	Total	5.00	r	6079127.56	2266061.92	972.85
R7		R7	48.1	48.1	54.7	0.0	0.0	0.0		x	Total	5.00	r	6079071.23	2265987.30	967.05
R8		R8	48.9	48.9	55.5	0.0	0.0	0.0		x	Total	5.00	r	6079072.02	2265943.20	963.86
R9		R9	47.9	47.9	54.6	0.0	0.0	0.0		x	Total	5.00	r	6079067.21	2265881.59	961.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
PUMPS		P1	115.2	115.2	115.2	Lw	115.2					1.00	r	6079186.16	2265866.60	978.69
PUMPS		P2	115.2	115.2	115.2	Lw	115.2					1.00	r	6079181.83	2265968.34	981.97
PUMPS		P3	115.2	115.2	115.2	Lw	115.2					1.00	r	6079178.74	2265915.69	980.07
PUMPS		P4	115.2	115.2	115.2	Lw	115.2					1.00	r	6079707.87	2265496.09	312.97
Derrick		D1	90.0	90.0	90.0	Lw	90					8.00	r	6079254.29	2265694.37	972.57

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin		End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIERPLANNED			0						6.00	r		6078584.00	2265935.91	975.06	969.06
												6078588.40	2265933.46	975.96	969.96
												6078589.15	2265933.04	975.79	969.79
												6078597.69	2265928.28	975.90	969.90
												6078608.89	2265922.03	974.71	968.71
												6078609.40	2265921.75	974.63	968.63
												6078615.72	2265918.22	973.85	967.85
												6078616.80	2265917.62	973.77	967.77
												6078624.29	2265913.44	970.57	964.57
												6078629.14	2265910.74	970.57	964.57
												6078638.70	2265904.26	970.57	964.57
												6078656.05	2265892.51	970.57	964.57
												6078691.27	2265871.24	967.95	961.95
												6078702.06	2265864.73	967.53	961.53
												6078707.40	2265860.58	967.29	961.29
												6078714.63	2265854.95	967.29	961.29
												6078726.22	2265845.94	967.29	961.29
												6078730.73	2265842.43	967.29	961.29
												6078734.00	2265839.89	966.86	960.86
												6078760.52	2265819.26	965.05	959.05
												6078781.31	2265803.09	964.78	958.78
												6078793.08	2265793.93	964.01	958.01
												6078795.81	2265791.81	964.01	958.01
												6078808.87	2265779.80	964.01	958.01
												6078811.43	2265777.45	964.01	958.01
												6078811.85	2265777.05	964.01	958.01
												6078816.65	2265772.64	964.01	958.01
												6078820.13	2265769.43	964.01	958.01
												6078822.67	2265767.10	964.01	958.01
												6078824.60	2265765.33	964.01	958.01
												6078832.82	2265757.77	964.01	958.01
												6078834.02	2265756.66	964.01	958.01
												6078834.62	2265756.10	963.21	957.21
												6078836.32	2265754.54	960.72	954.72
												6078839.21	2265751.88	956.72	950.72
												6078868.72	2265785.74	964.01	958.01
BARRIERPLANNED			0						6.00	r		6078939.04	2265712.82	950.97	944.97
												6078914.73	2265686.78	950.88	944.88
												6078918.65	2265683.66	954.16	948.16
												6078920.46	2265682.22	956.31	950.31
												6078921.44	2265681.44	957.44	951.44
												6078921.84	2265681.12	957.44	951.44
												6078933.79	2265671.60	957.44	951.44
												6078961.61	2265649.45	956.94	950.94
												6078972.36	2265641.66	956.30	950.30
												6078990.67	2265628.39	954.25	948.25
												6078990.72	2265628.35	954.24	948.24
												6078992.64	2265626.96	954.16	948.16
												6079016.30	2265609.82	954.16	948.16
												6079021.50	2265606.05	954.16	948.16
												6079033.44	2265598.82	954.16	948.16
												6079038.09	2265596.00	953.71	947.71
												6079049.39	2265589.16	952.43	946.43
												6079064.43	2265580.04	952.00	946.00
												6079073.86	2265574.33	950.88	944.88
												6079085.35	2265567.37	948.33	942.33
												6079089.05	2265565.13	947.60	941.60

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin		End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
												6079102.71	2265556.85	944.33	938.33
												6079102.72	2265556.85	944.32	938.32
												6079102.82	2265556.79	944.31	938.31
												6079135.42	2265537.04	941.04	935.04
												6079140.43	2265534.00	940.53	934.53
												6079143.85	2265532.51	941.04	935.04
												6079151.13	2265529.32	942.11	936.11
												6079165.72	2265522.95	944.32	938.32
												6079166.40	2265522.65	945.22	939.22
												6079180.35	2265516.56	946.51	940.51
												6079183.98	2265514.97	947.35	941.34
												6079185.07	2265514.50	947.60	941.60
												6079219.82	2265499.32	947.60	941.60
												6079223.90	2265497.53	947.60	941.60
												6079229.84	2265494.94	947.60	941.60
												6079237.75	2265492.44	947.60	941.60
												6079246.33	2265489.73	947.60	941.60
												6079259.35	2265515.15	947.60	941.60
												6079264.56	2265525.32	947.60	941.60
BARRIERPLANNED			0	0.99	0.99				20.00	r		6079156.46	2265988.47	999.19	979.19
												6079156.60	2265982.96	998.98	978.98
												6079157.28	2265955.96	998.44	978.44
												6079157.34	2265953.72	998.58	978.58
												6079157.37	2265952.26	998.44	978.44
												6079157.47	2265948.16	997.89	977.89
												6079157.51	2265946.72	997.69	977.69
												6079157.63	2265941.97	997.69	977.69
												6079157.70	2265939.32	997.81	977.81
												6079157.79	2265935.75	997.97	977.97
												6079158.03	2265925.87	998.01	978.01
												6079158.05	2265925.26	997.94	977.94
												6079158.14	2265921.55	997.69	977.69
												6079158.37	2265912.49	997.69	977.69
												6079158.37	2265912.36	997.69	977.69
												6079158.49	2265907.55	997.69	977.69
												6079158.73	2265898.01	997.69	977.69
												6079159.17	2265880.49	997.69	977.69
												6079159.53	2265866.24	997.69	977.69
												6079159.54	2265865.89	997.69	977.69
												6079159.69	2265860.06	997.69	977.69
												6079159.89	2265851.79	997.69	977.69
												6079160.03	2265846.36	997.69	977.69
												6079160.19	2265839.76	997.69	977.69
												6079160.26	2265837.09	997.69	977.69
												6079160.41	2265831.01	995.97	975.97
												6079160.56	2265825.02	994.41	974.41
												6079160.60	2265823.54	994.41	974.41
												6079160.71	2265819.10	994.41	974.41
												6079160.72	2265818.76	994.41	974.41
												6079160.81	2265815.16	992.07	972.07
												6079160.83	2265814.48	991.13	971.13
												6079160.86	2265813.10	991.13	971.13
												6079161.02	2265806.77	991.13	971.13
												6079161.03	2265806.55	991.03	971.03
												6079161.06	2265805.08	987.85	967.85
												6079161.11	2265803.19	987.85	967.85
												6079161.32	2265794.72	987.12	967.12
BARRIERPLANNED			0						8.00	r		6079153.69	2265707.22	968.18	960.18
												6079159.72	2265704.16	968.82	960.82
												6079164.19	2265701.90	969.29	961.29
												6079193.87	2265686.86	967.69	959.69
												6079196.24	2265685.66	969.29	961.29
												6079200.34	2265683.58	971.24	963.24
												6079214.52	2265676.40	972.03	964.03
												6079217.86	2265674.71	972.01	964.01
												6079227.32	2265669.91	970.18	962.18
												6079233.69	2265666.69	969.56	961.56
												6079234.42	2265666.32	969.49	961.49
												6079234.89	2265666.08	969.50	961.50
												6079236.25	2265665.39	969.63	961.63
												6079270.86	2265647.85	969.43	961.43
												6079271.49	2265647.54	969.37	961.37
												6079271.65	2265647.45	969.33	961.33
												6079271.88	2265647.34	969.29	961.29
												6079280.62	2265642.91	966.88	958.88
												6079286.44	2265642.97	966.52	958.52
												6079298.68	2265643.11	966.36	958.36

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height				Coordinates			
				left	right		horz.	vert.	Begin		End		x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
													6079301.53	2265643.14	966.01	958.01
													6079301.56	2265643.14	966.01	958.01
													6079301.64	2265643.14	966.05	958.05
													6079304.68	2265643.17	968.04	960.04
													6079314.02	2265643.28	966.01	958.01
													6079318.96	2265643.33	965.73	957.73
BARRIERPLANNED			0						20.00	r			6079161.32	2265794.72	987.12	967.12
													6079156.98	2265794.72	986.03	966.03
													6079152.99	2265794.72	985.64	965.64
													6079153.62	2265715.34	984.72	964.72
													6079153.65	2265711.34	984.42	964.42
													6079153.65	2265711.24	984.20	964.20
													6079153.66	2265711.02	984.57	964.57
													6079153.69	2265707.22	980.18	960.18
BARRIERPLANNED			0						16.00	r			6079143.96	2266025.28	994.71	978.71
													6079152.03	2266001.52	996.97	980.97
													6079152.03	2266001.52	996.97	980.97
													6079152.03	2266001.52	996.97	980.97
													6079152.42	2266000.37	996.97	980.97
													6079152.80	2265999.25	996.97	980.97
													6079153.40	2265997.49	996.97	980.97
													6079154.97	2265992.86	994.67	978.67
													6079156.46	2265988.47	995.19	979.19
BARRIERPLANNED			0						8.00	r			6079144.66	2266105.14	991.46	983.46
													6079144.35	2266069.38	988.97	980.97
													6079144.34	2266068.73	988.97	980.97
													6079144.34	2266068.03	988.97	980.97
													6079144.24	2266057.50	988.97	980.97
													6079144.24	2266057.50	988.97	980.97
													6079144.15	2266046.47	988.36	980.36
													6079143.96	2266025.28	986.71	978.71

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y		z	Ground
							(ft)	(ft)	(ft)		(ft)	(ft)

14919 - Vista Rose 2nd flr - Oil Field - Single Barrier

CadnaA Noise Prediction Model: 14919-02_Oil_Pumps_2nd_Flr.cna
Date: 03.01.23
Analyst: B. Maddux

Calculation Configuration

Configuration	
Parameter	**Value**
General	
Max. Error (dB)	**0.00**
Max. Search Radius (#(Unit,LEN))	**2000.01**
Min. Dist Src to Rcvr	**0.00**
Partition	
Raster Factor	**0.50**
Max. Length of Section (#(Unit,LEN))	**999.99**
Min. Length of Section (#(Unit,LEN))	**1.01**
Min. Length of Section (%)	**0.00**
Proj. Line Sources	**On**
Proj. Area Sources	**On**
Ref. Time	
Reference Time Day (min)	**960.00**
Reference Time Night (min)	**480.00**
Daytime Penalty (dB)	**0.00**
Recr. Time Penalty (dB)	**5.00**
Night-time Penalty (dB)	**10.00**
DTM	
Standard Height (m)	**85.34**
Model of Terrain	**Triangulation**
Reflection	
max. Order of Reflection	**2**
Search Radius Src	**100.00**
Search Radius Rcvr	**100.00**
Max. Distance Source - Rcvr	**1000.00 1000.00**
Min. Distance Rvcr - Reflector	**1.00 1.00**
Min. Distance Source - Reflector	**0.10**
Industrial (ISO 9613)	
Lateral Diffraction	**some Obj**
Obst. within Area Src do not shield	**On**
Screening	**Incl. Ground Att. over Barrier**
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	**3.0 20.0 0.0**
Temperature (#(Unit,TEMP))	**10**
rel. Humidity (%)	**70**
Ground Absorption G	**1.00**
Wind Speed for Dir. (#(Unit,SPEED))	**3.0**
Roads (TNM)	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
R1		R1	49.0	49.0	55.7	0.0	0.0	0.0		x	Total	14.00	r	6079239.59	2265607.33	955.60
R2		R2	52.1	52.1	58.8	0.0	0.0	0.0		x	Total	14.00	r	6079169.36	2265640.70	958.88
R3		R3	46.8	46.8	53.5	0.0	0.0	0.0		x	Total	14.00	r	6079100.41	2265677.68	962.16
R4		R4	52.9	52.9	59.6	0.0	0.0	0.0		x	Total	14.00	r	6079130.57	2265805.11	967.29
R5		R5	56.7	56.7	63.4	0.0	0.0	0.0		x	Total	14.00	r	6079110.23	2265928.88	976.04
R6		R6	58.6	58.6	65.2	0.0	0.0	0.0		x	Total	14.00	r	6079127.56	2266061.92	981.85
R7		R7	51.4	51.4	58.1	0.0	0.0	0.0		x	Total	14.00	r	6079071.23	2265987.30	976.05
R8		R8	52.0	52.0	58.7	0.0	0.0	0.0		x	Total	14.00	r	6079072.02	2265943.20	972.86
R9		R9	51.2	51.2	57.9	0.0	0.0	0.0		x	Total	14.00	r	6079067.21	2265881.59	970.00

Point Source(s)

Name	M.	ID	Result. PWL			Lw / Li			Operating Time			Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Special	Night			X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	(ft)		(ft)	(ft)	(ft)
PUMPS		P1	115.2	115.2	115.2	Lw	115.2					1.00	r	6079186.16	2265866.60	978.69
PUMPS		P2	115.2	115.2	115.2	Lw	115.2					1.00	r	6079181.83	2265968.34	981.97
PUMPS		P3	115.2	115.2	115.2	Lw	115.2					1.00	r	6079178.74	2265915.69	980.07
PUMPS		P4	115.2	115.2	115.2	Lw	115.2					1.00	r	6079707.87	2265496.09	312.97
Derrick		D1	90.0	90.0	90.0	Lw	90					8.00	r	6079254.29	2265694.37	972.57

Line Source(s)

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Operating Time			Moving Pt. Src				Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	Number			Speed	
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	Day	Evening	Night	(mph)	(ft)

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	

Name	ID	Height		Coordinates			
		Begin	End	x	y	z	Ground
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)

Barrier(s)

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin		End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
BARRIERPLANNED			0						6.00	r		6078584.00	2265935.91	975.06	969.06
												6078588.40	2265933.46	975.96	969.96
												6078589.15	2265933.04	975.79	969.79
												6078597.69	2265928.28	975.90	969.90
												6078608.89	2265922.03	974.71	968.71
												6078609.40	2265921.75	974.63	968.63
												6078615.72	2265918.22	973.85	967.85
												6078616.80	2265917.62	973.77	967.77
												6078624.29	2265913.44	970.57	964.57
												6078629.14	2265910.74	970.57	964.57
												6078638.70	2265904.26	970.57	964.57
												6078656.05	2265892.51	970.57	964.57
												6078691.27	2265871.24	967.95	961.95
												6078702.06	2265864.73	967.53	961.53
												6078707.40	2265860.58	967.29	961.29
												6078714.63	2265854.95	967.29	961.29
												6078726.22	2265845.94	967.29	961.29
												6078730.73	2265842.43	967.29	961.29
												6078734.00	2265839.89	966.86	960.86
												6078760.52	2265819.26	965.05	959.05
												6078781.31	2265803.09	964.78	958.78
												6078793.08	2265793.93	964.01	958.01
												6078795.81	2265791.81	964.01	958.01
												6078808.87	2265779.80	964.01	958.01
												6078811.43	2265777.45	964.01	958.01
												6078811.85	2265777.05	964.01	958.01
												6078816.65	2265772.64	964.01	958.01
												6078820.13	2265769.43	964.01	958.01
												6078822.67	2265767.10	964.01	958.01
												6078824.60	2265765.33	964.01	958.01
												6078832.82	2265757.77	964.01	958.01
												6078834.02	2265756.66	964.01	958.01
												6078834.62	2265756.10	963.21	957.21
												6078836.32	2265754.54	960.72	954.72
												6078839.21	2265751.88	956.72	950.72
												6078868.72	2265785.74	964.01	958.01
BARRIERPLANNED			0						6.00	r		6078939.04	2265712.82	950.97	944.97
												6078914.73	2265686.78	950.88	944.88
												6078918.65	2265683.66	954.16	948.16
												6078920.46	2265682.22	956.31	950.31
												6078921.44	2265681.44	957.44	951.44
												6078921.84	2265681.12	957.44	951.44
												6078933.79	2265671.60	957.44	951.44
												6078961.61	2265649.45	956.94	950.94
												6078972.36	2265641.66	956.30	950.30
												6078990.67	2265628.39	954.25	948.25
												6078990.72	2265628.35	954.24	948.24
												6078992.64	2265626.96	954.16	948.16
												6079016.30	2265609.82	954.16	948.16
												6079021.50	2265606.05	954.16	948.16
												6079033.44	2265598.82	954.16	948.16
												6079038.09	2265596.00	953.71	947.71
												6079049.39	2265589.16	952.43	946.43
												6079064.43	2265580.04	952.00	946.00
												6079073.86	2265574.33	950.88	944.88
												6079085.35	2265567.37	948.33	942.33
												6079089.05	2265565.13	947.60	941.60

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			Coordinates			
				left	right		horz.	vert.	Begin		End	x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
												6079102.71	2265556.85	944.33	938.33
												6079102.72	2265556.85	944.32	938.32
												6079102.82	2265556.79	944.31	938.31
												6079135.42	2265537.04	941.04	935.04
												6079140.43	2265534.00	940.53	934.53
												6079143.85	2265532.51	941.04	935.04
												6079151.13	2265529.32	942.11	936.11
												6079165.72	2265522.95	944.32	938.32
												6079166.40	2265522.65	945.22	939.22
												6079180.35	2265516.56	946.51	940.51
												6079183.98	2265514.97	947.35	941.34
												6079185.07	2265514.50	947.60	941.60
												6079219.82	2265499.32	947.60	941.60
												6079223.90	2265497.53	947.60	941.60
												6079229.84	2265494.94	947.60	941.60
												6079237.75	2265492.44	947.60	941.60
												6079246.33	2265489.73	947.60	941.60
												6079259.35	2265515.15	947.60	941.60
												6079264.56	2265525.32	947.60	941.60
BARRIERPLANNED			0	0.99	0.99		2.00	2.00	20.00	r		6079156.46	2265988.47	999.19	979.19
												6079156.60	2265982.96	998.98	978.98
												6079157.28	2265955.96	998.44	978.44
												6079157.34	2265953.72	998.58	978.58
												6079157.37	2265952.26	998.44	978.44
												6079157.47	2265948.16	997.89	977.89
												6079157.51	2265946.72	997.69	977.69
												6079157.63	2265941.97	997.69	977.69
												6079157.70	2265939.32	997.81	977.81
												6079157.79	2265935.75	997.97	977.97
												6079158.03	2265925.87	998.01	978.01
												6079158.05	2265925.26	997.94	977.94
												6079158.14	2265921.55	997.69	977.69
												6079158.37	2265912.49	997.69	977.69
												6079158.37	2265912.36	997.69	977.69
												6079158.49	2265907.55	997.69	977.69
												6079158.73	2265898.01	997.69	977.69
												6079159.17	2265880.49	997.69	977.69
												6079159.53	2265866.24	997.69	977.69
												6079159.54	2265865.89	997.69	977.69
												6079159.69	2265860.06	997.69	977.69
												6079159.89	2265851.79	997.69	977.69
												6079160.03	2265846.36	997.69	977.69
												6079160.19	2265839.76	997.69	977.69
												6079160.26	2265837.09	997.69	977.69
												6079160.41	2265831.01	995.97	975.97
												6079160.56	2265825.02	994.41	974.41
												6079160.60	2265823.54	994.41	974.41
												6079160.71	2265819.10	994.41	974.41
												6079160.72	2265818.76	994.41	974.41
												6079160.81	2265815.16	992.07	972.07
												6079160.83	2265814.48	991.13	971.13
												6079160.86	2265813.10	991.13	971.13
												6079161.02	2265806.77	991.13	971.13
												6079161.03	2265806.55	991.03	971.03
												6079161.06	2265805.08	987.85	967.85
												6079161.11	2265803.19	987.85	967.85
												6079161.32	2265794.72	987.12	967.12
BARRIERPLANNED			0						8.00	r		6079153.69	2265707.22	968.18	960.18
												6079159.72	2265704.16	968.82	960.82
												6079164.19	2265701.90	969.29	961.29
												6079193.87	2265686.86	967.69	959.69
												6079196.24	2265685.66	969.29	961.29
												6079200.34	2265683.58	971.24	963.24
												6079214.52	2265676.40	972.03	964.03
												6079217.86	2265674.71	972.01	964.01
												6079227.32	2265669.91	970.18	962.18
												6079233.69	2265666.69	969.56	961.56
												6079234.42	2265666.32	969.49	961.49
												6079234.89	2265666.08	969.50	961.50
												6079236.25	2265665.39	969.63	961.63
												6079270.86	2265647.85	969.43	961.43
												6079271.49	2265647.54	969.37	961.37
												6079271.65	2265647.45	969.33	961.33
												6079271.88	2265647.34	969.29	961.29
												6079280.62	2265642.91	966.88	958.88
												6079286.44	2265642.97	966.52	958.52
												6079298.68	2265643.11	966.36	958.36

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height				Coordinates			
				left	right		horz.	vert.	Begin		End		x	y	z	Ground
						(ft)	(ft)	(ft)	(ft)		(ft)		(ft)	(ft)	(ft)	(ft)
													6079301.53	2265643.14	966.01	958.01
													6079301.56	2265643.14	966.01	958.01
													6079301.64	2265643.14	966.05	958.05
													6079304.68	2265643.17	968.04	960.04
													6079314.02	2265643.28	966.01	958.01
													6079318.96	2265643.33	965.73	957.73
BARRIERPLANNED			0						10.00	r			6079161.32	2265794.72	977.12	967.12
													6079156.98	2265794.72	976.03	966.03
													6079152.99	2265794.72	975.64	965.64
													6079153.62	2265715.34	974.72	964.72
													6079153.65	2265711.34	974.42	964.42
													6079153.65	2265711.24	974.20	964.20
													6079153.66	2265711.02	974.57	964.57
													6079153.69	2265707.22	970.18	960.18
BARRIERPLANNED			0						16.00	r			6079143.96	2266025.28	994.71	978.71
													6079152.03	2266001.52	996.97	980.97
													6079152.03	2266001.52	996.97	980.97
													6079152.03	2266001.52	996.97	980.97
													6079152.42	2266000.37	996.97	980.97
													6079152.80	2265999.25	996.97	980.97
													6079153.40	2265997.49	996.97	980.97
													6079154.97	2265992.86	994.67	978.67
													6079156.46	2265988.47	995.19	979.19
BARRIERPLANNED			0						8.00	r			6079144.66	2266105.14	991.46	983.46
													6079144.35	2266069.38	988.97	980.97
													6079144.34	2266068.73	988.97	980.97
													6079144.34	2266068.03	988.97	980.97
													6079144.24	2266057.50	988.97	980.97
													6079144.24	2266057.50	988.97	980.97
													6079144.15	2266046.47	988.36	980.36
													6079143.96	2266025.28	986.71	978.71

Building(s)

Name	Sel.	M.	ID	RB	Residents	Absorption	Height	Coordinates				
							Begin	x	y		z	Ground
							(ft)	(ft)	(ft)		(ft)	(ft)

APPENDIX 5.2:

EXAMPLE SOUND BLANKETS

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Spec Data Sheet

G BSC 25 8 (BSC-SERIES)
NOISE BARRIER/SOUND ABSORBER COMPOSITES

G BSC 25 8 (BSC-25) Noise Barrier/Sound Absorber Composite

The barrier septum configuration offers the benefits of both sound absorbers and noise barriers. Sound Seal's **G BSC 25 8** (**BSC-25)** consists of a non-reinforced 1-lb psf loaded vinyl noise barrier sandwiched between two layers of 1" thick acoustical fiberglass sound absorbers, each quilted with a vinyl-coated-fiberglass-cloth facing. Curtain panels are constructed with grommets across the top and hook and loop fasteners along the vertical edges. Curtain is available 4' wide x 8' long bound.

- Class A (or 1) flammability rated per ASTM E84
- STC rating 29
- NRC rating .75
- Available colors: gray

Applications:

Typical uses include as acoustical curtain panels in acoustical curtain enclosures, as a free-hanging noise barrier/sound absorber composite wall, and as divider partitions between noise sources. BSC-25 products are commonly used to line the walls and/or ceiling of a mechanical room or building to reduce noise levels both inside and outside of the room/building.

Product Data:

Description	Vinyl coated fiberglass cloth faced 1" quilted fiberglass sound absorber 1 lb-psf non-reinforced loaded vinyl noise barrier Vinyl coated fiberglass cloth faced 1" quilted fiberglass sound absorber
Flammability	Class A: Flame Spread 22.78 Smoke Density: 30.56
Nominal Thickness	2.00"
Temperature Range	-20° to +180° F
Standard Size	4' wide x 8' long
Weight	1.43 lb psf

Acoustical Performance:

Sound Transmission Loss / Octave Band Frequencies (Hz)							
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**
G BSC 25 8 (BSC-25)	12	16	27	40	44	43	29

ASTM E-90 & E 413

Sound Absorption Data / Octave Band Frequencies (Hz)							
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**
G BSC 25 8 (BSC-25)	.45	.96	.87	.66	.47	.30	.75

ASTM C 423

NetWell NOISE CONTROL

QBO-2 Datasheet

EXTERIOR NOISE BARRIER + SOUND ABSORBER COMPOSITE

QBO-2 Outdoor Sound Barrier

NetWell's **QBO-2** offers the benefits of both a noise barrier and a sound absorber for outdoor applications. The QBO-2 consists of a two-inch thick vinyl-coated-fiberglass-cloth faced quilted fiberglass that is bonded to a one-pound per sq. ft. reinforced loaded vinyl noise barrier. **QBO** style Sound Blanket panels are constructed with grommets across the top and **bottom, and exterior grade** Velcro seals along the vertical edges. The product is also available in roll form with edges bound or unbound.

- Class A (or 1) flammability rated per ASTM E 84
- Designed for outdoor applications
- Available facing colors: gray, tan, black, or off-white
- Available barrier colors: gray, tan, blue or olive drab

Applications:

With a minimum life span of 5 years* in the harshest environments and a wind load rating of 120 mph, this product is typically used as a **temporary noise barrier on outdoor applications such as construction site noise mitigation projects**. QBO-2 has been a recommended, specified, and approved product to comply with the New York City Noise Ordinance Code.

Product Data:

Description	Vinyl coated fiberglass cloth facing on 2” quilted fiberglass
	1lb-psf reinforced loaded vinyl barrier
Flammability	Flame Spread: 23.0
	Smoke density: 30.0
Nominal thickness	2.0 inch
Temperature range	-20° to +180° F
Standard roll size	54” wide x 25’ long
Weight	1.45 lb psf

Acoustical Performance:

Sound Transmission Loss

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**
QBO-2	13	20	29	40	50	55	32

ASTM E-90 & E 413

Sound Absorption Data

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**
QBO-2	.07	.27	.96	1.13	1.08	.99	.85

ASTM C 423

* when properly installed.

NetWell NOISE CONTROL

QBO-3 Datasheet

EXTERIOR NOISE BARRIER + SOUND ABSORBER COMPOSITE

QBO-3 Outdoor Sound Barrier

NetWell's **QBO-3** offers the benefits of both a noise barrier and a sound absorber for outdoor applications. This product consists of a two-inch thick vinyl-coated-fiberglass-cloth faced quilted fiberglass bonded to a two-pound per sq. ft. reinforced loaded vinyl noise barrier. **QBO** style Sound Blanket panels are constructed with grommets across the top and **bottom, and exterior grade** Velcro seals along the vertical edges. The product is also available in roll form with edges bound or unbound.

- Class A (or 1) flammability rated per ASTM E- 84
- For Indoor or Outdoor Applications
- Available facing colors on quilt: gray, tan, black or off-white
- Available barrier colors: gray, tan, blue or olive drab

Applications:

With its 7+ year life span* in the harshest environments, this product is typically used as a **temporary noise barrier on outdoor applications such as construction site noise mitigation projects**. Also available with a one-pound psf noise barrier or a one-inch thick quilted fiberglass sound absorber.

Product Data:

Description	Vinyl coated fiberglass cloth facing on 2” quilted fiberglass/ 2 lb-psf reinforced loaded vinyl noise barrier
Flammability	Flame Spread: 23.0 Smoke density: 30.0
Nominal thickness	2.0 inches
Temperature range	-20° to +180° F
Standard roll size	54” wide x 25’ long
Weight	2.45 lb psf

Acoustical Performance:

Sound Transmission Loss

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**
QBO-3	19	25	33	46	53	58	37

ASTM E-90 & E 413

Sound Absorption Data

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**
QBO-3	.07	.27	.96	1.13	1.08	.99	.85

ASTM C 423

* when properly installed.

NetWell NOISE CONTROL

QBO-Max 2 Datasheet

EXTERIOR NOISE BARRIER + SOUND ABSORBER COMPOSITE

QBO-Max 2 Outdoor Sound Barrier

NetWell's QBO-Max 2 offers the benefits of both a noise barrier and a sound absorber composite in one product for outdoor applications. This barrier-backed product consists of a one-pound per sq. ft. reinforced loaded vinyl noise barrier bonded to an acoustical fiberglass absorber that is quilted with an exterior grade, UV resistant heavy-duty VCP faced quilted. Modular sound curtain panels are constructed with grommets across the top and bottom, and exterior grade Velcro seals along the vertical edges. The panels are sewn with an exterior grade thread.

- STC 33 Rating, NRC .75
- Maximum Durability and Longevity for outdoor applications
- Available facing colors on quilt: gray, tan, black, off-white
- Available barrier colors: gray, tan, black or blue

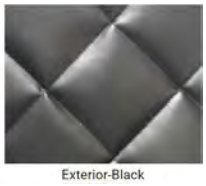
Applications:

Typically used as modular sound curtain panels on long-term construction projects or permanent outdoor applications such as enclosing HVAC equipment, dust collectors or similar machinery where UV and abuse resistance as well as maximum durability, longevity and noise reduction is required. This product is also available with a one-inch thick quilted fiberglass absorber, or with a two-pound per sq. ft. reinforced noise barrier.

Product Data:

Description	Vinyl coated polyester faced 2” quilted fiberglass/ 1 lb-psf reinforced loaded vinyl noise barrier
Nominal Thickness	2-inches
Wind Load	140 MPH per ASTM E330 “Wind Load Test Procedure”
Temperature range	-20° to +180° F
Standard panel size	54” wide, lengths as required up to 20’ high
Weight	1.45 lb psf


Exterior-Grey


Exterior-Black


Exterior-Tan


Exterior-White

Acoustical Performance:

Sound Transmission Loss

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**
QBO-Max 2	14	20	32	41	42	41	33

ASTM E-90 & E 413

Sound Absorption Performance:

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**
QBO-Max 2	.45	.96	.87	.66	.47	.28	.75

ASTM C 423

Bloomington, MN 55431 | 800.638.9355 | www.controlnoise.com

NetWell NOISE CONTROL

QBO-Max 3 Datasheet

EXTERIOR NOISE BARRIER + SOUND ABSORBER COMPOSITE

QBO-Max 3 Outdoor Sound Barrier

NetWell's QBO-Max 3 offers the benefits of both a noise barrier and a sound absorber composite in one product for outdoor applications. This barrier-backed product consists of an exterior grade, UV resistant heavy-duty faced quilted fiberglass absorber bonded to a two-pound per sq. ft. reinforced loaded vinyl barrier. Modular curtain panels are constructed with grommets across the top and bottom, and exterior grade Velcro seals along the vertical edges. Modular panels are sewn with an exterior grade thread.

- STC 38 Rating, NRC .65
- Available facing colors on quilt: gray, tan, black, off-white
- Available barrier colors: gray, tan, black or blue
- Maximum Durability and Longevity for outdoor applications

Applications:

Typically used as modular curtain panels on long-term construction projects or permanent outdoor applications such as enclosing HVAC equipment, dust collectors or similar machinery behind a manufacturing plant where UV and abuse resistance as well as maximum durability, longevity and noise reduction is required. Also available with a two-inch thick quilted fiberglass absorber, or with a one-pound per sq. ft. reinforced barrier.

Product Data:

Description	Vinyl coated polyester faced 1” quilted fiberglass/ 2 lb-psf reinforced loaded vinyl barrier
Nominal thickness	1.0 inches
Temperature range	-20° to +180° F
Standard panel width	54” wide, lengths as required up to 20’ high
Weight	2.2 lb psf

Acoustical Data:

Sound Transmission Loss:

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**
QBO-Max 3	18	26	38	48	52	56	38

ASTM E-90 & E 413

Sound Absorption Performance:

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**
QBO-Max 3	.18	.68	.74	.72	.42	.29	.65

ASTM C 423

NOISE BARRIER/SOUND ABSORBER COMPOSITE

Spec Data Sheet

QBV-2
Noise Barrier + Sound Abosorption

QBV-2 Noise Barrier/Sound Absorber Composite

QBV-2 offers the benefits of both a noise barrier and a sound absorber in one composite product. The QBV-2 consists of a two-inch thick vinyl-coated-fiberglass-cloth faced quilted fiberglass that is bonded to a one-pound per sq. ft. reinforced loaded vinyl barrier. Curtain panels are constructed with grommets across the top and Velcro seals along the vertical edges. Rolls are available 54" wide x 25' long and can be supplied with edges bound or unbound. (Note: barrier is 54" wide, quilt is 48" wide and is held 3" in from each vertical edge.)

- Class A (or 1) flammability rated per ASTM E- 84
- Available facing colors on quilt: gray, tan, black or off-white
- Available barrier colors: gray, tan, blue or olive drab

Applications:

Typically used as modular curtain panels in acoustical curtain enclosures where abuse resistance or excellent durability as well as maximum noise reduction is required. Also used as sliding acoustical doors, durable acoustical jacket on fans or as a temporary noise barrier on outdoor construction projects.

Product Data:

Description	Vinyl coated fiberglass cloth facing on 2" quilted fiberglass/ 1 lb-psf reinforced loaded vinyl barrier
Flammability	Flame Spread: 23.0 Smoke density: 30.0
Nominal thickness	2.0 inches
Temperature range	-20° to +180° F
Standard Roll size	54" wide x 25' long
Weight	1.43 lb psf

Acoustical Performance:

Sound Transmission Loss

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**STC**
QBV-2	13	20	29	40	50	55	32

ASTM E-90 & E 413

Sound Absorption Data

	OCTAVE BAND FREQUENCIES (Hz)						
Product	**125**	**250**	**500**	**1000**	**2000**	**4000**	**NRC**
QBV-2	.07	.27	.96	1.13	1.08	.99	.85

ASTM C 423

NetWell Noise Control
3800 American Blvd.
Bloomington, MN 55431
1-800-638-9355
ntrolnoise.com

SCC-13

Quilted Fiberglass + Mass Loaded Vinyl
2" thick Fiberglass + 1 lb Loaded Vinyl

MATERIAL DESCRIPTION

Part Number	FAs NS SCC13
Color	Metallic Gray
Weight	1.43 lb./sq. ft. 206196 oz./sq. yd.
Thickness	2.1 inch nominal (at loft)
Roll Size	48″ wide, 25 ft. long. Bound edges.
Material Description	1 layer of 2″ thick, 1 lb./cu. ft. density fiberglass batting, quilted over 1 layer of aluminum-vinyl coated figerglass facing with a 1 lb./sq. ft. mass loaded vinyl septum barrier backing. Sewn with Nylon Thread.
Chemical Resistivity	Resists oils, grease, moisture, mild acids and alkalis', dirt, dust and salt atmospheres.
Flame Resistance	Class 1 rated material per ASTM E84 (Surface Burning Characterisitcs of Building Materials)

Flame Spread	Fuel Contributed	Smoke Developed
5.0	20.00	5.0

Clean Ability	Facing can be cleaned, using a damp towel with common industrial cleaners
Temperature Limits	Service range of -20° to +180° F (continuous) + 265° F (intermittent)
Thermal Conductivity	K=0.25 (BTU in./°F sq. ft. -hr) @75°F mean

Random Incidence Sound Absorption

Frequency (Hertz)

125	250	500	1000	2000	4000	NRC
.07	.27	.96	1.13	1.08	.99	.85

(PER ASTM C423-77)

Noise Transmission Loss

125	250	500	1000	2000	4000	STC
13 dB	20 dB	29 dB	40 dB	50 dB	55 dB	32 dB

** Results above reflect typical performance characteristics of the product listed. This document should not be used as certification to any specification.*

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