Quick Quack Car Wash (Store #46-276)

Noise Impact Study

City of Carson, CA

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Date: 4/13/2023

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EXHIBIT 4

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1.0 Executive Summary

This report has been prepared to provide the calculated noise projections from the proposed Quick Quack Car Wash ("Project") located at 23820 Avalon Boulevard in the City of Carson, CA. All calculations are compared to the City of Carson's noise ordinance and General Plan as well as the existing ambient condition. The Project proposes to construct a 108-foot car wash tunnel with 8 vacuum stalls and a 2,140 square foot coffee shop with 21 parking spaces and a drive-thru.

1.1 Findings and Conclusions

Three (3) baseline 15-minute ambient measurement were performed at or near the Project site and represent the current operational noise and ambient levels within the Project vicinity. The predominant source of noise impacting the existing site is traffic noise propagating from Avalon Boulevard and Sepulveda Boulevard.

This study compares the Project's operational noise levels to two (2) different noise assessment scenarios: 1) Project only operational noise level projections and 2) Project plus ambient noise level projections.

Project-only operational noise levels are anticipated to be up to 56 dBA Leq at the residential receptors and up to 52 dBA Leq at commercial receptors. The "project-only" noise projections to the adjacent uses do not exceed the City's noise level limits for car wash blowers as outlined within the City's Municipal Code (see Section 4.3).

Project plus ambient noise level projections at residential uses will increase the ambient noise level by 1 decibel, which is less than significant. Project plus ambient noise level projections at commercial uses will not increase. This assessment evaluates the baseline noise condition and compares the Project's worst-case operational noise level to the measured noise level (during the Project's proposed hours of operation).

The following outlines the project design features:

1. The Project will incorporate a 120 HP IDC Predator blower system or equivalent to meet these acoustical benchmarks.

2.0 Introduction

2.1 Purpose of Analysis and Study Objectives

This noise impact study aims to evaluate the potential noise impacts for the Project study area and recommend noise mitigation measures, if necessary, to minimize the potential noise impacts. The assessment was conducted and compared to potentially applicable noise standards set forth by the State and/or local agencies. Consistent with the County's Noise Guidelines, the Project must demonstrate compliance with the applicable noise zoning ordinance and sound attenuation requirements.

The following is provided in this report:

- A description of the study area and the proposed Project
- Information regarding the fundamentals of noise
- A description of the local noise guidelines and standards
- An evaluation of the existing ambient noise environment
- An analysis of stationary noise impact (e.g., blowers and vacuums) from the Project site to adjacent land uses
- An analysis of construction noise to adjacent uses

2.2 Site Location and Study Area

The Project site is located at 23820 Avalon Boulevard in the City of Carson, CA, as shown in Exhibit A. The land uses directly surrounding the Project are commercial to the south and west, industrial to the east, and residential to the north, northeast, and northwest. Avalon Boulevard is to the west and Sepulveda Boulevard is to the south. There are residential uses further south and west.

2.3 Proposed Project Description

The Project proposes to develop a 108-foot car wash tunnel and 8 covered vacuum stall systems. The project also proposes to develop a 2,140-square-foot coffee shop (Starbucks) with a drive-thru and 21 parking spaces. The site plan used for this is illustrated in Exhibit B. The Project operational hours are assumed to be between 7 AM to 8 PM, seven days per week for the car wash and 4:30 AM to 10 PM for the coffee shop.

Exhibit A

Location Map

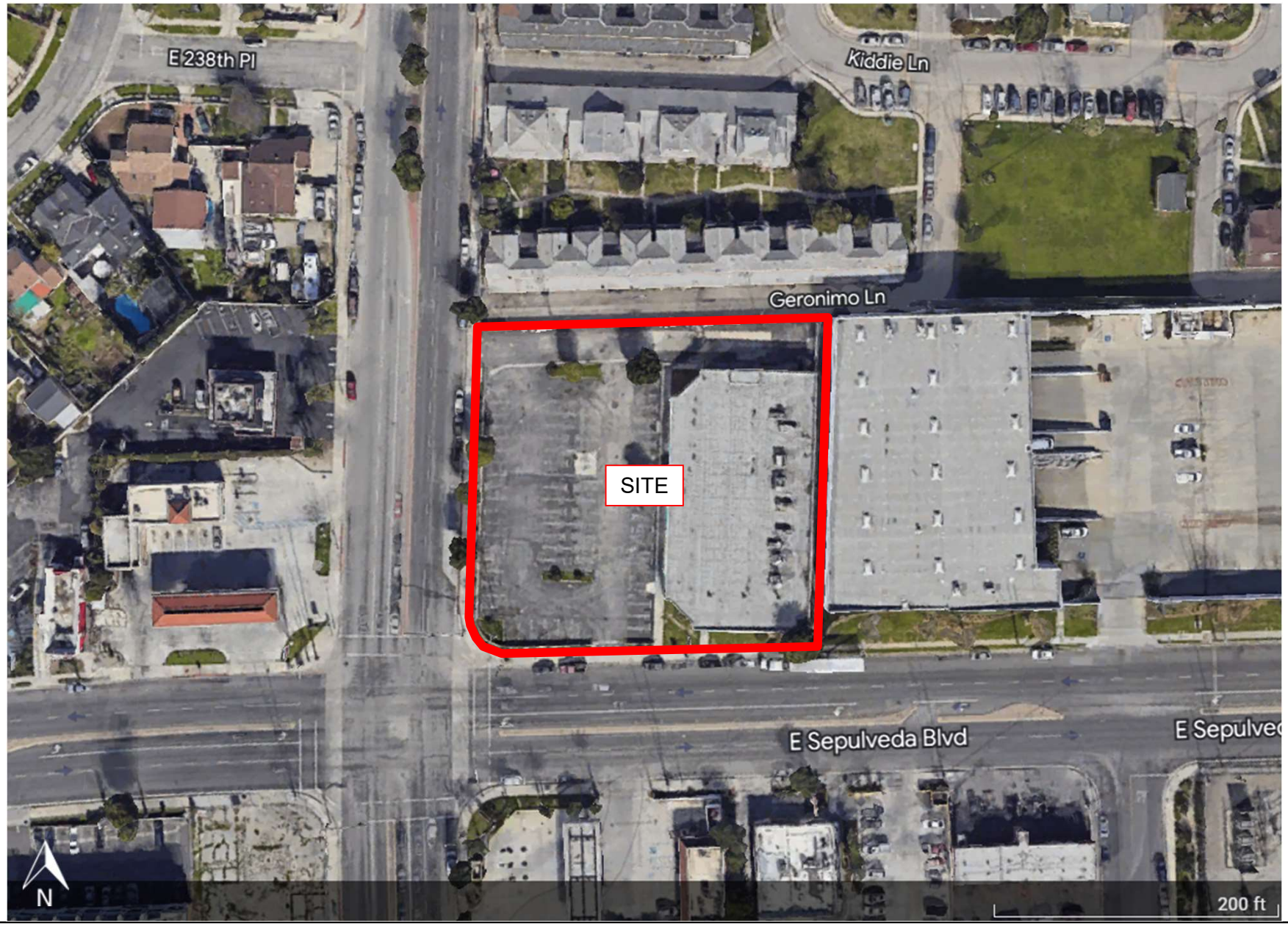
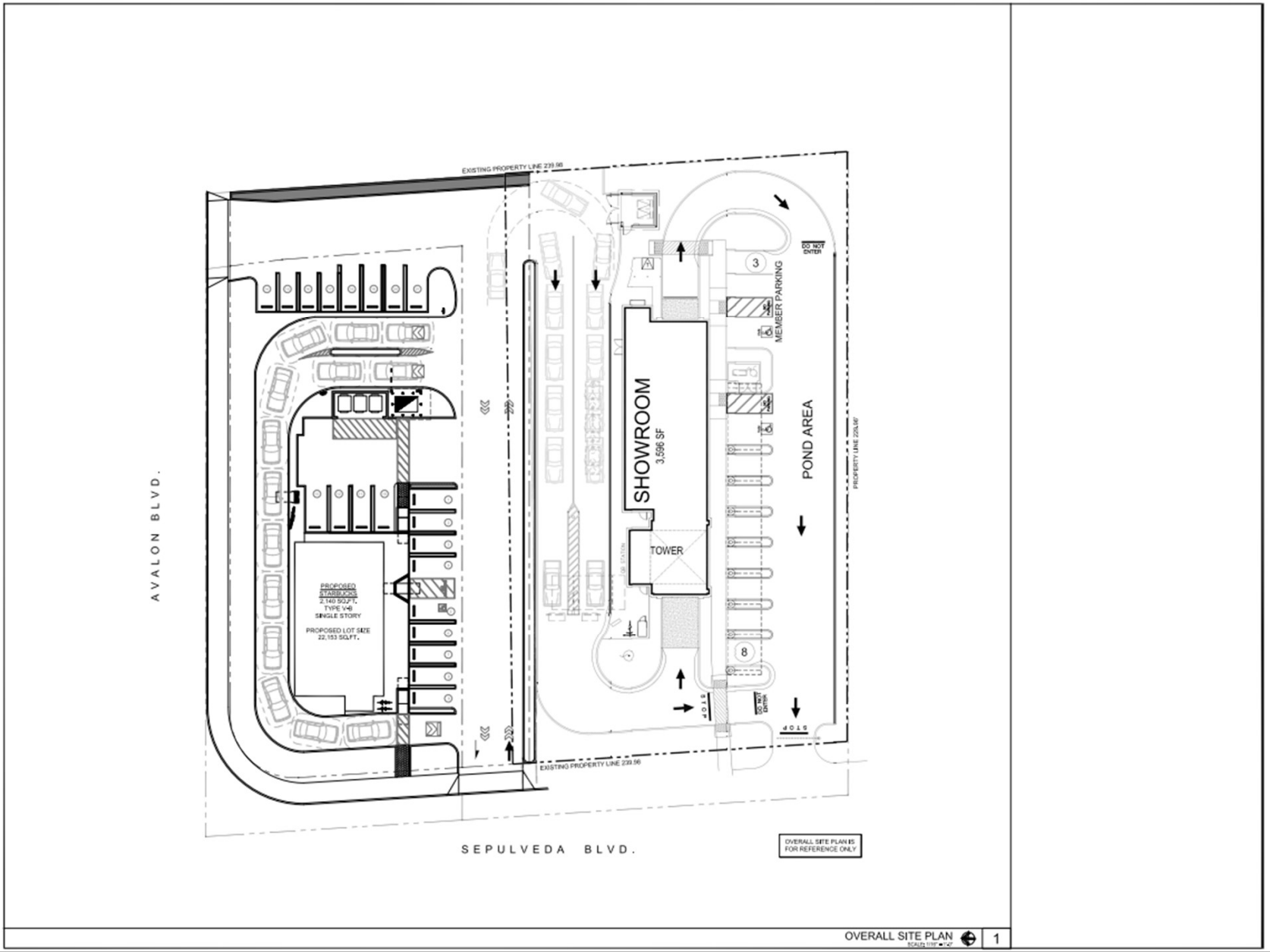


Exhibit B

Site Plan



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N O T E

SUBMITTALS | DATE | DESCRIPTION
PRE-BID:
BLD'G. DEPT.:
BID SET:

RELEASES
NO. | DATE | DESCRIPTION

ARCH/CONSULTANT:

LICENSED ARCHITECT — STATE OF CALIFORNIA

PROJECT
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REVISIONS
ISSUE | DATE | REVISION

DRAWN: STAFF | CHECKED: JS/RE

CAD FILE
22.619.00 - A-0.1 SITE PLAN

JOB NO.
22.619.00

DATE
2/23/2023

SCALE
AS SHOWN

TITLE
OVERALL
SITE PLAN

SHEET
A-0.1

3.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used within the report.

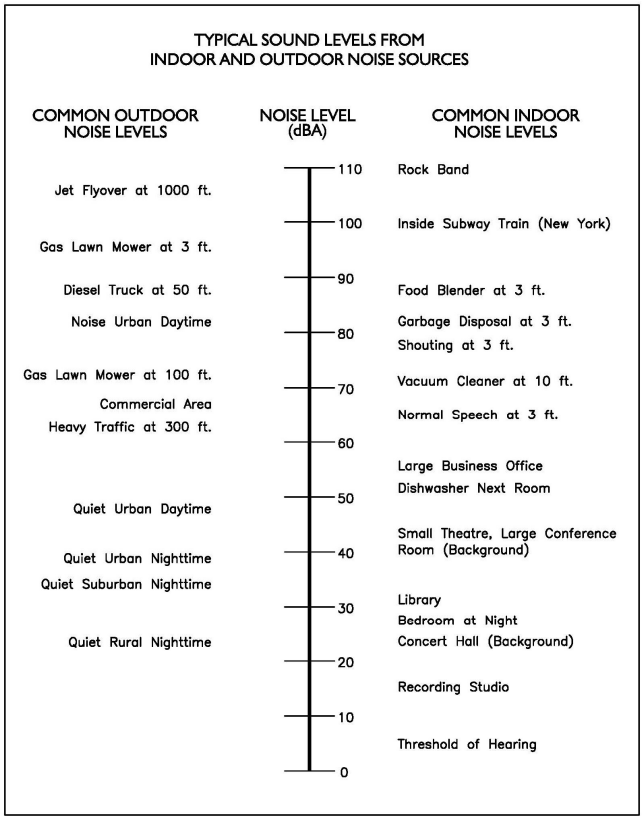
3.1 Sound, Noise, and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as the mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

3.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding), and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting at 20 Hz to the high pitch of 20,000 Hz.

Exhibit C: Typical A-Weighted Noise Levels



3.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square meter ($\mu N/m^2$), also called micro-Pascal (μPa). One μPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or L_p) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels, abbreviated dB. Exhibit C illustrates reference sound levels for different noise sources.

3.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

3.5 Human Response to Changes in Noise Levels

Generally, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz (A-weighted scale). It perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive the change in the noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the traffic volume on a highway) would result in a barely perceptible change in sound level.

3.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns; others are random. Some noise levels are constant, while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

A-Weighted Sound Level: The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level: The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL): The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after the addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

Decibel (dB): A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A): A-weighted sound level (see definition above).

Equivalent Sound Level (LEQ): The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

Habitable Room: Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking, or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces.

L(n): The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly, L50, L90, L99, etc.

Noise: *A*ny unwanted sound or sound which is undesirable because it interferes with speech and hearing, is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Outdoor Living Area: Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc. associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

Percent Noise Levels: See L(n).

Sound Level (Noise Level): The weighted sound pressure level obtained by use of a sound level meter having a standard frequency filter for attenuating part of the sound spectrum.

Sound Level Meter: An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Single Event Noise Exposure Level (SENEL): The dB(A) level, which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

3.7 Sound Propagation

As sound propagates from a source, it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt, or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall

noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located at least 200 feet from a noise source. Wind, temperature, air humidity, and turbulence can further impact how far sound can travel.

4.0 Regulatory Setting

The proposed Project is located in the City of Carson, California, and noise regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was originally tasked with implementing the Noise Control Act. However, it was eventually eliminated, leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible for regulating noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible for regulating noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers. The Housing and Urban Development (HUD) is responsible for establishing noise regulations as it relates to exterior/interior noise levels for new HUD-assisted housing developments near high-noise areas.

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

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation source, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

4.2 State Regulations

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix." The matrix allows the local jurisdiction to clearly delineate the compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 of the California Building Code (CBC), which in some cases requires acoustical analyses to outline exterior noise levels and

to ensure interior noise levels do not exceed the interior threshold. The state mandates that the legislative body of each county and City adopt a noise element as part of its comprehensive general plan. The local noise element usually recognizes the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable, as illustrated in Exhibit D.

4.3 City of Carson Noise Regulations

The City of Carson outlines their noise regulations and standards within the Municipal Code and the Noise Element of the City of Carson General Plan.

City of Carson General Plan

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan's Noise Element. Table N-2 (Exhibit D of this report) of the City's Noise Element outlines the exterior noise standards for community noise environments.

Exhibit D: Noise/Land Use Compatibility Matrix

Land Use Category	Community Noise Exposure Ldn or CNEL, dB			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Low Density	50-60	60-65	65-75	75-85
Residential-Multiple Family	50-60	60-65	65-75	75-85
Transient Lodging-Motel, Hotels	50-65	65-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	60-65	65-80	80-85
Auditoriums, Concert Halls, Amphitheaters	NA	50-65	NA	65-85
Sports Arenas, Outdoor Spectator Sports	NA	50-70	NA	70-85
Playgrounds, Neighborhood Parks	50-70	NA	70-75	75-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	NA	70-80	80-85
Office Buildings, Business Commercial and Professional	50-67.5	67.5-75	75-85	NA
Industrial, Manufacturing, Utilities, Agriculture	50-70	70-75	75-85	NA

Source: Modified from U.S. Department of Housing and Urban Development Guidelines and State of California Standards.

NOTES: NORMALLY ACCEPTABLE
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

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

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

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

NA: Not Applicable

In addition to the noise standards, the City has outlined goals, policies, and implementation measures to reduce potential noise impacts, which are presented below:

Goals, Policies, and Implementation Measures
Goals, policies, and implementation measures from the Noise Element that would mitigate potential impacts on noise include the following.

Goal N-7: Incorporate noise considerations into land use planning decisions.

Policies:

- **N-7.2:** Continue to incorporate noise assessments into the environmental review process, as needed. Said assessments shall identify potential noise sources, potential noise impacts, and appropriate sound attenuation. In non-residential projects, potential noise sources shall include truck pick-up and loading areas, locations of mechanical and electrical equipment, and similar noise sources. Require mitigation of all significant noise impacts as a condition of project approval.
- **N-7.4:** Ensure acceptable noise levels near schools, hospitals, convalescent homes, churches, and other noise sensitive areas in accordance with Table N-2 (Exhibit D in this report). To this end, require buffers or appropriate mitigation of potential noise sources. Such sources include, but are not limited to truck pickup and loading areas, mechanical and electrical equipment, exterior speaker boxes, and public address systems.

  Implementation Measures:

  - **N-IM-7.1:** Adopt the standards presented in Table N-2, Noise and Land Use Compatibility Matrix, which identify interior and exterior noise standards in relation to specific land uses.
  - **N-IM-7.2:** Ensure that the noise standards fully integrate noise considerations into land use planning decisions to prevent new noise/land use conflicts. Use the criteria of Table N-2.
  - **N-IM-7.3:** Incorporate noise reduction features during site planning.
  - **N-IM-7.4:** Require a noise impact evaluation for projects through the environmental review process, if determined necessary.
  - **N-IM-7.6:** Require that automobile and truck access to commercial and industrial developments, when located adjacent to residential neighborhoods, be located at the maximum practical distance from the residential parcel(s).
  - **N-IM-7.8:** Require that new commercial, industrial or any redevelopment projects or proposed developments near existing residential land uses demonstrate compliance with the City Noise Ordinance prior to approval of the project.

City of Carson Municipal Code
Article V Chapter 5 – Noise Control Ordinance in the Municipal Code states the following:

Except as hereinafter provided, Chapter 12.08 of Title 12 of the Los Angeles County Code, entitled "Noise Control Ordinance of the County of Los Angeles," as amended and in effect on August 1, 1995, is hereby adopted by reference and shall be known as the Noise Control Ordinance of the City of Carson.

The City of Carson's noise ordinance is thus found in the County of Los Angeles Municipal Code. The following outlines the County's exterior noise standards found in Chapter 12.08 of the Los Angeles County Code and applicable amendments provided in Chapter 5 of the City of Carson Code.

12.08.390 – Exterior noise standards – Citations for violations authorized when.

A. Unless otherwise herein provided, the following exterior noise levels shall apply to all receptor properties within a designated noise zone:

Table 1: Exterior Noise Level Standards

Noise Area	Zone	Exterior Noise Level (dBA)	
		10:00 pm to 7:00 am	7:00 am to 10:00 pm
I	Noise-sensitive	45	45
II	Residential properties	45	50
III	Commercial properties	55	60
IV	Industrial properties	70	70

B. Unless otherwise herein provided, no person shall operate or cause to be operated, any source of sound at any location within the unincorporated county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level, when measured on any other property either incorporated or unincorporated, to exceed any of the following exterior noise standards:

Standard No. 1 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 15 minutes in any 30 minute period. Standard No. 1 shall be the applicable noise level from subsection A of this Section; or, if the ambient L_{50} exceeds the foregoing level, then the ambient L_{50} becomes the exterior noise level for Standard No. 1.

Standard No. 2 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 7.5 minutes in any 30 minute period. Standard No. 2 shall be the applicable noise level from subsection A of this Section plus 5dB; or, if the ambient L_{25} exceeds the foregoing level, then the ambient L_{25} becomes the exterior noise level for Standard No. 2.

Standard No. 3 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 2.5 minutes in any 30 minute period. Standard No. 3 shall be the applicable noise level from subsection A of this Section plus 20dB; or, if the ambient $L_{8.3}$ exceeds the foregoing level, then the ambient $L_{8.3}$ becomes the exterior noise level for Standard No. 3.

Standard No. 4 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 seconds in any 30 minute period. Standard No. 4 shall be the applicable noise level

from subsection A of this Section plus 15dB; or, if the ambient $L_{1.7}$ exceeds the foregoing level, then the ambient $L_{1.7}$ becomes the exterior noise level for Standard No. 4.

Standard No. 5 shall be the exterior noise level which may not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from subsection A of this Section plus 20dB; or, if the ambient L_0 exceeds the foregoing level then the ambient L_0 becomes the exterior noise level for Standard No. 5.

C. If the measurement location is on a boundary property between two different zones, the exterior noise level utilized in subsection B of this section to determine the exterior standard shall be the arithmetic mean of the exterior noise levels in subsection A of the subject zones. Except as provided for above in this subsection C, when an intruding noise source originates on an industrial property and is impacting another noise zone, the applicable exterior noise level as designated in subsection A shall be the daytime exterior noise level for the subject receptor property.

12.08.410 – Correction for certain types of sounds.

For any source of sound which emits a pure tone or impulsive noise, the noise levels as set forth in Sections 12.08.390 and 12.08.400 shall be reduced by five decibels.

12.08.440 – Construction noise.

A. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real-property line, except for emergency work of public service utilities or by variance issued by the health officer is prohibited.

B. Noise Restrictions at Affected Structures. The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in the following schedule:

1. At Residential Structures.

a. Maximum noise levels for non-scheduled, intermittent, short-term operations of twenty (20) days or less for construction equipment:

	Single-family Residential	**Multi-family Residential**
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dBA	64 dBA

b. Maximum noise level for repetitively scheduled and relatively long-term operation of twenty-one (21) days or more for construction equipment:

	Single-family Residential	Multi-family Residential
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	55 dBA	60 dBA

2. At Business Structures.

a. Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment:

Daily, including Sunday and legal holidays, all hours: maximum of 85 dBA.

C. All mobile or stationary internal-combustion-engine powered equipment or machinery shall be equipped with suitable exhaust and air-intake silencers in proper working order.

D. In case of a conflict between this chapter and any other ordinance regulating construction activities, provisions of any specific ordinance regulating construction activities shall control.

12.08.450 – Forced-air blowers in tunnel car washes.

Operating or permitting the operation of any forced-air blower in a tunnel car wash between the hours of 7:00 a.m. and 8:00 p.m. in such a manner as to exceed any of the following sound levels is prohibited:

Table 2: Noise Level Limits for Car Wash Blowers

Measurement Location[1]	Noise Limit (dBA)
Residential	60
Commercial/Industrial	65
Notes: [1.] Any point on contiguous receptor property, five feet above grade level, no closer than three feet from any wall	

The project must therefore meet the limits presented in Table 1 (or the ambient level if the ambient level exceeds these limits) and the limits presented in Table 2. This report assumes that the vacuums, blowers, idling cars, and speaker system are all operating simultaneously for the full duration of an hour. Therefore, the project will compare the base level noise limits presented in Table 1 to the predicted Leq levels from the project in addition to the limits in Table 2.

5.0 Study Method and Procedure

The following section describes the noise modeling procedures and assumptions used for this assessment.

5.1 Noise Measurement Procedure and Criteria

MD conducted three (3) short-term noise measurements near the Project site, representing the noise level from the traffic conditions along Avalon Boulevard and Sepulveda Boulevard (see Appendix A for the field sheet data).

5.2 Stationary Noise Modeling

SoundPLAN (SP) acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. SP is capable of evaluating multiple stationary noise source impacts at various receiver locations. SP's software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations.

The future worst-case noise level projections were modeled using referenced sound level data for the various stationary on-site sources (vacuums and car wash blowers at the exit). The SP model assumes a total of 8 vacuums and the dryer systems are operating simultaneously (worst-case scenario) when the noise will, in reality, be intermittent and lower in noise level. In addition, the modeling takes into account the louver, windows, and openings on the car wash tunnel based on the plan elevations. The reference vacuum equipment and blower system sound level data are provided in Appendix C.

The model includes two drive-thru speakers at the coffee shop and idling cars every 6 feet along the car wash and coffee shop queues. The coffee shop is assumed to be operational during some nighttime hours and that the car wash will be operational from 7AM to 8PM. The model includes the worst-case scenario for the daytime and nighttime noise levels.

All other noise-producing equipment (e.g., compressors, pumps) will be housed within mechanical equipment rooms.

The following outlines the project design features:

1. The Project will incorporate a 120 HP IDC Predator blower system or equivalent to meet these acoustical benchmarks.

6.0 Existing Noise Environment

Three (3) 15-minute ambient noise measurements were taken near the project site to determine the existing ambient noise levels. Noise data indicates that traffic along Avalon Boulevard and Sepulveda Boulevard is the primary source of noise impacting the site and the surrounding area.

6.1 Short-Term Noise Measurement Results

The results of the 15-minute measurements are presented in Table 3.

Table 3: Short-Term Noise Measurement Data (dBA)

Location	Start Time	Stop Time	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)	L(90)
NM1	11:13 AM	11:28 AM	59.9	73.7	47.2	67.4	63.3	60.2	57.1	52.1
NM2	11:30 AM	11:45 AM	68.5	80.9	54.8	75.8	73.1	68.8	64.6	58.1
NM3	11:46 AM	12:01 PM	70.1	84.0	54.3	78.5	74.5	69.3	65.7	58.8

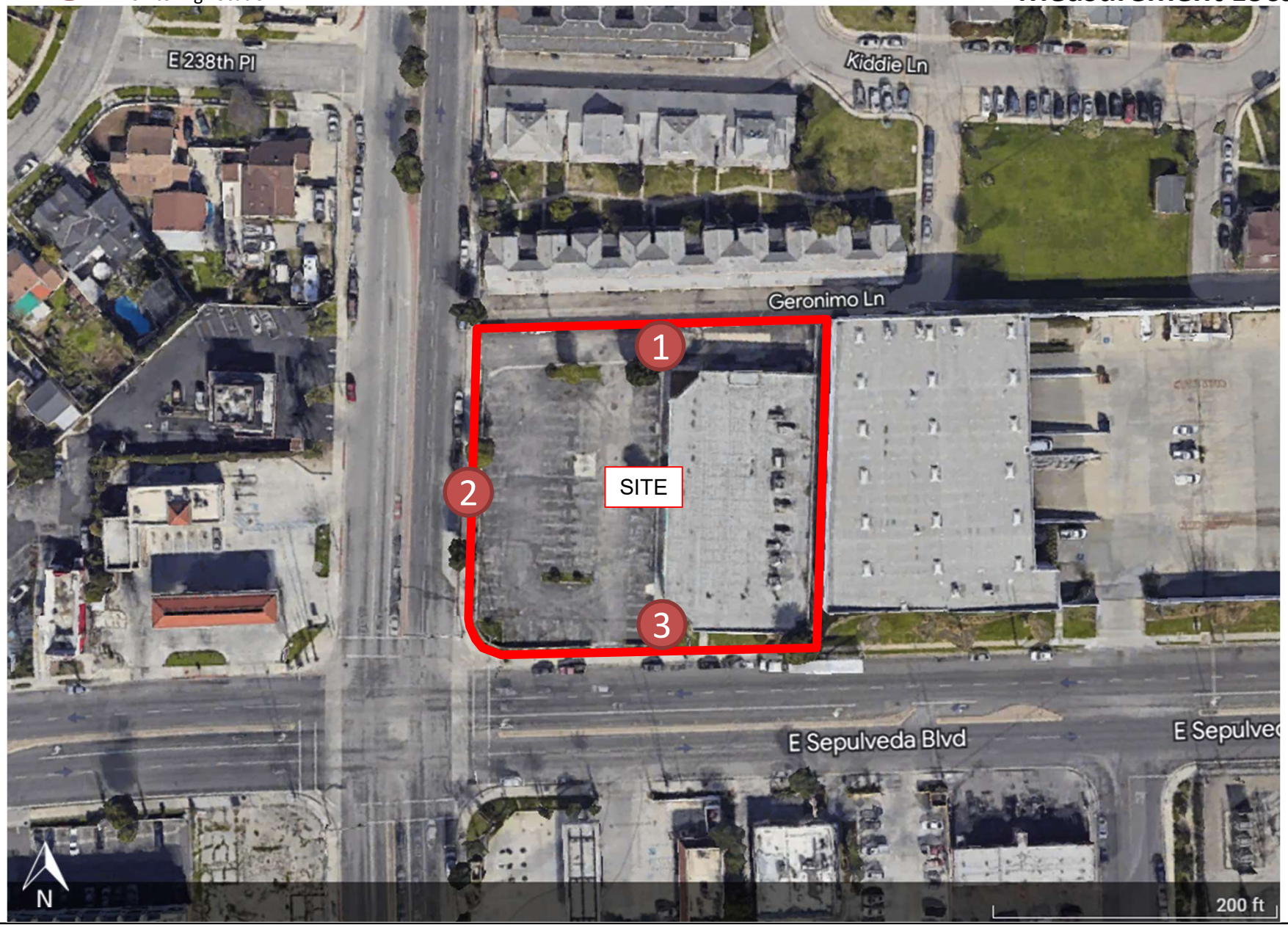
Notes:
1. Short-term noise monitoring locations are illustrated in Exhibit E.

For this evaluation, MD has utilized the measured ambient noise levels of 60 for the adjacent residential properties and 69 to 70 dBA Leq for the adjacent commercial properties. As the ambient exceeds the noise limit in the adjacent residential and commercial properties, the noise limit becomes the ambient level per 12.08.390(B) of the LA County Municipal Code (as adopted by Chapter 5 of the Carson Municipal Code). These ambient levels are above the levels presented in Table 2, and therefore the project will be compared to the more strict limits present in Table 2.

Exhibit E

Measurement Locations

= Short-Term Monitoring Location



7.0 Future Noise Environment Impacts

This assessment analyzes future noise impacts as a result of the Project. The analysis details the estimated exterior noise levels. Stationary noise impacts are analyzed from the noise sources on-site such as dryers/blowers and vacuums.

7.1 Stationary Source Noise

The following sections outline the exterior noise levels associated with the proposed Project.

7.1.1 Noise Impacts to Off-Site Receptors Due to Stationary Sources

Sensitive receptors affected by Project operational noise include existing residential uses to the north and drive-thru commercial uses to the west. The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software. Worst-case assumes the blowers, vacuums, and equipment are always operational when in reality, the noise will be intermittent and cycle on/off depending on the customer usage.

A total of four (4) receptors (R1 – R4) were modeled to evaluate the proposed Project's operational impact. Exhibit F shows the "Project-Only" noise levels and contours at the nearest sensitive receptors. These receptors include the nearest residential property lines and the nearest commercial drive thrus. The left values represent the worst-case daytime noise levels during car wash operation and the right values represent the worst-case nighttime noise levels during only coffee shop operation. Table 4 shows the Project only operational noise level projections and the Project plus ambient noise level projections for daytime operation.

Table 4: Worst-Case Predicted Operational Noise Levels (dBA)

Receptor[1]	Existing Ambient Noise Level (dBA, Leq)[2]	Project Noise Level (dBA, Leq)[3]	Total Combined Noise Level (dBA, Leq)	Daytime (7:00 a.m. - 8:00 p.m.) Car Wash Noise Limit (dBA, Leq)[4]	Change in Noise Level as Result of Project
1	60	56	61	**60**	1
2	69	50	69	**60**	0
3	69	46	69	**65**	0
4	70	52	70	**65**	0

Notes:
[1.] Receptor 1 represents residential uses and Receptors 2 & 3 represent commercial uses.
[2.] See Appendix A for the ambient noise measurement.
[3.] See Exhibit F for the operational noise level projections at said receptors.
[4.] Section 12.08.450 of the LA County Municipal Code.

The model indicates that the project-only daytime noise level will be 45-56 dBA Leq at the residential receptors and meets the City's 60 dBA residential noise standard for car wash blowers. The project-only noise level is projected to be 43 at the drive-thru to the west and will meet the commercial noise standard for car wash blowers of 65 dBA. The project plus ambient level at the commercial receptors

will not increase the existing ambient noise level. The project plus ambient level will increase the existing ambient noise level at the residential receptors by 1 dB. Table 5 provides the characteristics associated with changes in noise levels.

Table 5: Change in Noise Level Characteristics

Changes in Intensity Level, dBA	Changes in Apparent Loudness
1	Not perceptible
3	Just perceptible
5	Clearly noticeable
10	Twice (or half) as loud

https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm

It takes a change of 3 dB for the human ear to perceive a difference. Therefore, the change in noise level would be "Not Perceptible" at the residential receptor. Thus, the change in noise level at the residential uses will be less than significant.

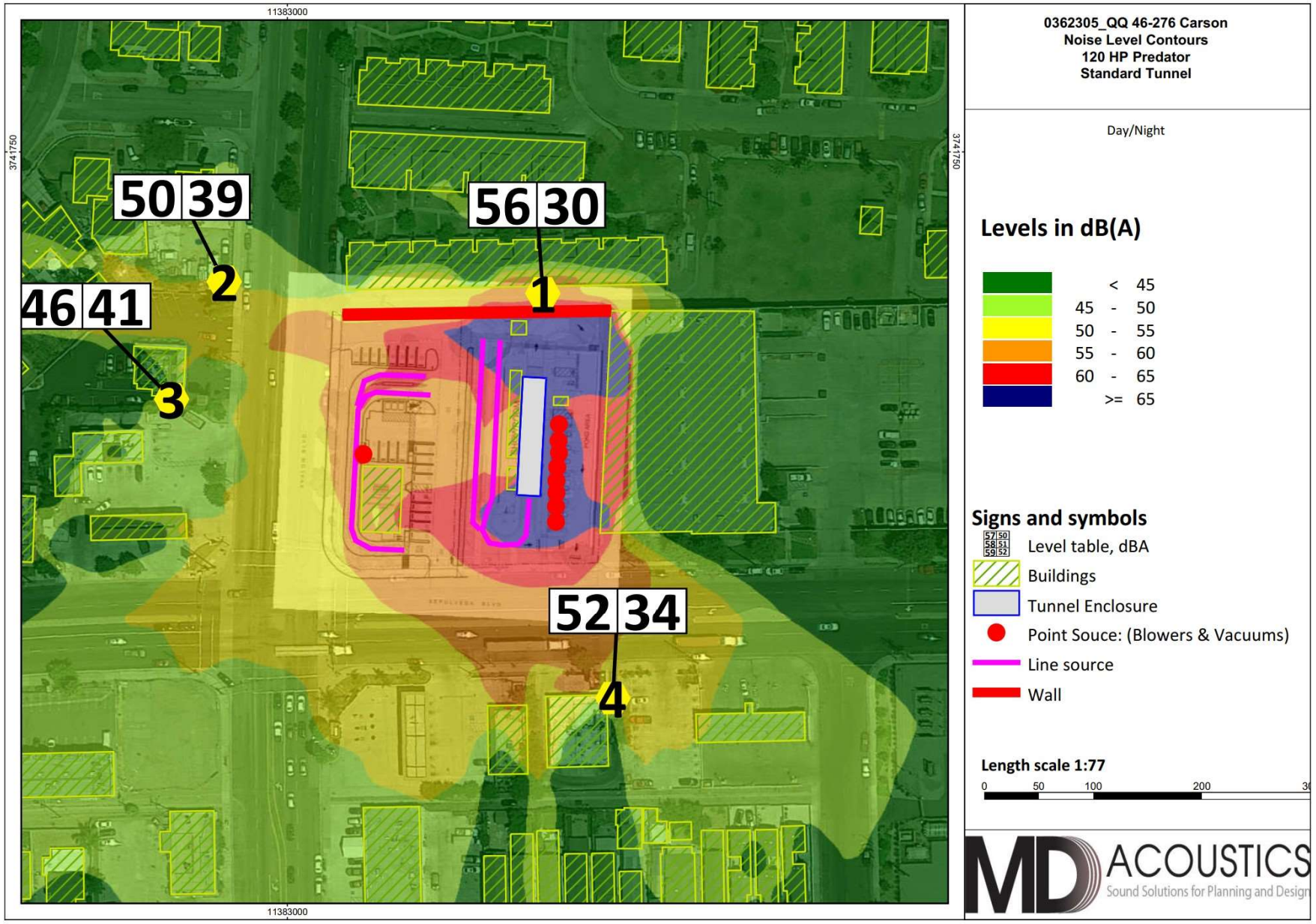
Nighttime noise levels were also modeled and represent the noise level of the coffee shop alone, including idling cars and the drive-thru speaker. Nighttime noise levels range between 30 to 41 dBA at the sensitive receptor. This is below the nighttime 45 dBA residential limit and 55 dBA commercial limit (Table 1) and is therefore not an impact.

The following outlines the project design features:

1. The Project will incorporate a 120 HP IDC Predator blower system or equivalent to meet these acoustical benchmarks.

Exhibit F

Operational Noise Level Contours



8.0 References

State of California General Plan Guidelines: 1998. Governor's Office of Planning and Research

City of Carson: Noise Element of the General Plan

City of Carson: Municipal Code Chapter 5 – Noise Control Ordinance

County of Los Angeles: Municipal Code Chapter 12.08 – Noise Control

Appendix A:

Field Measurement Data

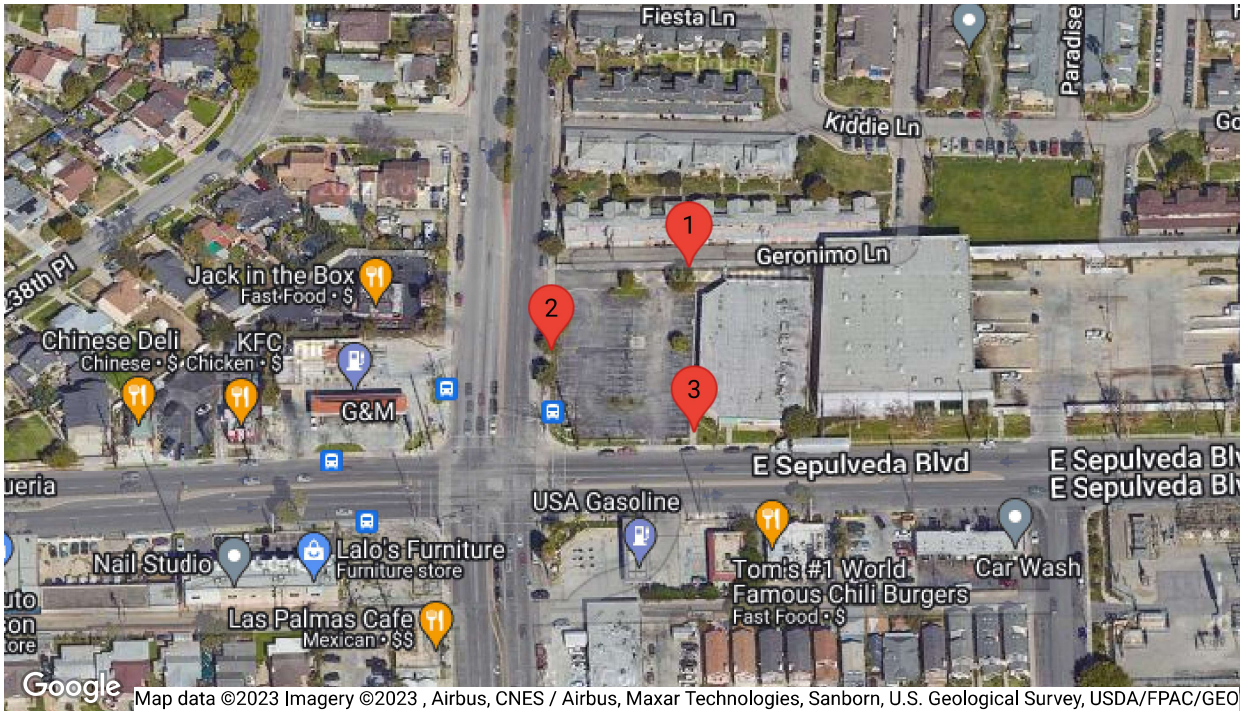
15-Minute Continuous Noise Measurement Datasheet

Project Name:	QQ 46-276 Carson
Project: #/Name:	0362-2023-005
Site Address/Location:	23820 Avalon Blvd
Date:	03/03/2023
Field Tech/Engineer:	Jason Schuyler/ Claire Pincock

Site Observations:

Sunny 62F no wind. Partly cloudy

Sound Meter:	XL2, NTI	**SN:**	A2A-08562-E0
Settings:	A-weighted, slow, 1-sec, 15-minute interval		
Site Id:	NM1, NM2, NM3		



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name: QQ 46-276 Carson

Site Address/Location: 23820 Avalon Blvd

Site Id: NM1, NM2, NM3

Figure 1: NM1

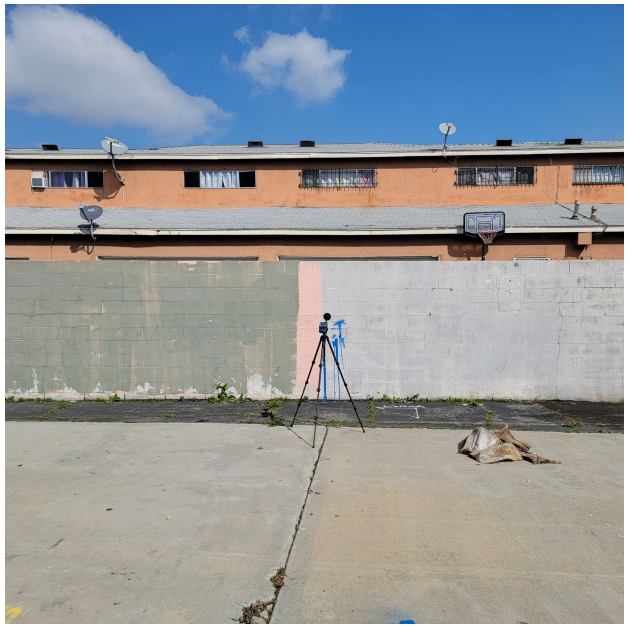


Figure 2: NM2

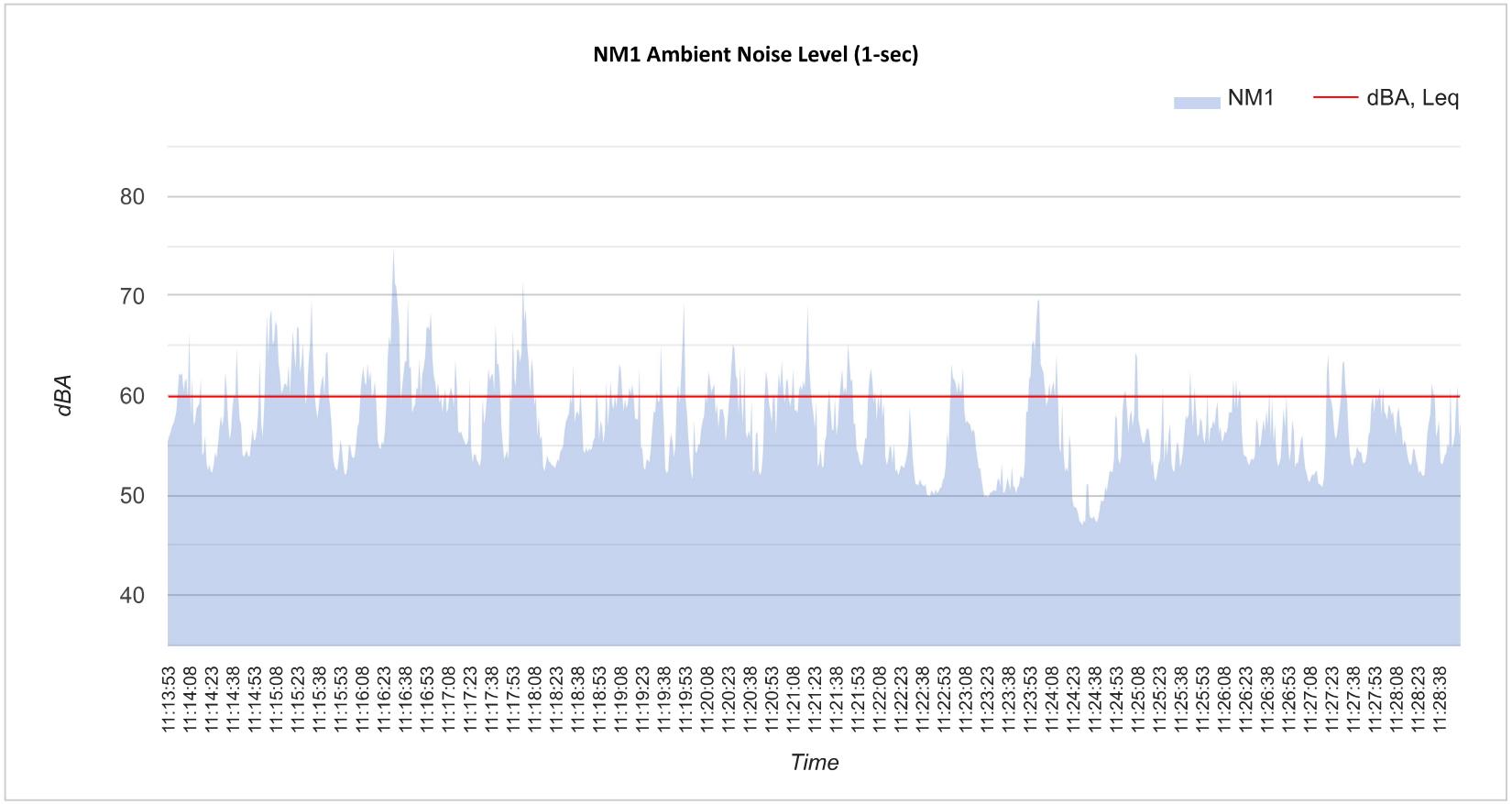
Figure 3: NM3

Table 1: Baseline Noise Measurement Summary

Location	Start	Stop	Leq	Lmax	Lmin	L2	L8	L25	L50	L90
NM1	11:13 AM	11:28 AM	59.9	73.7	47.2	67.4	63.3	60.2	57.1	52.1
NM2	11:30 AM	11:45 AM	68.5	80.9	54.8	75.8	73.1	68.8	64.6	58.1
NM3	11:46 AM	12:01 PM	70.1	84.0	54.3	78.5	74.5	69.3	65.7	58.8

15-Minute Continuous Noise Measurement Datasheet - Cont.

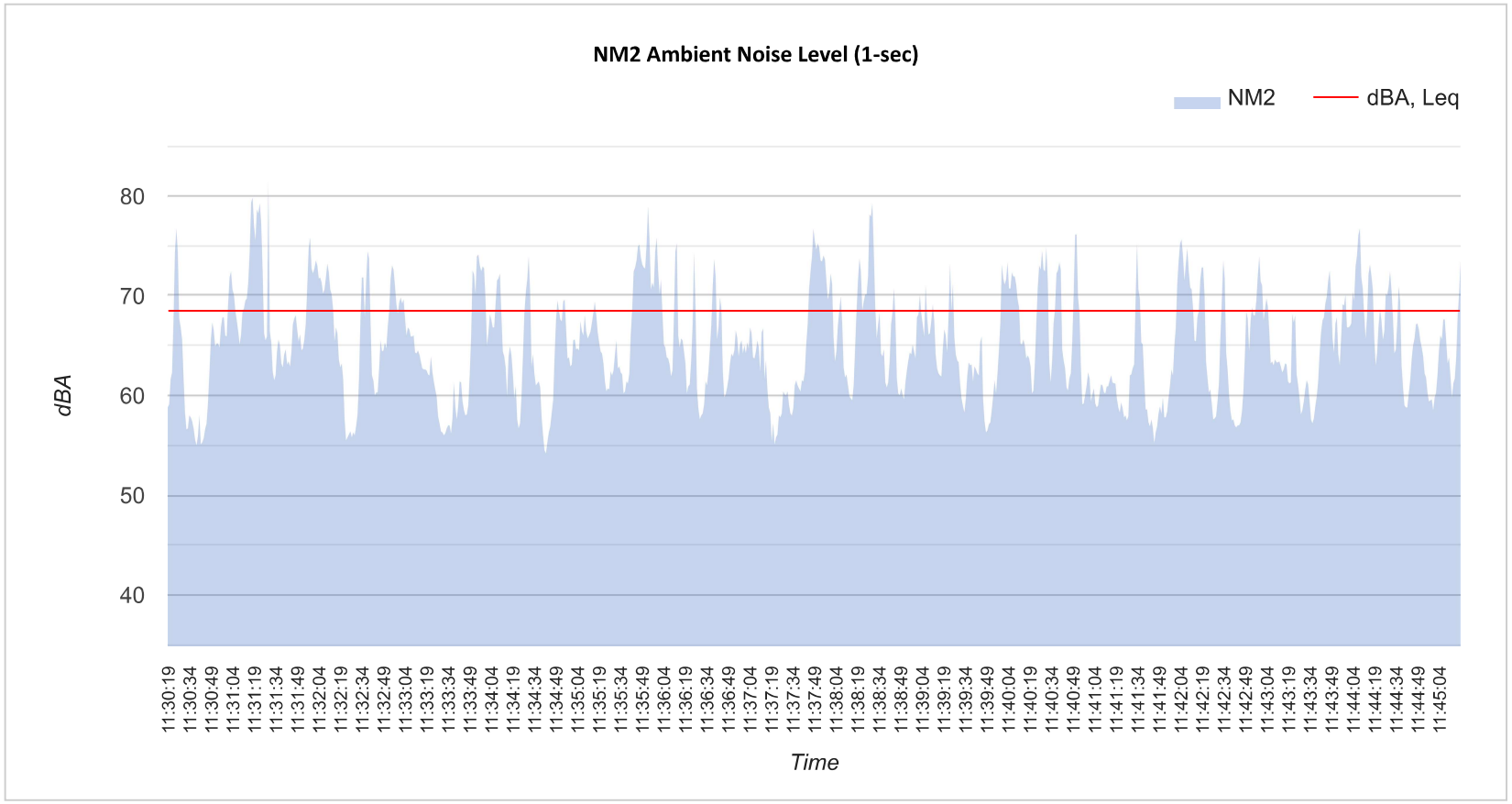
Project Name:	QQ 46-276 Carson	**Site Topo:**	Buildings 1-2 stories tall	**Noise Source(s) w/ Distance:**	
Site Address/Location:	23820 Avalon Blvd	**Meteorological Cond.:**	58F Partly cloudy, No wind	Road and commercial noise	
Site Id:	NM1	**Ground Type:**	buildings and asphalt		



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

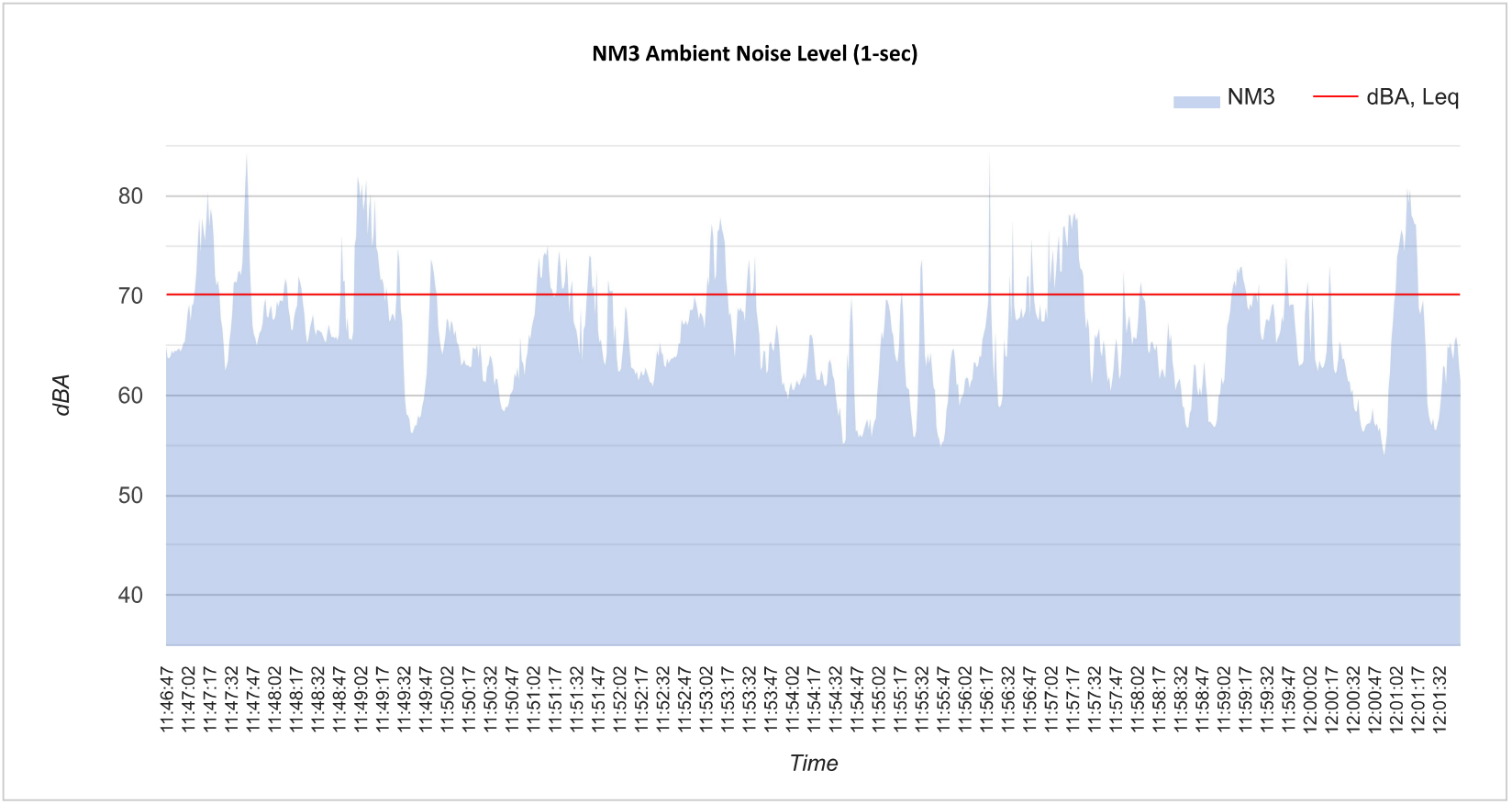
Project Name:	QQ 46-276 Carson	**Site Topo:**	Buildings 1-2 stories tall site	**Noise Source(s) w/ Distance:**	
Site Address/Location:	23820 Avalon Blvd	**Meteorological Cond.:**	58F Partly cloudy, No wind	Road and commercial noise	
Site Id:	NM2	**Ground Type:**	buildings and asphalt		



MD ACOUSTICS

15-Minute Continuous Noise Measurement Datasheet - Cont.

Project Name:	QQ 46-276 Carson	**Site Topo:**	Buildings 1-2 stories tall site	**Noise Source(s) w/ Distance:**
Site Address/Location:	23820 Avalon Blvd	**Meteorological Cond.:**	58F Partly cloudy, No wind	Road and commercial noise
Site Id:	NM3	**Ground Type:**	open soil lot, flat w/ some commercial buildings 1-2 story	



MD ACOUSTICS

Appendix B:

SoundPLAN Input/Outputs

QQ 46-276 Carson
Assessed receiver spectra in dB(A) - 002 - 120 HP Predator - Standard: Outdoor SP

Time slice	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	16kHz dB(A)
Receiver R1 Fl GF Lr,lim dB(A) Lr,lim dB(A) Leq,d 56.3 dB(A) Sigma(Leq,d) 0.0 dB(A) Leq,n 29.9 dB(A) Sigma(									
Leq,d	34.7	41.9	52.5	52.1	47.2	42.6	34.1	19.3	-4.3
Leq,n	17.3	19.0	20.7	23.5	24.9	22.5	15.6	1.2	-18.6
Receiver R2 Fl GF Lr,lim dB(A) Lr,lim dB(A) Leq,d 49.7 dB(A) Sigma(Leq,d) 0.0 dB(A) Leq,n 39.2 dB(A) Sigma(									
Leq,d	29.0	33.9	44.7	45.2	42.1	39.7	32.6	18.4	-2.3
Leq,n	23.6	24.7	27.6	31.2	33.4	34.4	29.6	16.7	-2.8
Receiver R3 Fl GF Lr,lim dB(A) Lr,lim dB(A) Leq,d 45.9 dB(A) Sigma(Leq,d) 0.0 dB(A) Leq,n 40.9 dB(A) Sigma(									
Leq,d	28.1	32.2	40.7	39.7	38.1	38.5	33.5	20.1	-1.0
Leq,n	24.3	26.2	29.1	33.0	35.4	36.1	31.3	18.4	-1.4

QQ 46-276 Carson
Octave spectra of the sources in dB(A) - 002 - 120 HP Predator - Standard: Indoor SP

Name	Source type	l or A m,m²	Li dB(A)	R'w dB	L'w dB(A)	Lw dB(A)	KI dB	KT dB	LwMax dB(A)	DO-Wall dB	Time histogram	Emission spectrum	63Hz dB(A)	125Hz dB(A)	250Hz dB(A)	500Hz dB(A)	1kHz dB(A)	2kHz dB(A)	4kHz dB(A)	8kHz dB(A)	
Hoggers	Point				102.4	102.4	0.0	0.0		0	Daytime	IDC Predator Hogger Single	75.6	83.6	96.8	97.7	95.2	93.9	88.0	76.2	
Side Columns	Point				89.9	89.9	0.0	0.0		0	Daytime	IDC Predator Side Column	58.6	69.9	82.7	85.9	83.2	81.6	75.4	67.0	
Side Columns	Point				89.9	89.9	0.0	0.0		0	Daytime	IDC Predator Side Column	58.6	69.9	82.7	85.9	83.2	81.6	75.4	67.0	

Source	Source type	Leq,d dB(A)	Leq,n dB(A)	
Receiver R1 Fl GF Lr,lim dB(A) Lr,lim dB(A)	Leq,d 56.3 dB(A)		Sigma(Leq,d) 0.0 dB(A)	Leq,n 29.9 dB(A) Sigma(Leq,n)
Idling Cars	Line	27.4	27.4	
Idling Cars	Line	24.3	24.3	
Idling Cars	Line	28.1		
Idling Cars	Line	28.4		
Vac	Point	29.5		
Vac	Point	29.7		
Vac	Point	30.2		
Vac	Point	30.6		
Vac	Point	31.1		
Vac	Point	30.1		
Vac	Point	30.0		
Vac	Point	30.6		
Drive Thru Speaker	Point	21.7	21.7	
002 - 120 HP Predaor - Standard Tunnel-Entrance	Area	33.4		
002 - 120 HP Predaor - Standard Tunnel-Exit	Area	56.2		
Receiver R2 Fl GF Lr,lim dB(A) Lr,lim dB(A)	Leq,d 49.7 dB(A)		Sigma(Leq,d) 0.0 dB(A)	Leq,n 39.2 dB(A) Sigma(Leq,n)
Idling Cars	Line	37.2	37.2	
Idling Cars	Line	33.7	33.7	
Idling Cars	Line	34.4		
Idling Cars	Line	33.7		
Vac	Point	26.1		
Vac	Point	21.0		
Vac	Point	20.6		
Vac	Point	20.9		
Vac	Point	21.0		
Vac	Point	21.2		
Vac	Point	22.9		
Vac	Point	21.5		
Drive Thru Speaker	Point	28.1	28.1	
002 - 120 HP Predaor - Standard Tunnel-Entrance	Area	34.9		
002 - 120 HP Predaor - Standard Tunnel-Exit	Area	48.8		
Receiver R3 Fl GF Lr,lim dB(A) Lr,lim dB(A)	Leq,d 45.9 dB(A)		Sigma(Leq,d) 0.0 dB(A)	Leq,n 40.9 dB(A) Sigma(Leq,n)
Idling Cars	Line	39.5	39.5	
Idling Cars	Line	33.2	33.2	
Idling Cars	Line	34.7		
Idling Cars	Line	34.2		
Vac	Point	28.2		
Vac	Point	32.7		
Vac	Point	22.0		
Vac	Point	20.8		
Vac	Point	20.6		
Vac	Point	20.6		
Vac	Point	20.5		

Source	Source type	Leq,d dB(A)	Leq,n dB(A)	
Vac	Point	20.6		
Drive Thru Speaker	Point	31.1	31.1	
002 - 120 HP Predaor - Standard Tunnel-Entrance	Area	39.6		
002 - 120 HP Predaor - Standard Tunnel-Exit	Area	39.4		

QQ 46-276 Carson
Octave spectra of the sources in dB(A) - 002 - 120 HP Predator - Standard: Outdoor SP

Name	Source type	l or A	Li	R'w	L'w	Lw	KI	KT	LwMax	DO-Wall	Time histogram	Emission spectrum	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
		m,m²	dB(A)	dB	dB(A)	dB(A)	dB	dB	dB(A)	dB			dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
002 - 120 HP Predaor - Standard Tunnel-Entrance	Area	15.63	80.3	0.0	80.3	92.3	0.0	0.0		3	100%/24h	1969_Entrance	65.6	73.2	89.5	88.3	79.0	66.8	50.8	34.8	
002 - 120 HP Predaor - Standard Tunnel-Exit	Area	9.30	88.9	0.0	88.9	98.5	0.0	0.0		3	100%/24h	1973_Exit	72.2	80.4	92.7	94.2	91.5	89.6	82.8	69.6	
Drive Thru Speaker	Point				72.3	72.3	0.0	0.0		0	100%/24h	Drive Thru Speaker	42.4	50.0	57.7	65.0	69.5	65.4	59.3	50.3	45.3
Idling Cars	Line	73.58			62.8	81.5	0.0	0.0		0	100%/24h	Drive-Thru - Idiling Car @ 6ft	65.5	67.0	70.5	74.2	75.0	76.3	72.7	64.5	58.2
Idling Cars	Line	24.81			62.8	76.8	0.0	0.0		0	100%/24h	Drive-Thru - Idiling Car @ 6ft	60.8	62.3	65.8	69.5	70.3	71.5	68.0	59.8	53.4
Idling Cars	Line	79.56			62.8	81.8	0.0	0.0		0	Daytime	Drive-Thru - Idiling Car @ 6ft	65.8	67.3	70.8	74.5	75.4	76.6	73.1	64.9	58.5
Idling Cars	Line	54.24			62.8	80.2	0.0	0.0		0	Daytime	Drive-Thru - Idiling Car @ 6ft	64.2	65.7	69.2	72.9	73.7	74.9	71.4	63.2	56.8
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1
Vac	Point				81.0	81.0	0.0	0.0		0	Daytime	Vacutech - in car	61.6	69.0	76.6	72.9	71.4	73.2	72.6	67.6	58.1

Appendix C:

Equipment Reference Data

INTERNATIONAL DRYING
CORPORATION

STEALTH PREDATOR DRYING SYSTEM

THE FIRST "ULTRA QUIET" DRYING SYSTEM

- ✔Patent pending Reverse flow technology
- ✔Producers construced from 304 surgical stainless steel
- ✔Over 11,000 cubic feet per minute (CFM) per 10HP motor
- ✔Meets or exceeds most U.S. and International sound regulations
- ✔Sound & Performance studies done in reverberant sound room ISO 3741:2010, 3747:2010

SCAN ME

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info@internationaldrying.com

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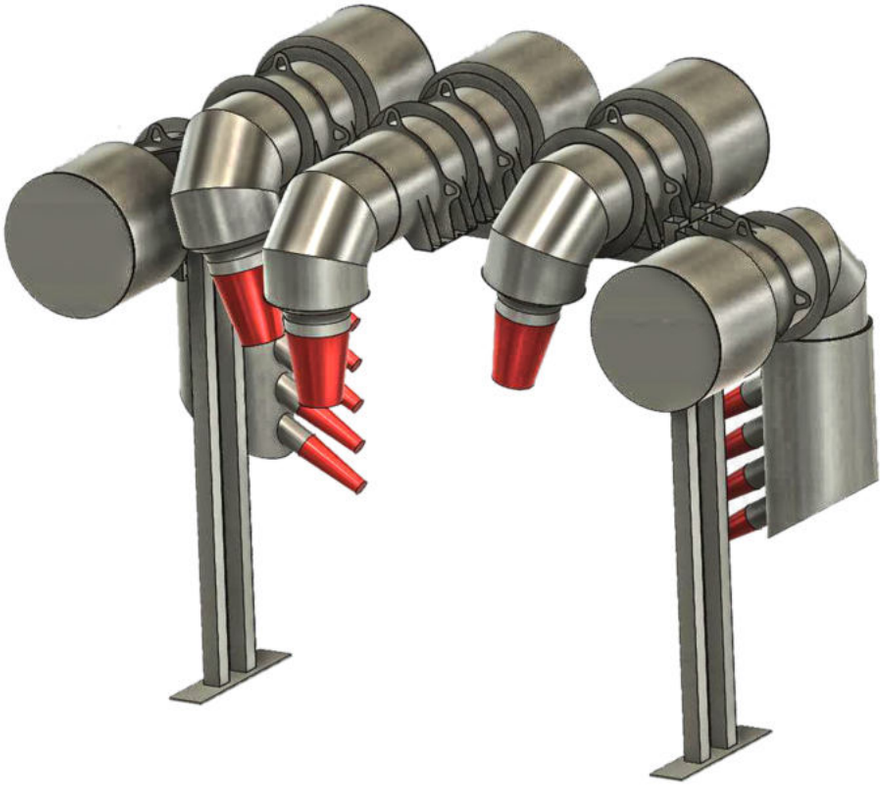
International Drying Corporation
160 Chicago St
Cary, IL 60013

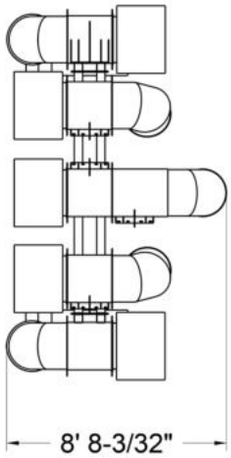
Stealth Predator Ultra-Quiet Drying System Specifications

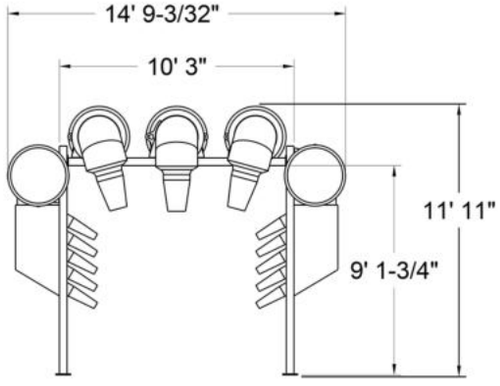
30HP System - Total Sound 60Hz		80HP System - Total Sound 60Hz	
Q = sound source			
65	dBA at Q=1, 30 feet	69.4	dBA at Q=1, 30 feet
61.8	dBA at Q=1, 45 feet	66.5	dBA at Q=1, 45 feet
60.2	dBA at Q=1, 55 feet	64.9	dBA at Q=1, 55 feet

Meets OSHA Sound Exposure Requirements

✓ **The Stealth Predator features patent pending "Reverse flow air technology" which creates the first "Ultra-Quiet Dryer" and is the most powerful Ultra Quiet Dryer ever designed.**







INTERNATIONAL DRYING CORPORATION

SPECIFICATIONS

15' 2" Bay Width
12' 0" Ceiling Height
96" Standard Clearance

Closed cell foam nozzles available in red, blue, black

Ducts-Stainless Steel
Molded Aluminum Impellors
Stainless Steel Motor Housings

Slotted flanges for adjustability of air outlet and air intake direction

MD ACOUSTICS
Sound Solutions for Planning and Design
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Chandler, AZ 85249
p. (602) 774-1950

CA Office
1197 Los Angeles Ave, Ste C-256
Simi Valley, CA 93065
p. (805) 426-4477

Project: SuperStar Car Wash Chula Vista
Site Location: 1555 W Warner Rd, Gilbert, AZ 85233
Date: 4/5/2018
Field Tech/Engineer: Robert Pearson
Source/System: Vacutec System

Location: Vac Bay 1
Sound Meter: NTi XL2 **SN:** A2A-05967-E0
Settings: A-weighted, slow, 1-sec, 10-sec duration
Meteorological Cond.: 80 degrees F, 2 mph wind

Site Observations:
Clear sky, measurements were performed within 1.5ft of source. Measurements were performed while the vacuum was positiioned at three (3) different positions. Holstered, unholstered and inside a car. This data is utilized for acoustic modeling purposes and represents an average sound level at a vacuum station.

Table 1: Summary Measurement Data

Source	System	Overall dB(A)	3rd Octave Band Data (dBA)																														
			20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1K	1.25K	1.6K	2K	2.5K	3.15K	4K	5K	6.3K	8K	10K	12.5K	16K	20K
Vacutech (Holstered)	Vacuum	63.3	9	17	22	29	31	35	40	41	44	43	46	48	47	49	51	51	51	52	53	52	52	50	52	53	50	47	47	48	45	39	30
Vacutech (Unholstered)	Vacuum	80.7	6	19	22	28	34	37	40	43	47	46	48	48	48	49	54	55	58	58	62	65	68	70	74	75	73	69	67	65	63	60	55
Vacutech (Inside Car)	Vacuum	69.6	16	28	31	38	42	45	49	51	52	55	60	61	57	55	59	53	55	56	54	57	57	57	57	57	55	54	51	48	46	42	36
Average Level*	Vacuum	76.3	13	24	28	34	38	41	45	47	49	51	56	57	53	52	56	54	56	56	59	61	64	66	69	70	68	64	62	60	58	55	50

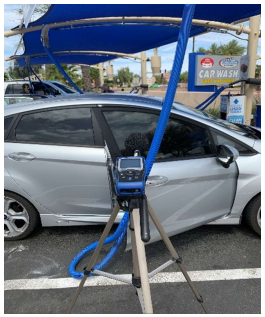
* Refers to the logarithmic average of all measurements. This measurement represents an average of the multiple vacuum positions.

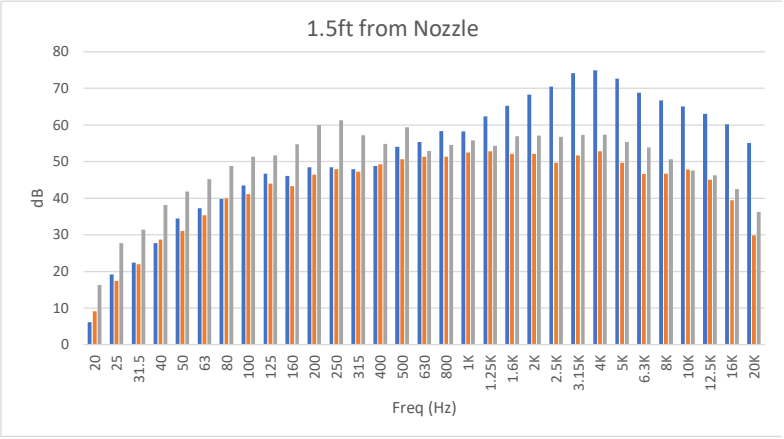
Figure 1: Example Measurement Position

Figure 1: Holstered

Figure 2: Unholstered

Figure 3: Inside Car





SOUND LEVEL METER READINGS

MODEL: FT-DD-T340HP4 (40hp VACSTAR TURBINE VACUUM PRODUCER)

READING ONE: 43 DB-A, 3 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING TWO: 36 DB-A, 10 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING THREE: 24 DB-A, 20 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

READING FOUR: 12 DB-A, 30 FEET FROM TURBINE @ 45° ANGLE
AND NO BACKGROUND NOISE OR OUTSIDE INTERFERENCE.

NOTE: THESE READINGS WERE TAKEN OUTSIDE OF 8'x10'x8' CINDER BLOCK ENCLOSURE WITH CONCRETE SLAB AND WOOD JOIST ROOF.

SOUND LEVEL METER USED:

SIMPSON MODEL #40003 – MSHA APPROVED.
MEETS OSHA & WALSH-HEALY REQUIREMENTS FOR NOISE CONTROL.
CONFORMS TO ANSI S1.4-1983, IEC 651 SPECS FOR METER TYPE.

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Project: Sound Library

Job Number: 0000-2020-02

Site Address/Location: Parking lot

Date: 09/18/2018

Field Tech/Engineer: Robert Pearson

Source/System: 2009 Hyundai Sonata

General Location: Measured @ 3'

Sound Meter: NTi XL2 **SN:** A2A-05967-E0

Settings: A-weighted, slow, 1-sec, 10-sec duration

Meteorological Cond.: 90 degrees F, 0 mph wind

Site Observations:

Clear sky, measurements were performed at 3ft of source.

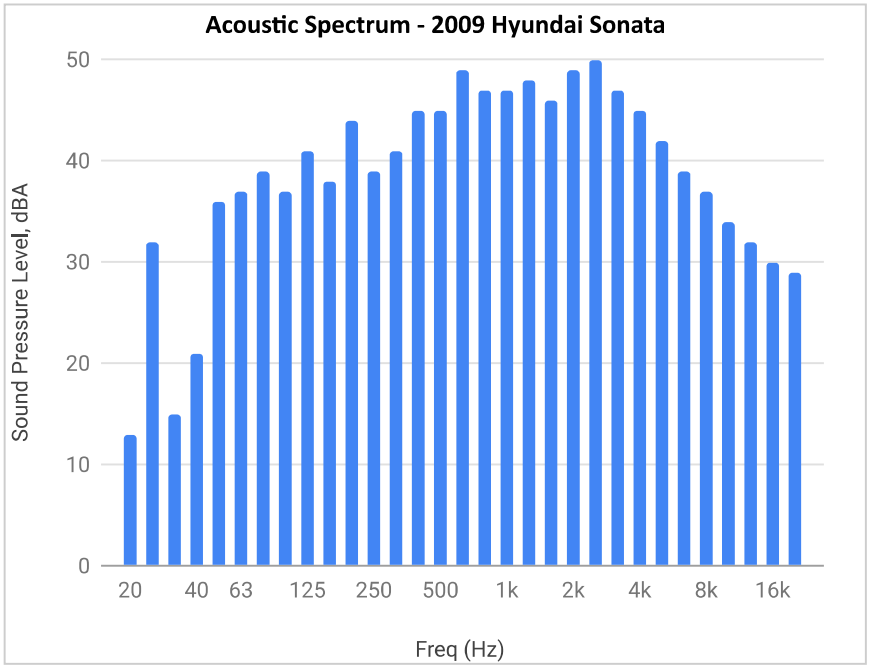
Leq	Lmin	Lmax
58.7	0.0	0.0

Ln 2	Ln 8	Ln 25	Ln 50	Ln 90	Ln 99
0.0	0.0	0.0	0.0	0.0	0.0

Table 1: Summary Measurement Data

Source/System	Overall Source	Overall dB(A)	3rd Octave Band Data (dBA)																													
			20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
2009 Hyundai Sonata	Car Idle	58.7	13.0	32.0	15.0	21.0	36.0	37.0	39.0	37.0	41.0	38.0	44.0	39.0	41.0	45.0	45.0	49.0	47.0	47.0	48.0	46.0	49.0	50.0	47.0	45.0	42.0	39.0	37.0	34.0	32.0	30.0	29.0

Figure 1: Car Idle - Hyundai Sonata



Project:	Whataburger	**Site Observations:**	
Job Number:	0792-2021-01	3-feet from drive-thru speakerphone	
Site Address/Location:	20151 S. Ellsworth Road		
Date:	03/09/2021		
Field Tech/Engineer:	Robert Pearson		
Source/System:	Drive Thru Speaker Phone		
General Location:	3-feet		
Sound Meter:	NTi	**SN:** A2A-16164-E0	
Settings:	A-weighted, Slow, 1-sec, 10-sec duration		
Meteorological Cond.:	Clear Skies, 60 degrees		

Leq	Lmin	Lmax
62.1	56.5	66.8

Ln 2	Ln 5	Ln 10	Ln 50	Ln 90	Ln 99
0.0	68.0	66.2	58.5	55.7	0.0

Table 1: Summary Measurement Data

Source/System	Overall Source	Overall dB(A)	3rd Octave Band Data (dBA)																													
			20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	16k	20k
Drive Thru Speaker Phone	Drive Thru Spea	62.1	4.2	7.7	9.9	15.5	18.0	29.8	31.2	30.0	36.2	38.2	41.2	40.7	45.5	46.7	50.7	51.9	53.9	55.9	52.8	52.7	48.6	48.0	45.6	46.3	35.0	38.3	33.5	32.7	31.1	30.0	29.0

Figure 1: