Appendix K

Acoustical Assessment

ACOUSTICAL ASSESSMENT

for the

Alder Logistics Center Project

Bloomington, California

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TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF TABLES

DEFINITIONS OF COMMONLY USED TERMS IN NOISE CONTROL

The definitions that follow are in general agreement with those contained in publications of various professional organizations, including the American National Standards Institute (ANSI); the American Society for Testing and Materials (ASTM); the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE); the International Organization for Standardization (ISO); and the International Electrotechnical Commission (IEC).

TERMINOLOGY

acoustic; acoustical: *Acoustic* is usually used when the term being qualified designates something that has the properties, dimensions, or physical characteristics associated with sound waves (e.g., acoustic power); *acoustical* is usually used when the term which it modifies does not explicitly designate something that has the properties, dimensions, or physical characteristics of sound (e.g., acoustical material).

ambient noise: The all-encompassing noise associated with a given environment at a specified time, usually being a composite of sound from many sources arriving from many directions, near and far; no particular sound is dominant.

attenuation: The decrease in level of sound, usually from absorption, divergence, scattering, or the cancellation of the sound waves.

average sound level (L_{eq}): The level of a steady sound which, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound.
Unit: decibel.

A-weighted sound level (L_A): The sound level measured with a sound-level meter using A-weighting. *Unit*: decibel (dBA).

background noise: The total noise from all sources other than a particular sound that is of interest (e.g., other than the noise being measured or other than the speech or music being listened to).

decibel (dB): A unit of level which denotes the ratio between two quantities that are proportional to power; the number of decibels correspond to the logarithm (to the base 10) of this ratio. [In many sound fields, the sound pressure ratios are not proportional to the corresponding power ratios, but it is common practice to extend the use of the decibel to such cases. One decibel equals one-tenth of a *bel*.]

equivalent continuous sound level (average sound level) (L_{eq}): The level of a steady sound which, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound. *Unit*: decibel (dBA).

frequency (*f*): Of a periodic function, the number of times that a quantity repeats itself in one second, i.e., the number of cycles per second. *Unit*: hertz (Hz).

noise: Any disagreeable or undesired sound, i.e., unwanted sound.

noise level: Same as sound level. Usually used to describe the sound level of an unwanted sound.

noise reduction (NR): The difference in sound pressure level between any two points along a path of sound propagation.

sound: (1) A change in air pressure that is capable of being detected by the human ear.
(2) The hearing sensation excited by a change in air pressure.

sound level: Ten times the logarithm to the base 10 of the square of the ratio of the frequency-weighted (and time-averaged) sound pressure to the reference sound pressure of 20 micropascals. The frequency-weightings and time-weighting employed should be specified; if they are not specified, it is understood that A-frequency-weighting is used and that an averaging time of 0.125 is used. *Unit*: decibel (dBA).

SYMBOLS, ABBREVIATIONS, AND ACRONYMS

ADT	Average Daily Traffic
ANSI	American National Standards Institute
AM	Ante Meridiem
APN	Assessor's Parcel Number
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
HVAC	heating, ventilation, and air conditioning
in/sec	inches per second
Ldn	average day/night sound level
Leq	equivalent sound level
Lmax	maximum noise level
Lmin	minimum noise level
Ln	exceedance level
MPH	miles per hour
PM	Post Meridiem
PPV	peak particle velocity
SEL	sound level exposure
Sr	sensitive receptor
STC	sound transmission class
TNM2.5	Traffic Noise Model 2.5
TWA	time weighted average noise levels
VdB	velocity decibels

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EXECUTIVE SUMMARY

The purpose of this Acoustical Assessment is to evaluate potential short- and long-term noise impacts resulting from implementation of the proposed Alder Logistics Center Project ("project" or "proposed project"). The project site is generally located south of Interstate 10 (I-10) in the community of Bloomington, San Bernardino County, California.

The project proposes to demolish the existing food-related warehouse/storage building and construct an approximate 174,780 square-foot warehouse building on the project site. The gross site area is 9.44 acres and is comprised of four parcels. The proposed building would be located toward the rear half of the lot, situated farthest from adjacent residential properties. A 65-foot landscaped buffer would serve as a retention basin at the property line closest to adjacent residential properties to better transition the two differing uses. A total of 114 parking spaces would be provided on-site. A new trash enclosure is proposed, located in an accessible area on-site for circulation and access by waste services. A total of 2 grade level and 22 dock high loading docks would be provided on-site. Site access would be provided via Alder Avenue off Slover Avenue, a major arterial road that runs east-west.

Short-Term Construction Impacts. Based upon the results of the analysis, noise from construction activities would not exceed the noise standards of the Codified Ordinances of the County of San Bernardino (San Bernardino County Code) at off-site uses. Implementation of recommended Noise Reduction Measure NOI-1 would further reduce construction noise levels at off-site receptors impacts during construction activities. Further, groundborne vibration during construction would result in a less than significant impact.

Long-Term Operational Impacts. The analysis has concluded that implementation of the proposed project would result in less than significant impacts related to vehicular (mobile) and stationary noise. In addition, groundborne vibration impacts would be less than significant.

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1.0 INTRODUCTION

The purpose of this Acoustical Assessment is to evaluate potential short- and long-term noise impacts resulting from implementation of the proposed Alder Logistics Center Project ("proposed project" or "project") in the community of Bloomington, San Bernardino County, California.

1.1 PROJECT LOCATION

The project site is generally located south of Interstate 10 (I-10) along Alder Avenue in the unincorporated community of Bloomington, San Bernardino County, California; refer to Exhibit 1, *Regional Vicinity*. The project site is specifically located at 10326, 10339, 10360, 10380, and 10396 Alder Avenue, Assessor's Parcel Numbers (APNs) 0252-131-03, -04, -36, -41, and-43. The project site is surrounded by a railroad easement and infrastructure, and I-10 to the north; single-family structures to the south; a mix of industrial and residential to the east; and industrial uses and railroad infrastructure to the west; refer to Exhibit 2, *Site Vicinity*.

1.2 PROJECT DESCRIPTION

The project proposes to demolish the existing food-related warehouse/storage building and construct an approximate 174,780-square foot warehouse building on the project site. The gross site area is 9.44 acres and is comprised of four parcels. The proposed building would be located toward the rear half of the lot, situated farthest from adjacent residential properties; refer to Exhibit 3, *Conceptual Site Plan*. A 65-foot landscaped buffer would serve as a retention basin at the property line closest to adjacent residential properties to better transition the two differing uses. A total of 114 parking spaces would be provided on-site. A new trash enclosure is proposed, located in an accessible area on-site for circulation and access by waste services. A total of two grade level and 22 dock high loading docks would be provided on-site. Site access would be provided via Alder Avenue off Slover Avenue, a major arterial road that runs east-west.

Currently, there is no identified tenant for the proposed building. The proposed project is planned for a single tenant with an ancillary office component. Since the tenant is unknown, hours of operation and employee count will vary, but is assumed for planning purposes to operate 24 hours per day, seven days per week. Office workers would likely have typical shifts of Monday through Friday, 8:00 a.m. to 5:00 p.m., while warehouse staff would work day, evening, and night shifts. Specific hours of operation would be identified during the tenant improvement process.

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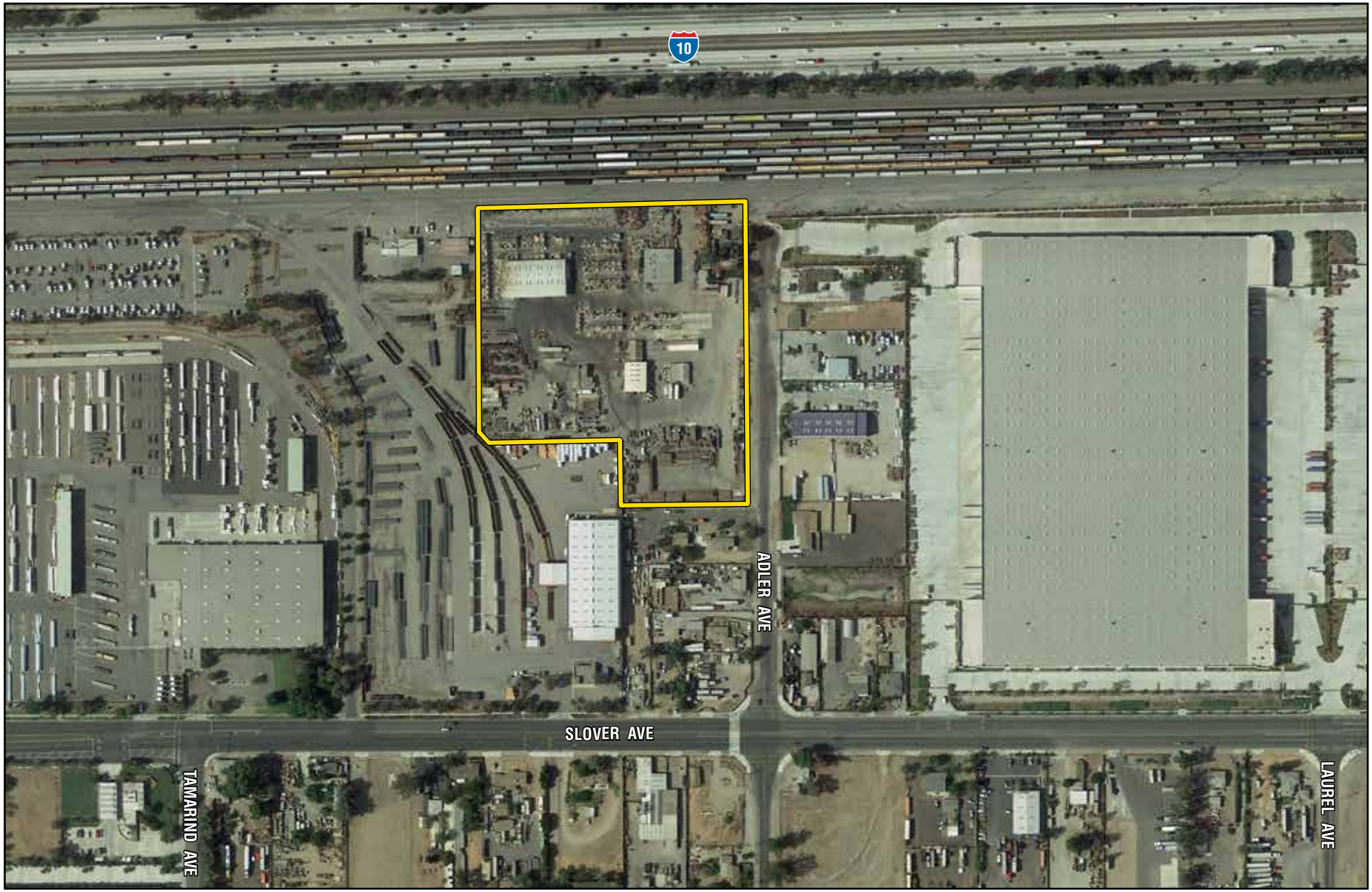
ALDER LOGISTICS CENTER PROJECT
ACOUSTICAL ASSESSMENT

Regional Vicinity

Exhibit 1



Source: Google Earth Pro, August 2019

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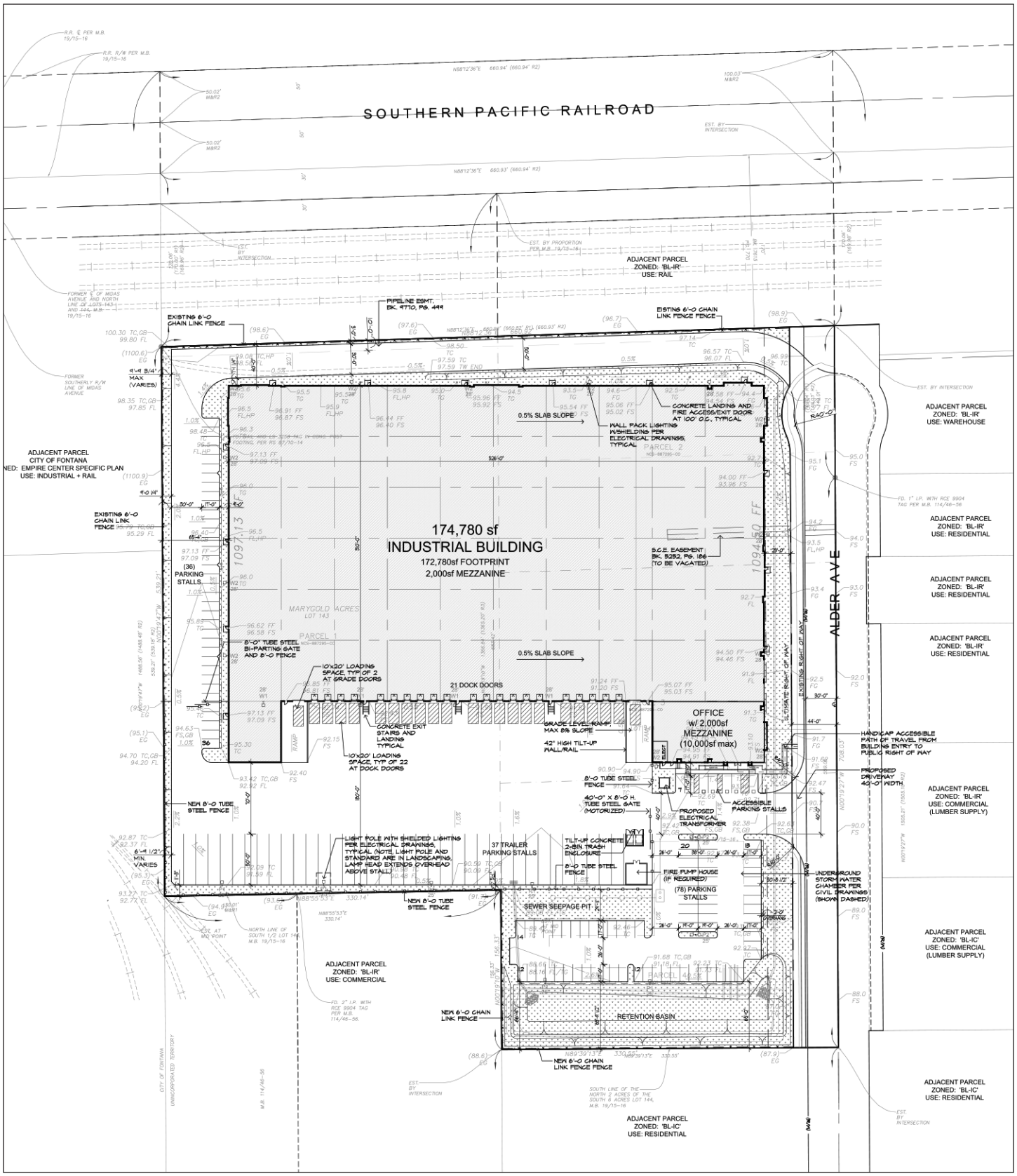
PROJECT SITE

08/19 JN 173563

ALDER LOGISTICS CENTER PROJECT
ACOUSTICAL ASSESSMENT

Site Vicinity

Exhibit 2



Source: DouglasFranz Architects, Inc., May 2019

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ALDER LOGISTICS CENTER PROJECT
ACOUSTICAL ASSESSMENT

Conceptual Site Plan

Exhibit 3

2.0 DESCRIPTION OF NOISE METRICS

2.1 STANDARD UNIT OF MEASUREMENT

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by differentiating among frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is perceived to be twice as loud and 20 dBA higher is perceived to be four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on Exhibit 4, *Common Environmental Noise Levels*.

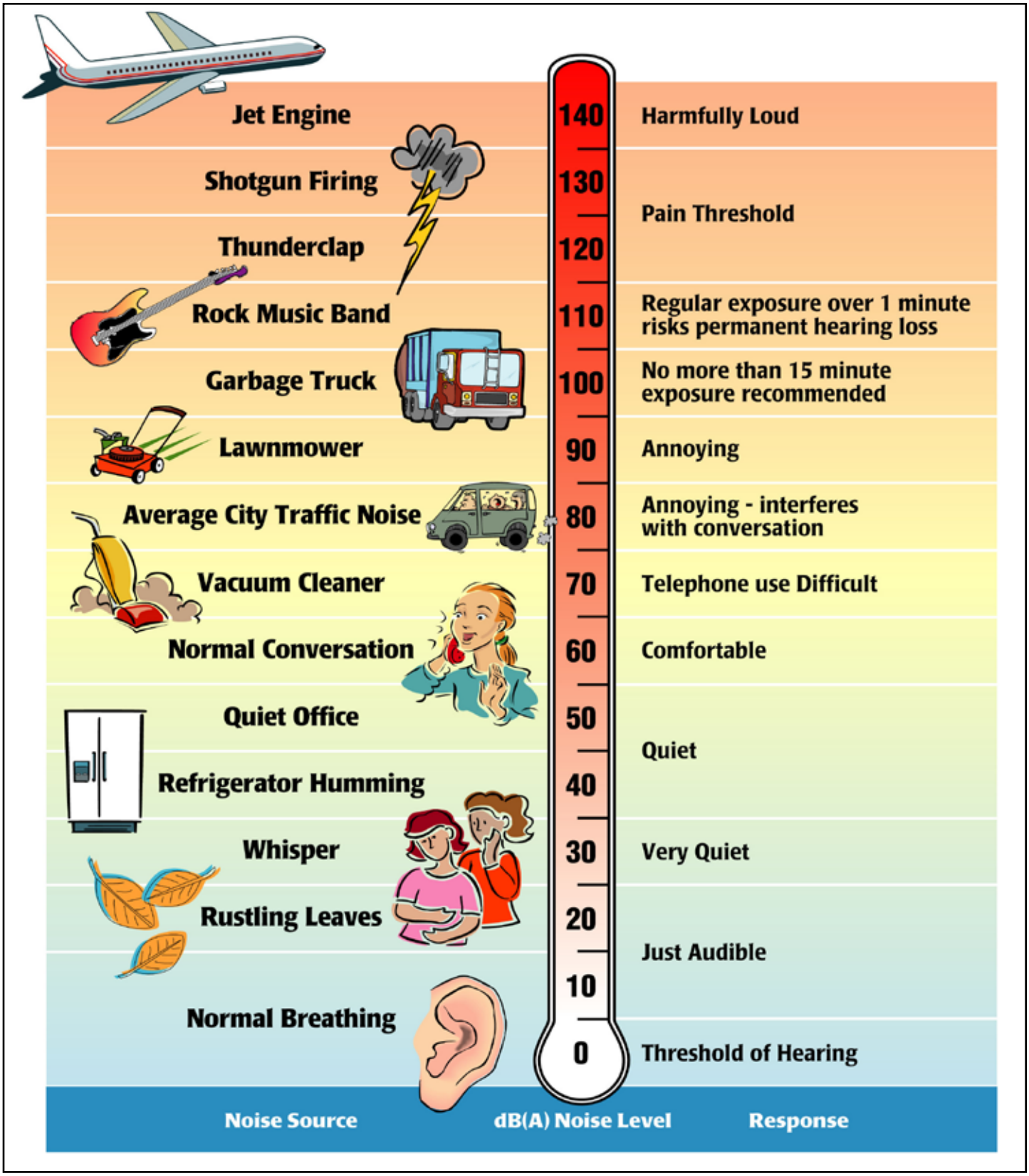
Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the community noise environment.

Table 1, *Noise Descriptors*, provides a list of methods to measure sound over a period of time.

2.2 HEALTH EFFECTS OF NOISE

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses would range from "not annoyed" to "highly annoyed."



Source: Environmental Protection Agency, *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.

Table 1
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 a.m. to 10:00 p.m., and +10 dBA for the night, 10:00 p.m. to 7:00 a.m.
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 p.m. to 7:00 a.m.) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.

Source: Cyril M. Harris, *Handbook of Noise Control*, 1979.

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss;
- Interference with Communication;
- Effects of Noise on Sleep;
- Effects on Performance and Behavior;

- Extra-Auditory Health Effects; and
- Annoyance.

Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources.

According to the National Institute on Deafness and Other Communication Disorders, at least ten million Americans with hearing impairments owe their losses to noise exposure.[1] Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proven to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Recent research indicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of "helping" behavior, and increased incidence of "hostile" behavior. Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to

[1] National Institute on Deafness and Other Communication Disorders, *Noise-Induced Hearing Loss*, https://www.nidcd.nih.gov/health/noise-induced-hearing-loss, accessed July 11, 2019.

the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the relationship between the effects of annoyance and the community were quantified. In areas where exterior noise levels were consistently above 60 dBA Community Noise Equivalent Level (CNEL), approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

3.0 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

This noise analysis was conducted in accordance with Federal, State, and local criteria described in the following sections.

3.1 U.S. ENVIRONMENTAL PROTECTION AGENCY

The U.S. Environmental Protection Agency (EPA) offers guidelines for community noise exposure in the publication *Noise Effects Handbook – A Desk Reference to Health and Welfare Effects of Noise*. These guidelines consider occupational noise exposure as well as noise exposure in homes. The EPA recognizes an exterior noise level of 55 decibels day-night level (dB L_{dn}) as a general goal to protect the public from hearing loss, activity interference, sleep disturbance, and annoyance. The EPA and other Federal agencies have adopted suggested land use compatibility guidelines that indicate that residential noise exposures of 55 to 65 dB L_{dn} are acceptable. However, the EPA notes that these levels are not regulatory goals, but are levels defined by a negotiated scientific consensus, without concern for economic and technological feasibility or the needs and desires of any particular community.

3.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The State Office of Planning and Research Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The Noise Element Guidelines contain a land use compatibility table that describes the compatibility of various land uses with a range of environmental noise levels in terms of the CNEL. Table 2, *Land Use Compatibility for Community Noise Environments*, presents guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

Table 2
Land Use Compatibility for Community Noise Environments

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 - 70	70-75	75-85
Residential - Multiple Family	50 – 65	60 - 70	70 – 75	70 - 85
Transient Lodging - Motel, Hotels	50 – 65	60 - 70	70 – 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 - 70	70 – 80	80 - 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 - 70	NA	65 - 85
Sports Arenas, Outdoor Spectator Sports	NA	50 - 75	NA	70 - 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 75	72.5 - 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 - 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 - 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 - 80	75 – 85	NA

NA: Not Applicable; L_{dn}: average day/night sound level; CNEL: Community Noise Equivalent Level

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.

Source: Office of Planning and Research, *State of California General Plan Guidelines*, October 2017.

3.3 LOCAL JURISDICTION

COUNTY OF SAN BERNARDINO GENERAL PLAN

The *County of San Bernardino General Plan* (General Plan) Noise Element identifies noise-sensitive land uses and noise sources, defines areas of noise impact, and establishes goals and policies to ensure that County residents are protected from excessive noise. The following lists applicable noise goals and policies obtained from the General Plan*:*

Goal N 1. The County will abate and avoid excessive noise exposures through noise mitigation measures incorporated into the design of new noise-generating and new noise-sensitive land uses, while protecting areas within the County where the present noise environment is within acceptable limits.

Policy N 1.2. Ensure that new development of residential or other noise-sensitive land uses is not permitted in noise-impacted areas unless effective mitigation measurements are incorporated into the project design to reduce noise levels to the standards of Noise-sensitive land uses include residential uses, schools, hospitals, nursing homes, places of worship and libraries.

Policy N 1.4. Enforce the state noise insulation standards (California Administrative Code, Title 24) and Chapter 35 of the California Building Code (CBC).

Policy N 1.5. Enforce the hourly noise-level performance standards for stationary and other locally regulated sources, such as industrial, recreational, and construction activities as well as mechanical and electrical equipment.

Goal N 2. The County will strive to preserve and maintain the quiet environment of mountain, desert and other rural areas.

Policy N 2.1. The County will require appropriate and feasible on-site noise attenuating measures that may include noise walls, enclosure of noise-generating equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.

CODIFIED ORDINANCES OF THE COUNTY OF SAN BERNARDINO

Chapter 83.01, Section 83.01.080, *Noise* of the Codified Ordinances of the County of San Bernardino (San Bernardino County Code (San Bernardino County Code) establishes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses. The following sections of the San Bernardino County Code are applicable to the proposed project.

§ 83.01.080 – Noise.

(c) Noise Standards for Stationary Noise Sources.

*(1) Noise Standards. Table 83-2 (*Table 3, *Noise Standards for Stationary Noise Sources) describes the noise standards for emanations from a stationary noise source, as it affects adjacent properties:*

Table 3
Noise Standards for Stationary Noise Sources

Affected Land Uses (*Receiving Noise*)	7:00 a.m. – 10:00 p.m. L_{eq}	10:00 p.m. – 7 :00 a.m. L_{eq}
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)
Industrial	70 dB(A)	70 dB(A)

Notes:
L_{eq} = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.
dB(A) = (A-weighted Sound Pressure Level). The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear.
L_{dn} = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way L_{dn} takes into account the lower tolerance of people for noise during nighttime periods.

Source: San Bernardino County Code Section 83.01.080, Table 83-2.

(2) Noise Limit Categories. No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:

(A) The noise standard for the receiving land use as specified in Subdivision (b) (Noise-Impacted Areas), above, for a cumulative period of more than 30 minutes in any hour.

(B) The noise standard plus five dB(A) for a cumulative period of more than 15 minutes in any hour.

(C) The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour.

(D) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour.

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

*(d) Noise Standards for Adjacent Mobile Noise Sources. Noise from mobile sources may affect adjacent properties adversely. When it does, the noise shall be mitigated for any new development to a level that shall not exceed the standards described in the following Table 83-3 (*Table 4*, Noise Standards for Adjacent Mobile Noise Sources).*

Table 4
Noise Standards for Adjacent Mobile Noise Sources

Land Use		L_{dn} (or CNEL) dB(A)[4]	
Categories	**Uses**	**Interior[1]**	**Exterior[2]**
Residential	Single and multi-family, duplex, mobile homes	45	60[3]
Commercial	Hotel, motel, transient housing	45	60[3]
	Commercial retail, bank, restaurant	50	N/A
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	N/A
Institutional/Public	Hospital, nursing home, school classroom, religious institution, library	45	65
Open Space	Park	N/A	65

Notes: N/A: Not Applicable; L_{dn}: average day/night sound level; CNEL: Community Noise Equivalent Level; dBA: A-weighted decibel scale

1. The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.
2. The outdoor environment shall be limited to:
   - Hospital/office building patios
   - Hotel and motel recreation areas
   - Mobile home parks
   - Multi-family private patios or balconies
   - Park picnic areas
   - Private yard of single-family dwellings
   - School playgrounds
3. An exterior noise level of up to 65 dB(A) (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.
4. CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

Source: San Bernardino County Code, Section 83.01.080, Table 83-3.

(e) Increases in Allowable Noise Levels. If the measured ambient level exceeds any of the first four noise limit categories in Subdivision (d)(2), above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category in Subdivision (d)(2), above, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

(f) Reductions in Allowable Noise Levels. If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 83-2 (Noise Standards for Stationary Noise Sources) shall be reduced by five dB(A).

(g) Exempt Noise. The following sources of noise shall be exempt from the regulations of this Section:

(1) Motor vehicles not under the control of the commercial or industrial use.

(2) Emergency equipment, vehicles, and devices.

(3) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

§ 83.01.090 Vibration.

(a) Vibration Standard. No ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the lot line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenths inches per second measured at or beyond the lot line.

(b) Vibration Measurement. Vibration velocity shall be measured with a seismograph or other instrument capable of measuring and recording displacement and frequency, particle velocity, or acceleration. Readings shall be made at points of maximum vibration along any lot line next to a parcel within a residential, commercial and industrial land use zoning district.

(c) Exempt Vibrations. The following sources of vibration shall be exempt from the regulations of this Section.

(1) Motor vehicles not under the control of the subject use.

(2) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

4.0 EXISTING CONDITIONS

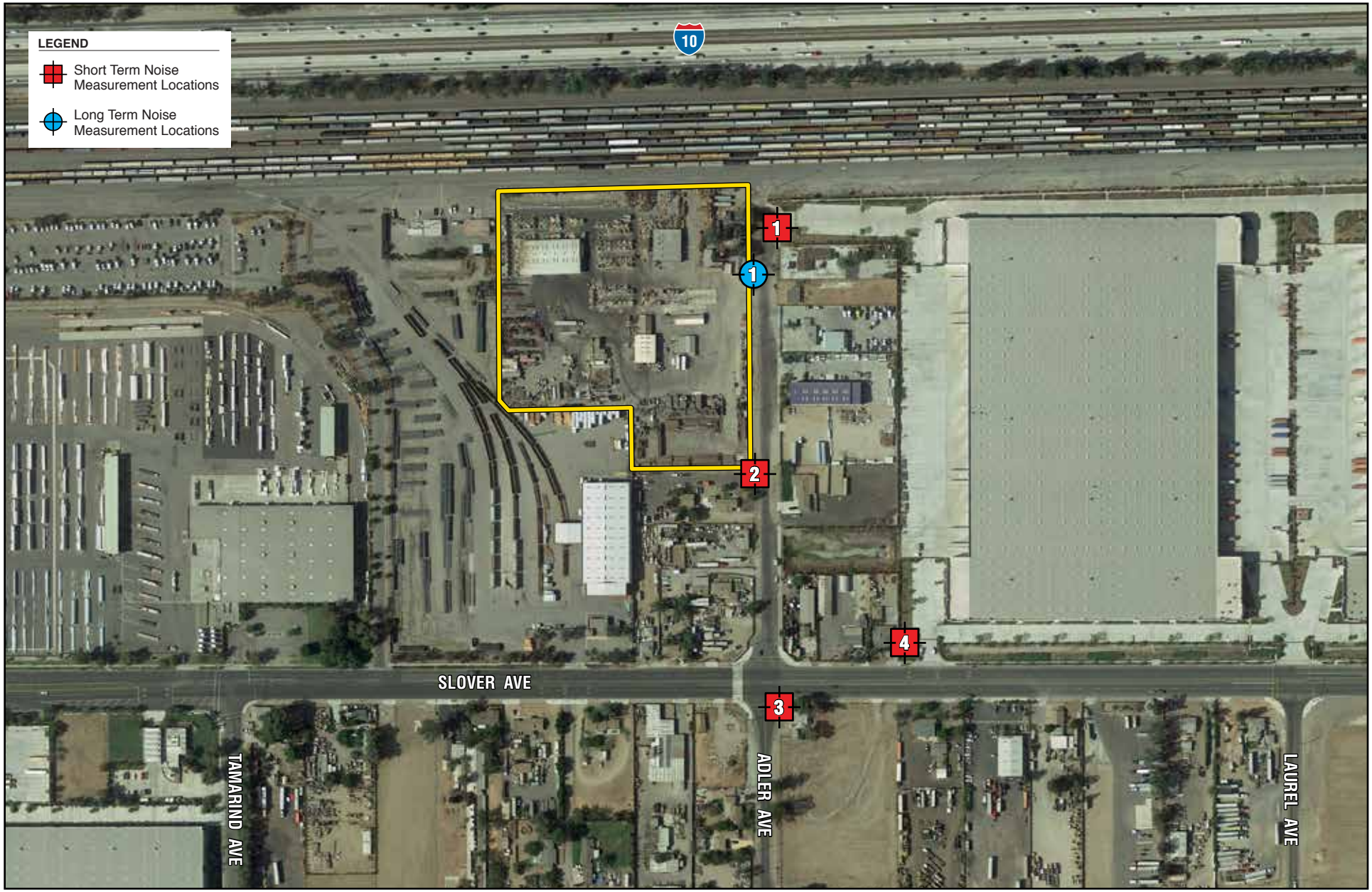
4.1 NOISE MEASUREMENTS

In order to quantify existing ambient noise levels in the project area, Michael Baker International (Michael Baker) conducted three short-term and one long-term (24-hour) noise measurements in the vicinity of the project site on July 17 and 18; refer to Table 5, *Noise Measurements* and Exhibit 5, *Noise Measurement Locations*, for the noise measurement locations. The noise measurement sites were representative of typical existing noise exposure at and immediately adjacent to the project site. Ten-minute measurements were taken between 9:00 a.m. and 11:00 a.m. at each site during the day. A long-term noise measurement was taken to assess the typical daily noise levels in the project vicinity.

Table 5
Noise Measurements

Site No.	Location	SEL (dBA)	TWA (dBA)	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Time
Short-Term Noise Measurement								
ST-1	End of Alder Avenue, to the northeast of the project site.	-	-	55.7	50.5	64.0	92.1	9:08 a.m.
ST-2	South end of the project site, adjacent to the adjoining residence to the south.	-	-	53.2	44.0	65.9	90.1	9:22 a.m.
ST-3	Corner of Alder Avenue and Slover Avenue.	-	-	66.2	48.8	82.2	105.2	9:43 a.m.
ST-4	Off Slover Avenue, adjacent to 1780 Slover Avenue.	-	-	65.3	45.3	79.2	104.7	10:03 a.m.
Long-Term Noise Measurement								
LT-1	Adjacent to the eastern portion of the project site.	110.9	66.3	61.5	55.3-	107.1	133.4	10:32 a.m.
dBA = A-weighted decibels, SEL =Sound Level Exposure, TWA = Time Weighted Average Noise Levels; L_{eq} = Equivalent Sound Level; L_{min} = Minimum Sound Level; L_{max} = Maximum Sound Level								
Source: Michael Baker International, July 17 and 18, 2019.								

Meteorological conditions included clear skies, warm temperatures, with light wind speeds (under 5 miles per hour), and low humidity. Measured noise levels during the daytime measurements ranged from 53.2 to 66.2 dBA L_{eq}. Noise monitoring equipment used for the short-term ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a Type 4189 pre-polarized microphone which complies with applicable requirements of the American National Standards Institute (ANSI) for Type I (precision) sound level meters. The equipment for the long-term noise measurement consisted of a Quest SoundPro DL-1 Hand-held Analyzer with a 3M SoundPro DL-1-1/3 Microphone (a Type II sound level meter). The results of the field measurements are included in Appendix A, *Noise Data*.



Source: Google Earth Pro, August 2019

NOT TO SCALE

Michael Baker INTERNATIONAL

PROJECT SITE

08/19 JN 173563

ALDER LOGISTICS CENTER PROJECT
ACOUSTICAL ASSESSMENT

Noise Measurement Locations

Exhibit 5

4.2 SENSITIVE RECEPTORS

Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours. Existing sensitive receptors located in the project vicinity include residential uses, recreational uses, schools, places of worship, hospitals/medical offices, and parks. Sensitive receptors are listed in Table 6, *Sensitive Receptors*.

Table 6
Sensitive Receptors

Type	Name	Distance from Project Site[1] (feet)	Direction from Project Site	Location
Residential	Residential Uses	578	North	Residential uses along Alder Avenue
		80	East	Residential uses along Alder Avenue
		Adjoining	South	10440 Alder Avenue, Bloomington, CA 92316
Schools	Options For Youth	2,840	Southwest	17216 Slover Avenue, Suite L-102 & 12A Fontana, CA 92337
	Sycamore Hills Elementary School	4,363	Southwest	11036 Mahogany Drive, Fontana, CA 92337
	Ruth O. Harris Middle School	4,528	South	11150 Alder Avenue, Bloomington, CA 92316
	Bloomington High School	1,637	Southeast	10750 Laurel Avenue, Bloomington, CA 92316
	Truth Tabernacle Christian Academy	4,090	Northeast	18027 San Bernardino Avenue, Bloomington, CA 92316
	Mary B. Lewis Elementary School	4,784	Northeast	18040 San Bernardino Avenue, Bloomington, CA 92316
Places of Worship	Kingdom Hall of Jehovah's Witnesses	3,112	Southeast	10575 Locust Avenue, Bloomington, CA 92316
	Bloomington Pentecostal Church of God	5,724	Northeast	9999 Linden Avenue, Bloomington, CA 92316
	Calvary Missionary Baptist Church	4,212	Northeast	18194 Marygold Avenue, Bloomington, CA 92316
	St George's Catholic Church	3,985	Northeast	17895 San Bernardino Avenue, Fontana, CA 92335
Hospitals	Kaiser Permanente Hospital	3,142	Northwest	9961 Sierra Avenue, Fontana, CA 92335
Parks	Sycamore Hills Park	4,692	Southwest	11075 Mayberry Street, Fontana, CA 92337
	Ayala Park	3,855	Northeast	18313 Valley Boulevard, Bloomington, CA 92316

Note:
1. Distances are approximate and are measured from the exterior project boundary only, not from individual construction areas within the interior of the project site.

Source: Google Earth, 2019.

4.3 EXISTING NOISE LEVELS

MOBILE SOURCES

In order to assess the potential for mobile source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the project area. The majority of the existing mobile noise in the project area is generated from vehicle sources along Slover Avenue. As shown in Table 5, noise levels ranged from 65.3 to 66.2 dBA along Slover Avenue during noise measurements recorded by Michael Baker on July 18, 2019. Measured ambient noise levels ranged from 53.2 to 55.7 dBA along Alder Avenue. Furthermore, a major railway system comprised of nine separate railroad tracks is located to the north of the project site. Typical noise sources associated with this railway system include trains starting, stopping, accelerating, and train horns.

STATIONARY SOURCES

The site vicinity consists of residential, commercial, and industrial uses. The primary sources of stationary noise in the project vicinity are urban activities (e.g., heating, ventilation, and air conditioning [HVAC] units, parking areas, conversations, etc.). The noise associated with these sources may represent a single-event noise occurrence, short-term, or long-term/continuous noise.

5.0 POTENTIAL ACOUSTICAL IMPACTS

CEQA THRESHOLDS

Appendix G of the *CEQA Guidelines* contains analysis guidelines related to the assessment of noise impacts. These guidelines have been used by the County to develop thresholds of significance for this analysis. As stated in Appendix G, a project would create a significant environmental impact if it would:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact Statement NOI-1);

- Generation of excessive groundborne vibration or groundborne noise levels (refer to Impact Statement NOI-2);

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels (refer to Impact Statement NOI-3); and

Based on these standards and thresholds, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are provided for all potentially significant impacts.

SIGNIFICANCE OF CHANGES IN TRAFFIC NOISE LEVELS

An off-site traffic noise impact typically occurs when there is a discernable increase in traffic and the resulting noise level exceeds an established noise standard. In community noise considerations, changes in noise levels greater than 3 dB are often identified as substantial, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. However, this is based on a direct, immediate comparison of two sound levels. Community noise exposures occur over a long period of time and changes in noise levels occur over years (rather than the immediate comparison made in a laboratory situation). Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB is the most commonly accepted discernable difference. A 5 dB change is generally recognized as a clearly discernable difference.

As traffic noise levels at sensitive uses likely approach or exceed the County's applicable mobile noise source standard (refer to Table 4), a 3 dB increase is used as the significance threshold for the project. Thus, the project would result in a significant noise impact when a permanent increase in ambient noise levels of 3 dB occurs upon project implementation and the resulting noise level exceeds the County's applicable exterior standard at off-site uses.

NOI-1 GENERATION OF A SUBSTANTIAL TEMPORARY OR PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE VICINITY OF THE PROJECT IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES?

SHORT-TERM CONSTRUCTION IMPACTS

Construction of the proposed project would occur over approximately seven months and include demolition, grading, paving, building construction, and architectural coating. Ground-borne noise and other types of construction-related noise impacts would typically occur during excavation activities of the grading phase and the construction phase. Table 7, *Maximum Noise Levels Generated by Construction Equipment*, indicates the anticipated noise levels of construction equipment. It should be noted that the noise levels identified in Table 7 are maximum sound levels (L_{max}), which are the highest individual sound occurring at an individual time period. Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Typical construction equipment noise levels provided in Table 7 are projected at the nearest sensitive receptors in relation to the closest construction activity area. The nearest sensitive receptor (i.e. a residential use to the south of the project site) property line to the proposed construction area is located approximately 65 feet south of the proposed retention basin. As shown in Table 7, project construction noise levels would range between 72 dBA and 83 dBA at a distance of 65 feet.

Table 7
Maximum Noise Levels Generated by Construction Equipment

Equipment Type	Actual L_{max} at 50 Feet (dBA)	Actual L_{max} at 65 Feet (dBA)
Backhoe	78	76
Bulldozer	82	80
Compactor	82	80
Compressor	78	76
Concrete Mixer	79	77
Concrete Pump	81	79
Crane, Mobile	81	79
Dump Truck	76	74
Excavator	81	79
Generator	81	79
Grader	85	83
Loader	79	77
Paver	77	75
Pump	81	79
Roller	80	78
Tractor	84	82
Flatbed Truck	74	72
Welder	74	72

Notes: dBA = A-weighted decibels, L_{min} = Minimum Sound Level; L_{max} = Maximum Sound Level
Source: Federal Highway Administration, 2006.

Although the residential receptors to the south of the project site would experience increased noise levels during project construction activities, the County does not have construction noise standards for residential uses. Rather, Section 83.01.080 of the San Bernardino County Code exempts construction activities from the noise standard providing that such activities take place between the hours of 7:00 a.m. to 7:00 p.m. except Sundays and Federal holidays. These permitted hours of construction are included in the San Bernardino County Code in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant disruption. Construction would occur throughout the project site and would not be concentrated or confined in the area directly adjacent to sensitive receptors. Therefore, construction noise would be acoustically dispersed throughout the project site and not concentrated in one area near adjacent sensitive uses. In addition, Noise Reduction Measure NOI-1 requires several construction noise measures to further reduce noise levels at off-site receptors during construction.

Construction Truck Trips

Construction activities would also cause increased noise along access routes to and from the site due to movement of equipment and workers. Demolition of the current buildings on the project site would create 10,635 tons of demolished materials which would require approximately 1,052 hauling trips. Grading of the project site would require the import of approximately 12,000 cubic

yards of soil, which would result in approximately 1,500 soil hauling trips. It is anticipated that a maximum of 159 construction worker trips per day and 63 vendor trips per day would occur during the building phase. As a result, mobile source noise would increase along access routes to and from the project site during construction. However, mobile traffic noise from construction trips would be temporary and would cease upon project completion. Additionally, Noise Reduction Measure NOI-1 would require haul routes to avoid sensitive receptors to the extent feasible. Thus, impacts in this regard would be less than significant.

Conclusion

As discussed above, project construction would result in increased noise levels in the project area. However, project construction would be short-term in nature, and would cease upon completion. In addition, upon compliance with the County's allowable construction hours (San Bernardino County Code Section 83.01.080) and implementation of Noise Reduction Measure NOI-1, short-term noise impacts from construction equipment would be less than significant.

LONG-TERM OPERATIONAL IMPACTS

Off- Site Mobile Noise

Traffic noise levels were modeled at the nearest residential receptors to the project site using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM2.5). Traffic along Slover Avenue and Alder Avenue was modeled for Existing and Existing Plus Project conditions in TNM2.5. TNM2.5 takes into account differences in topography and physical barriers (e.g., buildings, walls, etc.) to model traffic noise levels at discrete receptor locations. TNM2.5 runs were conducted to determine the project's off-site mobile noise impacts (if any) at nearby receptors. According to the Trip Memo, the project would generate 306 trips per day, including 242 trips (79 percent) by automobiles, 11 trips (four percent) by medium trucks, and 38 trips (17 percent) by heavy trucks.

Table 8, *Existing Traffic Noise Levels*, shows the existing traffic noise levels modeled in TNM2.5. As shown in Table 8, existing exterior noise levels at the nearest receptors range from 51.3 dBA L_{dn} to a maximum of 62.2 dBA L_{dn}, and existing interior noise levels range from 31.3 dBA L_{dn} to 42.2 dBA L_{dn}.

Table 8
Existing Traffic Noise Levels

Receptor No.[1]	Address	Exterior Noise Levels (dBA L_{dn})	Interior Noise Levels (dBA L_{dn})[2]
SR_1	10349 Alder Ave, Bloomington, CA 92316	51.3	31.3
SR_2	10359 Alder Ave, Bloomington, CA 92316	55.4	35.4
SR_3	10395 Alder Ave, Bloomington, CA 92316	56.1	36.1
SR_4	10431 Alder Ave, Bloomington, CA 92316	58.5	38.5
SR_5	10440 Alder Ave, Bloomington, CA 92316	59.0	39.0
SR_6	10472 Alder Ave, Bloomington, CA 92316	62.2	42.2

dBA = A-weighted decibel; L_{dn} = day/night average.

Notes:
1. Refer to Appendix A, *Noise Data*, for receptor locations and detailed modeling outputs.
2. A 20 dBA noise attenuation rate was utilized to determine the interior noise levels for standard construction per the U.S. Department of Housing and Urban Development, *The Noise Guidebook*, March 2009, page 14. Receptors the exposed to noise levels beyond the City's noise standards would be required to use heating, ventilation, and air conditioning (HVAC) to ensure a "closed window" condition is satisfied.

Table 9, *Existing Plus Project Traffic Noise Levels*, shows the traffic noise levels with implementation of the proposed project. As shown in Table 9, exterior mobile traffic noise levels at the nearest receptors with the project would range from 54.6 dBA L_{dn} to a maximum of 63.8 dBA L_{dn}, and interior noise levels with the project would range from 34.6 dBA L_{dn} to 43.8 dBA L_{dn}.

Table 9
Existing Plus Project Traffic Noise Levels

Receptor No.[1]	Address	Exterior Noise Levels (dBA L_{dn})	Interior Noise Levels (dBA L_{dn})[2]
SR_1	10349 Alder Avenue, Bloomington, CA 92316	54.6	34.6
SR_2	10359 Alder Avenue, Bloomington, CA 92316	58.7	38.7
SR_3	10395 Alder Avenue, Bloomington, CA 92316	59.4	39.4
SR_4	10431 Alder Avenue, Bloomington, CA 92316	60.9	40.9
SR_5	10440 Alder Avenue, Bloomington, CA 92316	61.8	41.8
SR_6	10472 Alder Avenue, Bloomington, CA 92316	63.8	43.8

dBA = A-weighted decibel; L_{dn} = day/night average.

Notes:
1. Refer to Appendix A, *Noise Data*, for receptor locations and for detailed modeling outputs.
2. A 20 dBA noise attenuation rate was utilized to determine the interior noise levels for standard construction per the U.S. Department of Housing and Urban Development, *The Noise Guidebook*, March 2009, page 14. Receptors the exposed to noise levels beyond the City's noise standards would be required to use heating, ventilation, and air conditioning (HVAC) to ensure a "closed window" condition is satisfied.

Table 10, *Traffic Noise Level Comparison*, compares the Existing traffic noise levels to Existing Plus Project traffic noise levels.

Table 10
Traffic Noise Level Comparison

Receptor No.[1]	Existing Exterior Noise Levels (dBA L_{dn})	Existing Plus Project Exterior Noise Levels (dBA L_{dn})	Difference (dBA L_{dn})
SR_1	51.3	54.6	**+3.3**
SR_2	55.4	58.7	**+3.3**
SR_3	56.1	59.4	**+3.3**
SR_4	58.5	60.9	+2.4
SR_5	59.0	61.8	+2.8
SR_6	62.2	63.8	+1.6

dBA = A-weighted decibel; L_{dn} = day/night average; **bold** text indicates a difference in noise level in exceedance of 3 dBA.

Notes:
1. Refer to Appendix A, *Noise Data*, for receptor locations .and for detailed modeling outputs.

As shown in Table 10, the project would cause a perceptible increase in traffic noise levels (i.e., a noise level increase would be greater than 3.0 dBA) at receptors SR_1 through SR_3. However, the "Existing Plus Project Exterior Noise Levels" at receptors SR_1 through SR_3 would not exceed the County's residential exterior noise standards for mobile noise (i.e., 60 dBA CNEL). Receptors SR_4 through SR_6 would exceed the County's residential exterior noise standard of 60 dBA CNEL under the "Existing Plus Project Exterior Noise Levels" scenario; refer to Table 10. However, receptors SR_4 through SR_6 would experience an imperceptible increase in traffic noise (i.e., less than 3.0 dBA) under Existing Plus Project conditions. Furthermore, the maximum modeled interior noise level would be 43.8 dBA CNEL, which is below the County's allowable exterior the interior standard of 45 dBA CNEL. Thus, project-related traffic noise impacts would be less than significant.

On-Site Operational Noise

Slow-moving trucks, mechanical equipment, parking lot activities, and back-up alarms for trucks would generate noise during on-site operations. The operations would be typical of a warehouse/distribution center use.

Slow-Moving Trucks

On-site truck operations would be considered a mobile noise source subject to the County's noise regulations. It is anticipated that most operations would be conducted during daytime business hours (assumed to be 7:00 a.m. to 6:00 p.m.); however, some degree of operation would take place between 6:00 p.m. and 7:00 a.m. Therefore, this analysis assumes the project would operate 24

hours per day, seven days per week as a worst-case scenario. The predominant noise source during on-site operations would be from on-site truck movements and idling.

Based on the Translutions, Inc., A*lder Logistics Center – Trip Generation Memorandum*, dated November 6, 2018 (Trip Memo), the proposed project would generate 306 average daily trips (ADT) including up to 64 truck trips per day, including 8 trucks during the a.m. peak hour and 9 truck trips during the p.m. peak hour. Typically, slow movements from these trucks can generate a maximum noise level of approximately 79 dBA at a distance of 50 feet.[2]

For the purposes of this analysis, the distance to the nearest receptor was measured from the closest on-site truck-movement area (located approximately 217 feet north of the southern project site boundary) to the closest outdoor "outdoor environment"[3] of the receptor being analyzed. The nearest sensitive receptor (i.e., a residence to the south of the project site) would be located approximately 262 feet south of slow-moving trucks at the project site. At this distance, on-site noise levels from slow-moving trucks would be approximately 64.6 dBA[4] which is below the County's 65 dBA CNEL maximum allowable noise limit for residential uses for adjacent mobile noise sources. Interior noise levels from slow-moving trucks at the nearest residence would be attenuated by 20 dBA, decreasing interior noise levels to approximately 44 dBA,[5] which is below the County's allowable interior standard of 45 dBA CNEL. As such, noise levels from on-site slow-moving trucks would be less than significant. In addition, it should be noted that slow-moving truck noise levels (64.6 dBA exterior and 44.6 Dba at the nearest receptor) would be much lower in the CNEL noise scale (i.e., the noise metric used by the County to evaluate mobile noise impacts) which represents a time-weighted 24-hour average noise level based on A-weighted decibels. Therefore, slow-moving truck noise level would not exceed the County's applicable noise standards at the nearest off-site receptor, and a less than significant impact would occur in this regard.

[2] Elliot H. Berger, Rick Neitzel, and Cynthia A. Kladden, Noise Navigator Sound Level Database with Over 1700 Measurement Values, July 6, 2010.

[3] In accordance with San Bernardino County Code, Section 83.01.080, Table 83-3, the outdoor environment shall be limited to hospital/office building patios; hotel and motel recreation areas; mobile home parks; multi-family private patios or balconies; park picnic areas; private yard of single-family dwellings, and school playgrounds; refer to footnote 2 in Table 4.

[4] Assuming a noise attenuation rate of 7.5 dBA for each doubling of distance over "soft" surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees. California Department of Transportation, *Technical Noise Supplement*, 2009.

[5] Assuming a 20-dBA outdoor-indoor noise attenuation rate per the U.S. Department of Housing and Urban Development, *The Noise Guidebook*, page 14, March 2009 (i.e., 62.1 dBA – 20 dBA = 42.1 dBA).

Mechanical Equipment

HVAC units would be installed as part of the proposed project. HVAC systems can result in noise levels of approximately 52 dBA L_{eq} at 50 feet from the source.[6] At the time of this analysis, the exact location of HVAC units is unknown. However, based on the project site plan (see Exhibit 3), the closest potential location of HVAC units on-site (near the office mezzanine) to a sensitive receptor (i.e., residential uses to the east) would be approximately 120 feet. At this distance, HVAC noise levels would be approximately 44 dBA. Therefore, HVAC noise levels would not exceed the County's exterior noise standards for stationary noise sources of 55 dBA L_{eq} (daytime) and 45 dBA L_{eq} (nighttime), or interior noise standard of 45 dBA CNEL as a result of on-site HVAC units. Impacts would be less than significant in this regard.

Parking Areas

Passenger vehicle parking areas on-site include a 78-space main surface parking lot in the southwestern portion of the project site and a 36-space lot in the western portion of the project site. Traffic associated with parking lots is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL (or L_{dn}) scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys may be an annoyance to adjacent noise-sensitive receptors. Estimates of the maximum noise levels associated with parking lot activities are presented in Table 11, *Typical Noise Levels Generated by Parking Lots*.

Table 11
Typical Noise Levels Generated by Parking Lots

Noise Source	Maximum Noise Levels at 50 Feet from Source
Car door slamming	61 dBA L_{eq}
Car starting	60 dBA L_{eq}
Car idling	53 dBA L_{eq}
Source: Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.	

As shown in Table 11, parking lot noise levels range between 53 dBA and 61 dBA at a distance of 50 feet. The property line of the nearest sensitive receptor (i.e., a residence) is located approximately 65 feet south of the proposed main surface parking area on the project site. At this distance, parking lot noise levels would range between 51 dBA and 59 dBA. According to San Bernardino County Code Section 83.01.080, stationary noise exceeding 65 dBA for a cumulative

[6] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

period of five minutes in any hour would exceed the County's noise standard.[7] As parking lot noise is temporary and short in duration, it is not anticipated the parking lot activities depicted in Table 11 would exceed five minutes in duration. A less than significant impact would occur in this regard.

Back-Up Alarms

The project would also include a 37-space trailer parking area in the southern portion of the site. Medium and heavy-duty trucks reversing into trailer parking stalls and loading docks would produce noise from back-up alarms (also known as back-up beepers). Back-up beepers produce a typical volume of 97 dBA at one meter from the source.[8] The property line of the nearest sensitive receptor (i.e., a residence) would be located approximately 160 feet[9] south of the trailer parking stalls where trucks would be reversing/parking. At this distance, exterior noise levels from back-up beepers would be approximately 54.8 dBA,[10] which is below the County's 55 dBA L_{eq} stationary noise source standard for residential uses (see Table 4). In addition, maximum interior noise levels from back-up beepers would be less than 45 dBA (the County's interior noise standard) with windows open and 35 dBA with windows closed at the nearest receptor.[11]

For the purpose of this analysis, nighttime noise levels were analyzed at the interior of the nearest residence (where residents may be sleeping), approximately 220 feet south of the proposed trailer parking stalls. At this distance, exterior noise levels from back-up beepers would be approximately 51.3 dBA, and interior noise levels would be 41.3 dBA with windows open and 31.3 dBA with windows closed.[12] As such, the anticipated nighttime noise levels from back-up beepers would not exceed the County's 55 dBA L_{eq} exterior noise standard for stationary sources or 45 dBA CNEL interior noise standard at the nearest residential receptors. Therefore, noise impacts from back-up beepers associated with the project would be less than significant.

[8] Environmental Health Perspectives, *Vehicle Motion Alarms: Necessity, Noise Pollution, or Both?* https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3018517/, accessed August 7, 2019.

[9] This represents the closest distance between the noise source and the "outdoor environment" at the nearest off-site receptor.

[10] Assuming a noise attenuation rate of 7.5 dBA for each doubling of distance over "soft" surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees. California Department of Transportation, *Technical Noise Supplement*, 2009.

[11] Assuming a 10-dBA outdoor-indoor noise attenuation rate per the International Journal of Environmental Research and Public Health, *Differences between Outdoor and Indoor Sound Levels for Open, Tilted, and Closed Windows*, January 2018, and a 20-dBA outdoor-indoor noise attenuation rate per the U.S. Department of Housing and Urban Development, *The Noise Guidebook*, March 2009, page 14.

[12] See footnotes 16 and 17 above.

Noise Reduction Measures:

NOI-1 Prior to Grading Permit issuance, the project Applicant shall demonstrate, to the satisfaction of the San Bernardino County Planning Division that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other state required noise attenuation devices.

- Property owners and occupants located within 200 feet of the project boundary shall be sent a notice, at least 15 days prior to commencement of construction of each phase, regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the project construction site. All notices and signs shall be reviewed and approved by the County of San Bernardino Community Development Director (or designee), prior to mailing or posting and shall indicate the dates and duration of construction activities, as well as provide a contact name and a telephone number where residents can inquire about the construction process and register complaints.

- The Contractor shall provide evidence that a construction staff member will be designated as a Noise Disturbance Coordinator and will be present on-site during construction activities. The Noise Disturbance Coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the Noise Disturbance Coordinator shall notify the County within 24-hours of the complaint and determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall implement reasonable measures to resolve the complaint, as deemed acceptable by the Community Development Director (or designee). All notices that are sent to residential units immediately surrounding the construction site and all signs posted at the construction site shall include the contact name and the telephone number for the Noise Disturbance Coordinator.

- Prior to issuance of any Grading or Building Permit, the project Applicant shall demonstrate to the satisfaction of the Community Development Director (or designee) that construction noise reduction methods shall be used where feasible. These reduction methods include shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and electric air compressors and similar power tools.

- Construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.), to the extent feasible.

- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.

- Construction activities shall not take place outside of the allowable hours specified by the San Bernardino County Code Section 83.01.080 (from 7:00 a.m. to 7:00 p.m. on weekdays, except Sundays and Federal holidays).

NOI-2 GENERATION OF EXCESSIVE GROUNDBORNE VIBRATION OR GROUNDBORNE NOISE LEVELS?

SHORT-TERM CONSTRUCTION IMPACTS

Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. Construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, buildings that are constructed with typical timber frames and masonry show that a vibration level of up to 0.2 inch-per-second PPV is considered safe and would not result in any construction vibration damage.[13] This evaluation uses the Federal Transit Administration (FTA) architectural damage criterion for continuous vibrations at non-engineered timber and masonry buildings of 0.2 inch-per-second peak particle velocity (PPV) and human annoyance criterion of 0.4 inch-per-second PPV in accordance with

[13] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, September 2018.

California Department of Transportation (Caltrans) guidance.[14] The FTA has published standard vibration velocities for construction equipment operations. The vibration levels produced by construction equipment is illustrated in Table 12, *Typical Vibration Levels for Construction Equipment*.

Table 12
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inches/second)[1]	Approximate peak particle velocity at 65 feet (inches/second)[1]
Large bulldozer	0.089	0.024
Loaded trucks	0.076	0.020
Small bulldozer	0.003	0.001
Vibratory roller	0.210	0.056
Jackhammer	0.035	0.009

Notes:
1. Calculated using the following formula:

$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in in/sec from Table 7-4 of the FTA *Transit Noise and Vibration Impact Assessment Manual*
D = the distance from the equipment to the receiver

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

Groundborne vibration decreases rapidly with distance. The nearest structure is located approximately 65 feet south of the of the proposed retention basin construction area. As indicated in Table 12, vibration velocities from typical heavy construction equipment used during project construction would range from 0.001 (a small bulldozer) to 0.056 (vibratory roller) inch-per-second peak particle velocity (in/sec PPV) at 65 feet from the source of activity, which would not exceed the FTA's 0.20 in/sec PPV threshold. Further, construction vibration would not cause excessive human annoyance as the highest groundborne vibration nearest sensitive receptors (i.e. 0.056 inch-per-second PPV) would not exceed the 0.4 inch-per-second PPV human annoyance criteria. Thus, vibration impacts would be less than significant in this regard.

[14] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, *Table 20*, September 2013.

NOI-3 FOR A PROJECT LOCATED WITHIN THE VICINITY OF A PRIVATE AIRSTRIP OR AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT, WOULD THE PROJECT EXPOSE PEOPLE RESIDING OR WORKING IN THE PROJECT AREA TO EXCESSIVE NOISE LEVELS?

Level of Significance Before Mitigation: *No Impact.*

The proposed project is not located within an airport land use plan. The closest airport is the Ontario International Airport, located approximately nine miles to the west of the project site. The proposed project would not expose people residing or working in the area to excessive noise levels. Therefore, no impacts would occur in this regard.

6.0 REFERENCES

6.1 LIST OF PREPARERS

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Santa Ana, California 92707
949/472-3505

Eddie Torres, Planning Department Manager
Ryan Chiene, Technical Studies Manager
Pierre Glaize, Air Quality and Noise Specialist
Faye Stroud, Graphics Artist

6.2 DOCUMENTS

1. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, 2013.

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3. County of San Bernardino, *Codified Ordinances of the County of San Bernardino, California,* April 16, 2019.

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5. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, July 6, 2010.

6. Federal Highway Administration, *Roadway Construction Noise Model User's Guide,* January 2006.

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10. Hayne, M.J., *Prediction of Crowd Noise*, November 2006.

11. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), March 10, 1991.

12. National Institute on Deafness and Other Communication Disorders, *Noise-Induced Hearing Loss*, https://www.nidcd.nih.gov/health/noise-induced-hearing-loss, accessed July 11, 2019.

13. Office of Planning and Research, *State of California General Plan Guidelines*, October 2017.

14. Translutions, Inc., *Alder Logistics Center – Trip Generation Memorandum*, November 6, 2018.

15. U.S. Department of Transportation, Highway Traffic Noise Analysis and Abatement Policy and Guidance, https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm, accessed July 9, 2019.

16. U.S. Environmental Protection Agency, *Noise Effects Handbook – A Desk Reference to Health and Welfare Effects of Noise*, October 1979 (revised July 1981).

6.3 SOFTWARE/WEBSITES

Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, January 2006.

Federal Highway Administration, *Traffic Noise Model 2.5* (TNM2.5).

Google Earth, 2019.

APPENDIX A – NOISE DATA

Site Number: Alder Logistics Site #1	
Recorded By: Pierre Glaize & Clara Eddy	
Job Number: 173563	
Date: 07/18/2019	
Time: 9:08 a.m.	
Location: End of Alder Avenue, at the cul-de-sac east of the project.	
Source of Peak Noise: I-10 Interstate, trains nearby, airplanes above.	

Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
55.7	50.5	64.0	92.1

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**04/08/2019**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**04/08/2019**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**04/08/2019**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**04/08/2019**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = -0.01		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	2 mph	73°	29.95

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.4
Start Time:		07/18/2019 09:08:38
End Time:		07/18/2019 09:18:38
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.11

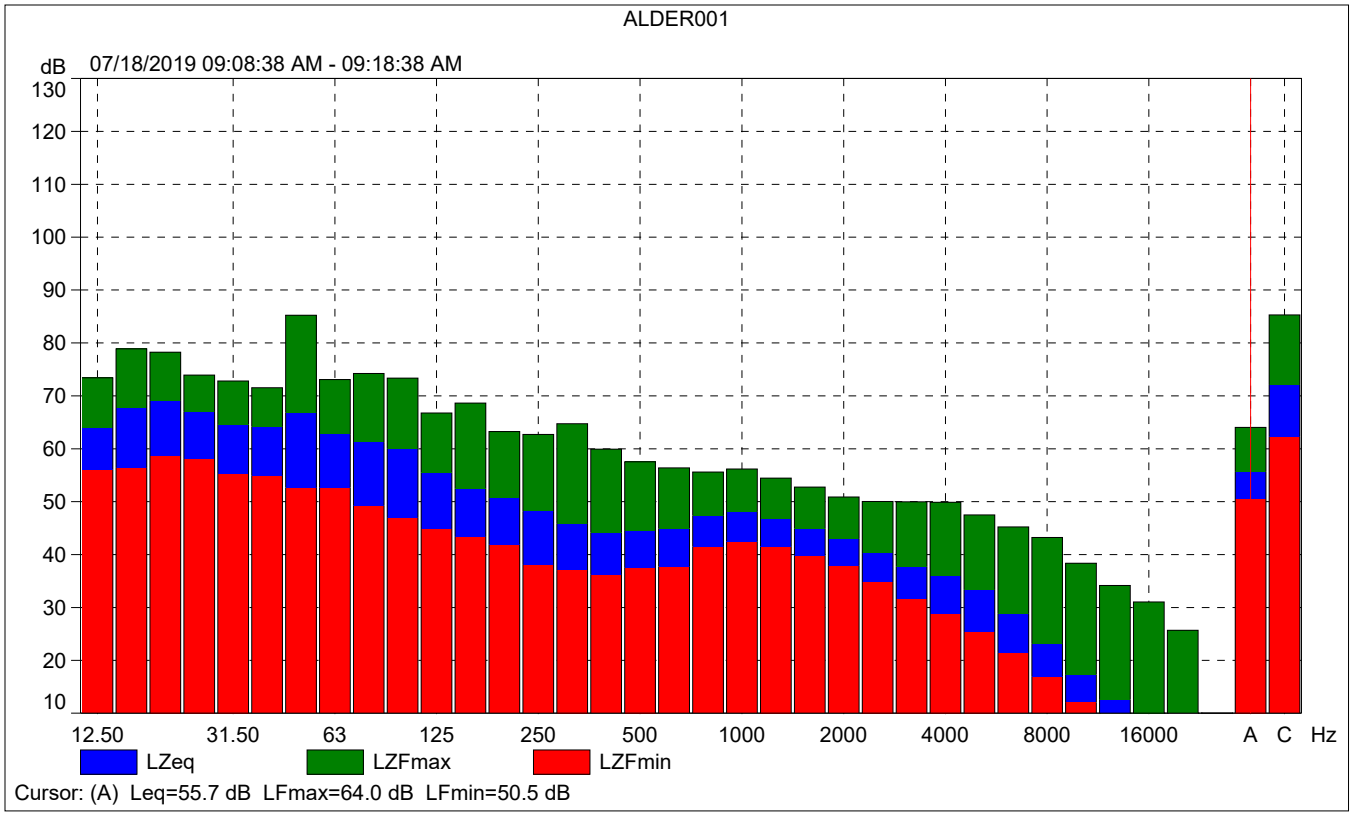
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

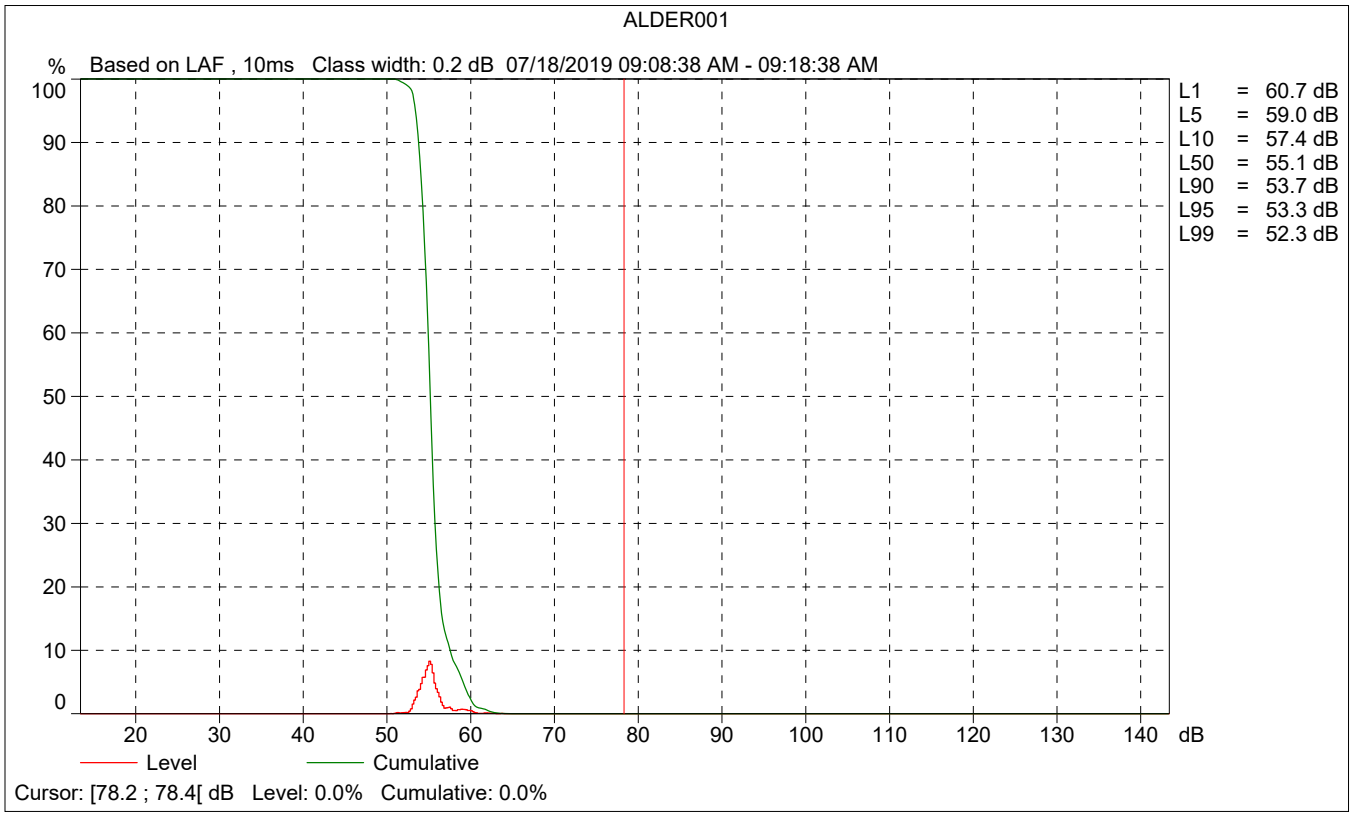
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

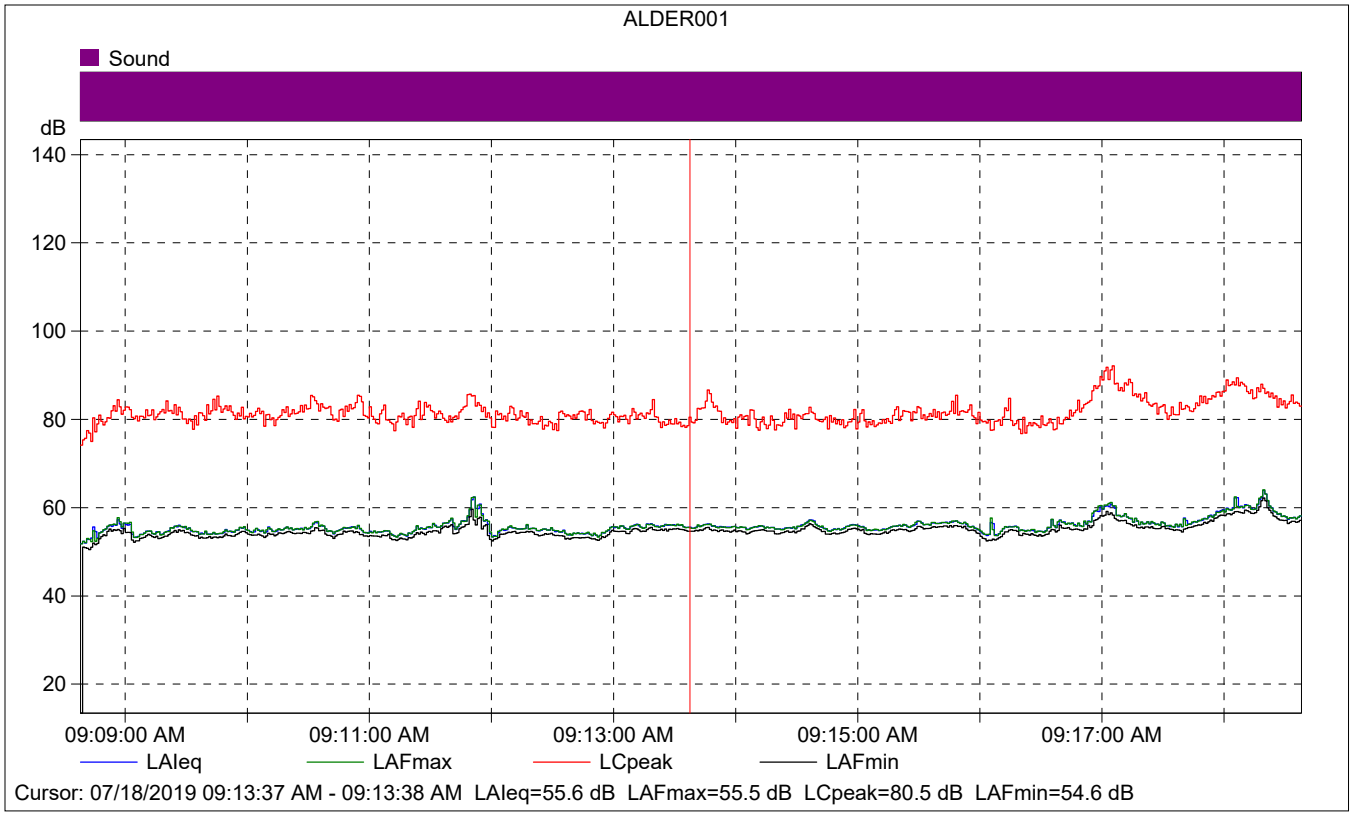
Calibration Time:		07/18/2019 07:38:08
Calibration Type:		External reference
Sensitivity:		43.69230940938 mV/Pa

ALDER001

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	55.7	64.0	50.5
Time	09:08:38 AM	09:18:38 AM	0:10:00				
Date	07/18/2019	07/18/2019					

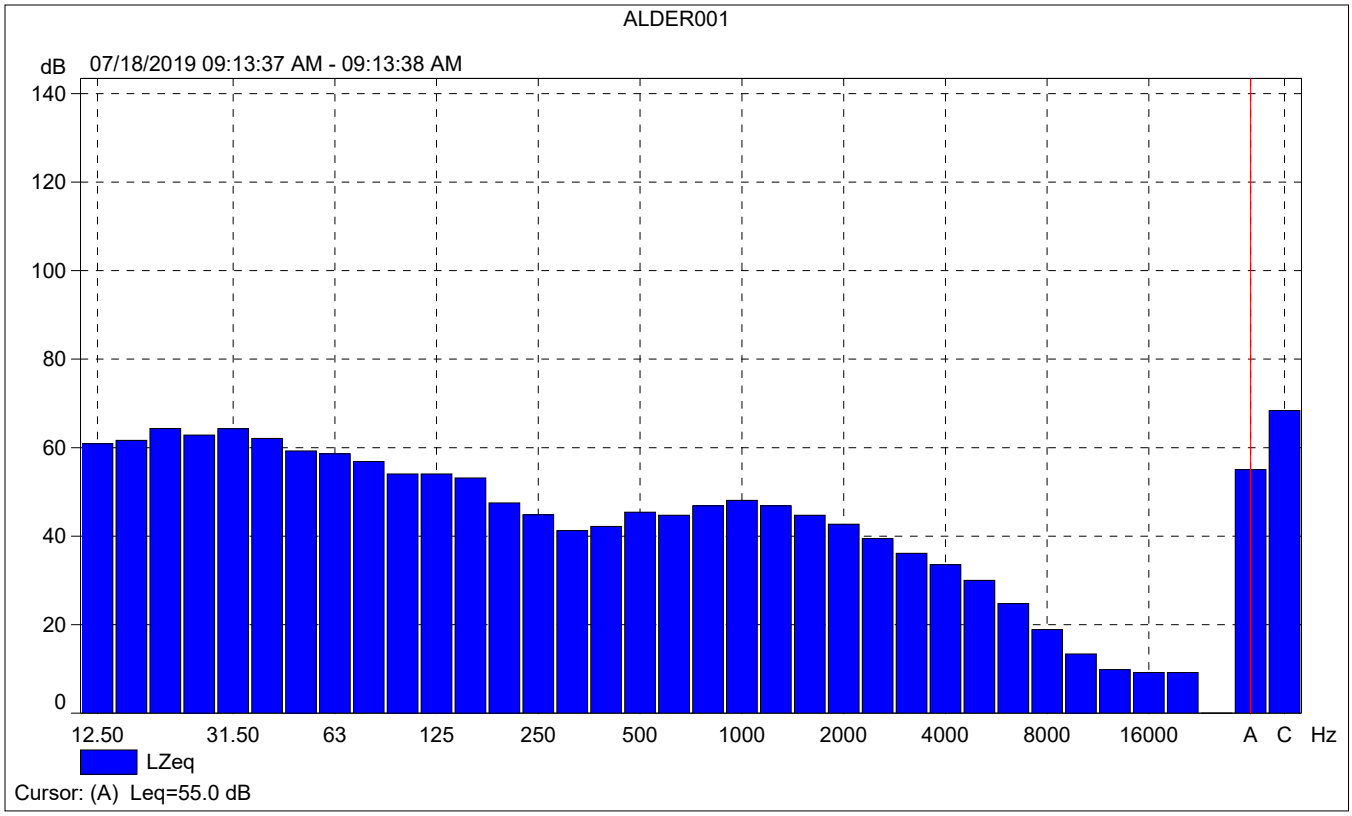

ALDER001
dB
07/18/2019 09:08:38 AM - 09:18:38 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=55.7 dB LFmax=64.0 dB LFmin=50.5 dB

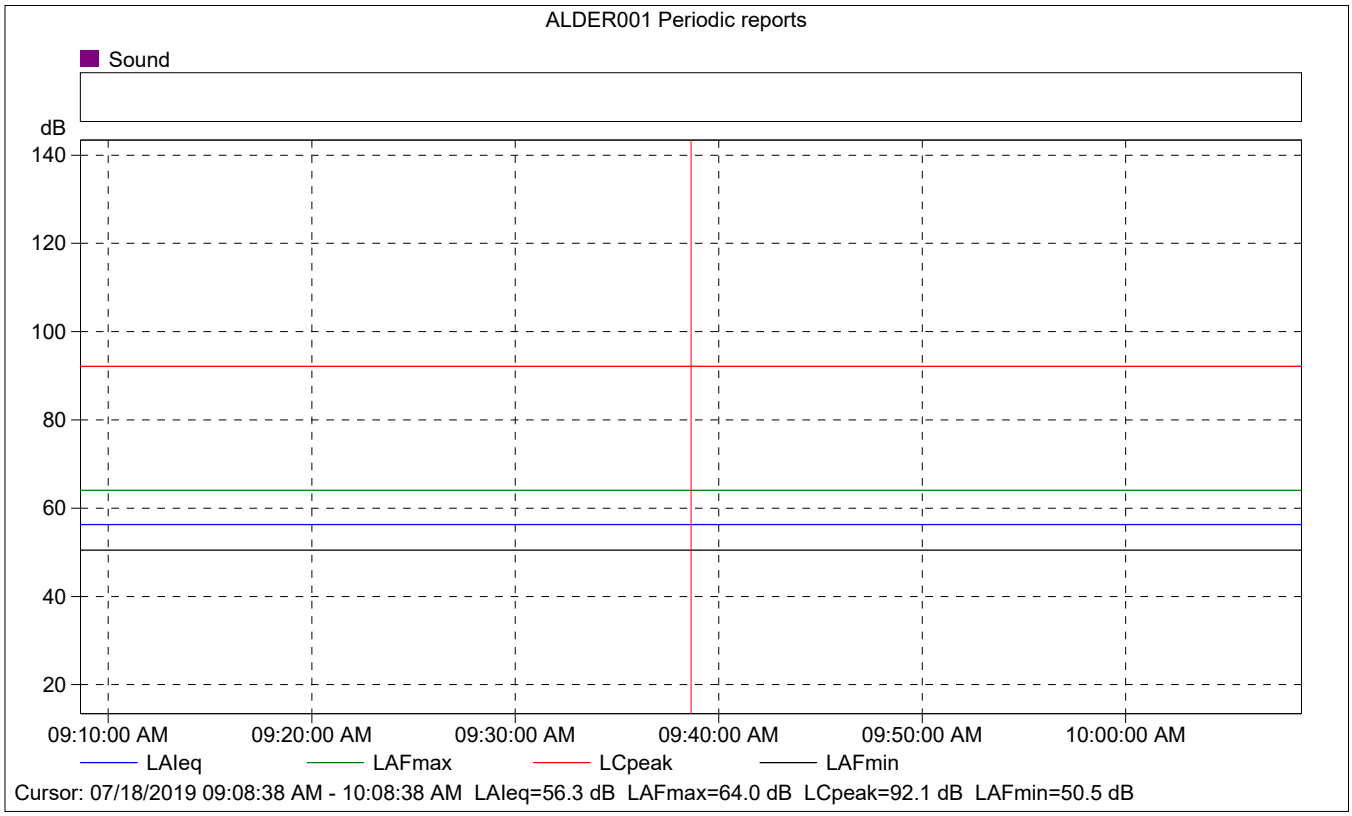

ALDER001
%
Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 09:08:38 AM - 09:18:38 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 60.7 dB
L5 = 59.0 dB
L10 = 57.4 dB
L50 = 55.1 dB
L90 = 53.7 dB
L95 = 53.3 dB
L99 = 52.3 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.0%



ALDER001

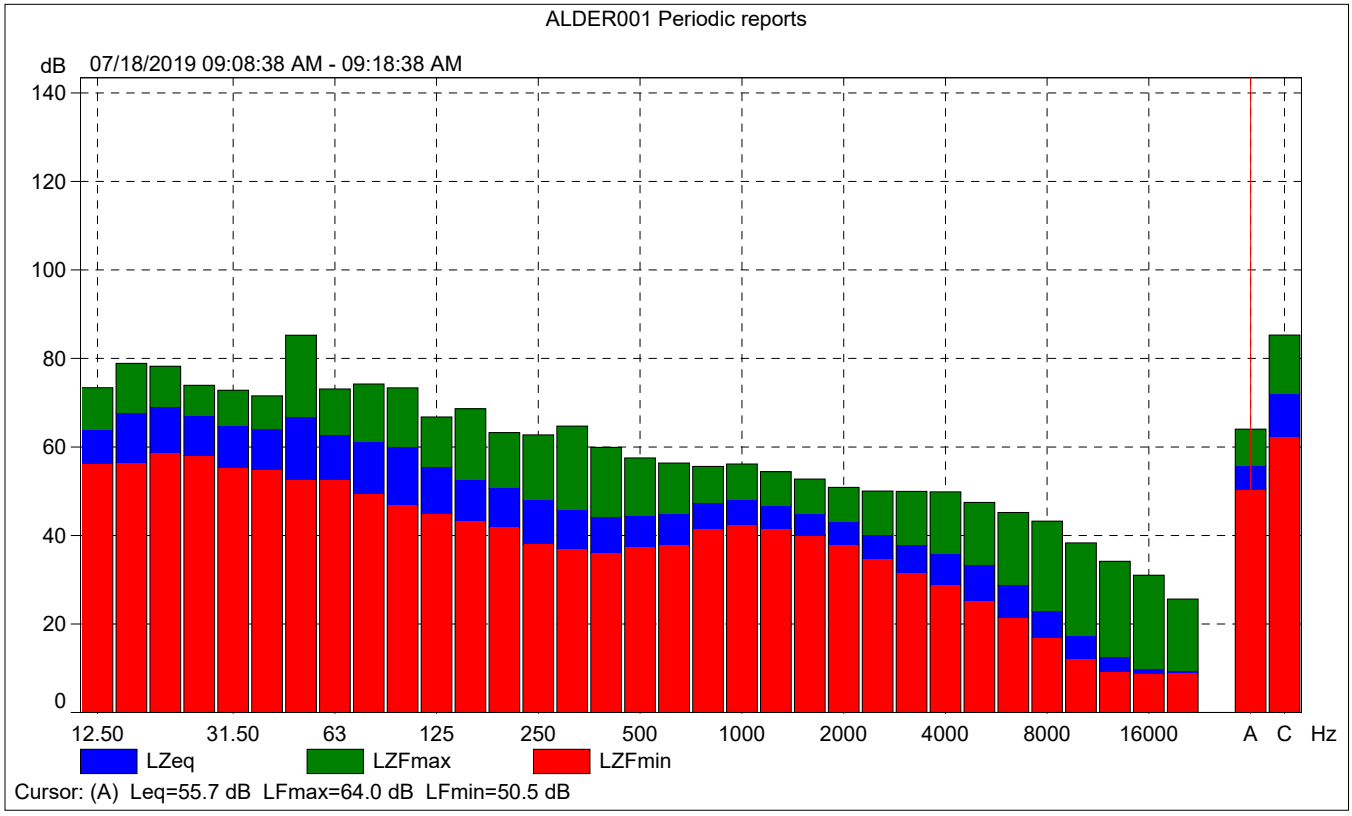
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			55.6	55.5	54.6
Time	09:13:37 AM	0:00:01			
Date	07/18/2019				

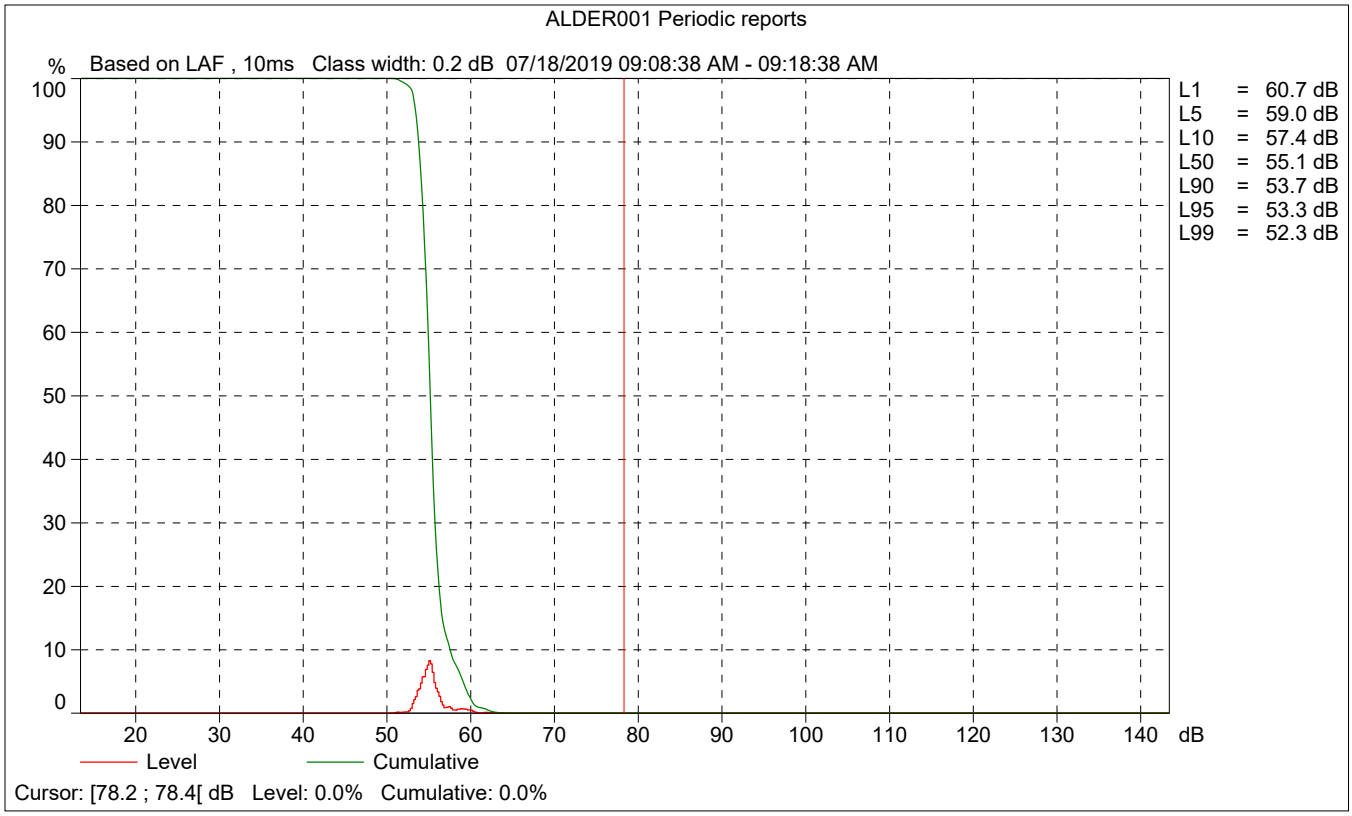

ALDER001
dB
07/18/2019 09:13:37 AM - 09:13:38 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=55.0 dB


ALDER001 Periodic reports
Sound
dB
140
120
100
80
60
40
20
09:10:00 AM
09:20:00 AM
09:30:00 AM
09:40:00 AM
09:50:00 AM
10:00:00 AM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 07/18/2019 09:08:38 AM - 10:08:38 AM LAIeq=56.3 dB LAFmax=64.0 dB LCpeak=92.1 dB LAFmin=50.5 dB

ALDER001 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	56.3	64.0	50.5
Time	09:08:38 AM	0:10:00				
Date	07/18/2019					




ALDER001 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 09:08:38 AM - 09:18:38 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 60.7 dB
L5 = 59.0 dB
L10 = 57.4 dB
L50 = 55.1 dB
L90 = 53.7 dB
L95 = 53.3 dB
L99 = 52.3 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.0%

Site Number: Alder Logistics Site #2			
Recorded By: Pierre Glaize & Clara Eddy			
Job Number: 173563			
Date: 07/18/2019			
Time: 9:22 a.m.			
Location: South end of the Project Site, adjacent to nearest residential parcel.			
Source of Peak Noise: Airplane above and train horn.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
53.2	44.0	65.9	90.1

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**04/08/2019**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**04/08/2019**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**04/08/2019**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**04/08/2019**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = -0.01		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	2 mph	73°	29.95

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.4
Start Time:		07/18/2019 09:22:53
End Time:		07/18/2019 09:32:53
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.11

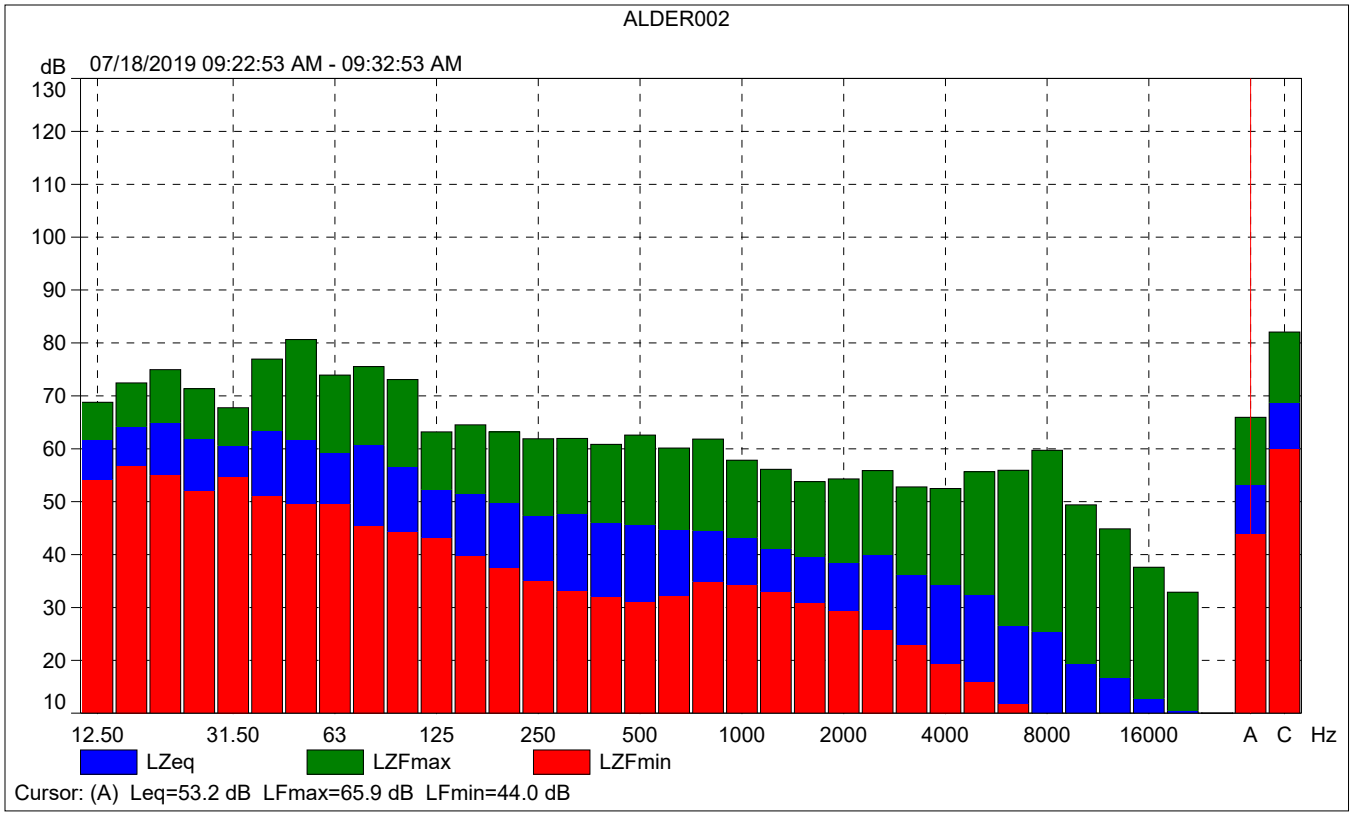
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

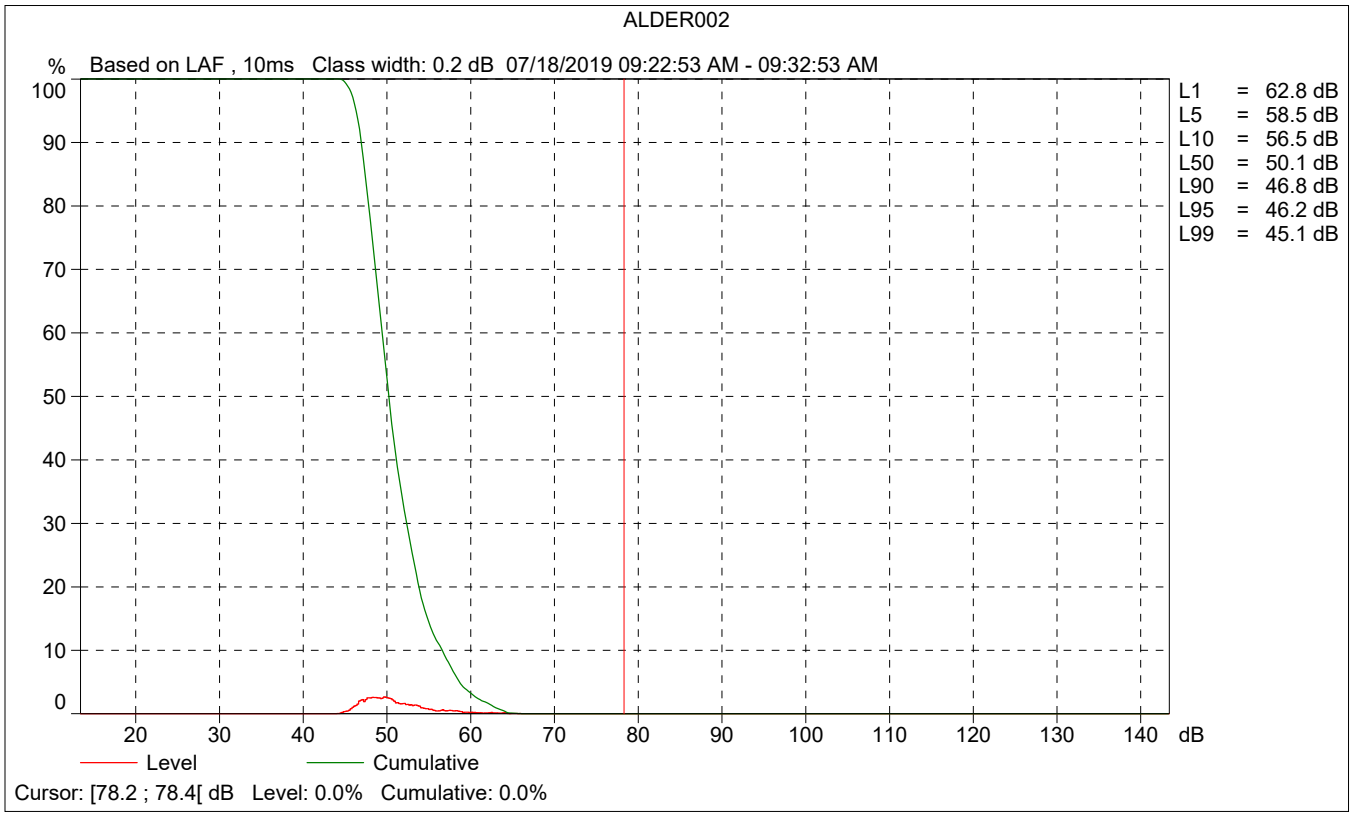
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

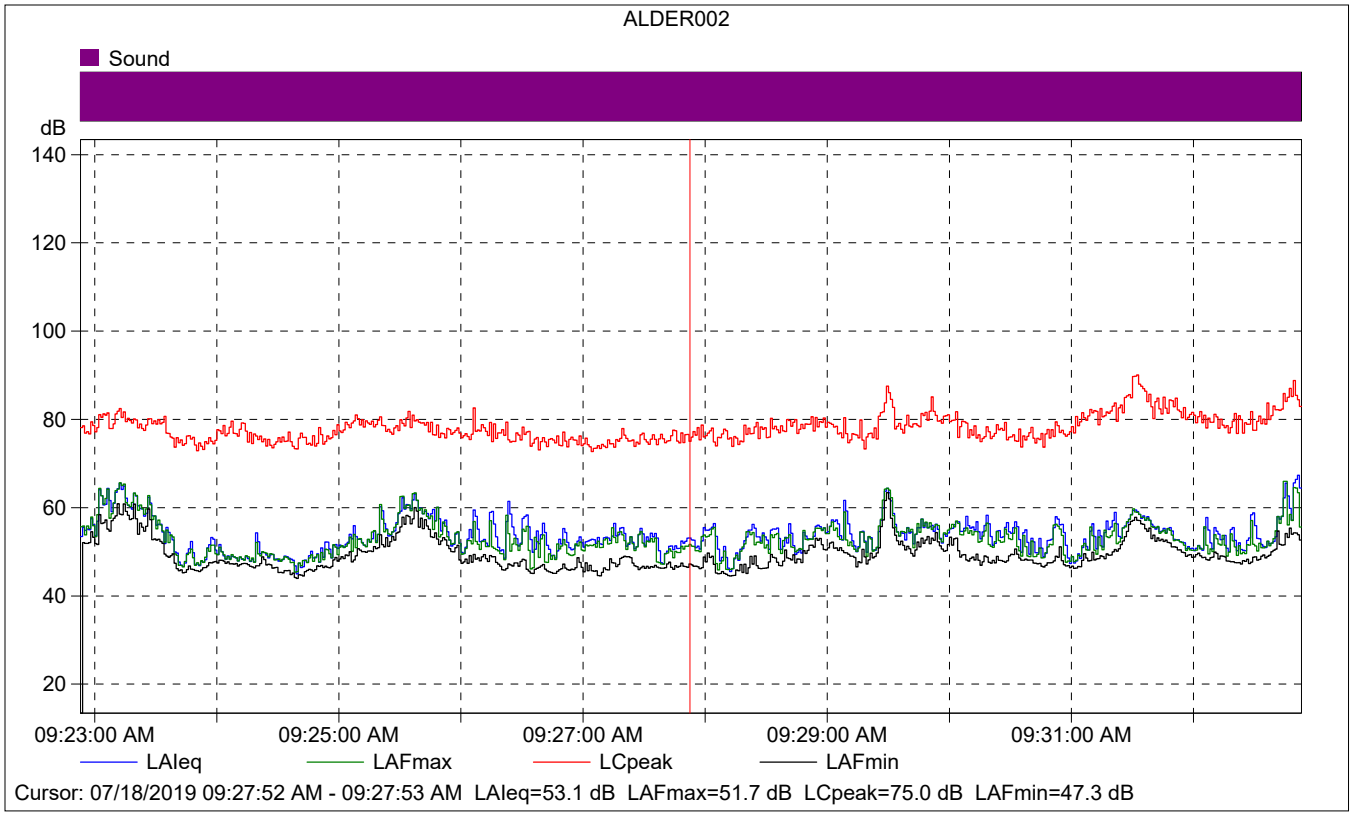
Calibration Time:		07/18/2019 07:38:08
Calibration Type:		External reference
Sensitivity:		43.69230940938 mV/Pa

ALDER002

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	53.2	65.9	44.0
Time	09:22:53 AM	09:32:53 AM	0:10:00				
Date	07/18/2019	07/18/2019					

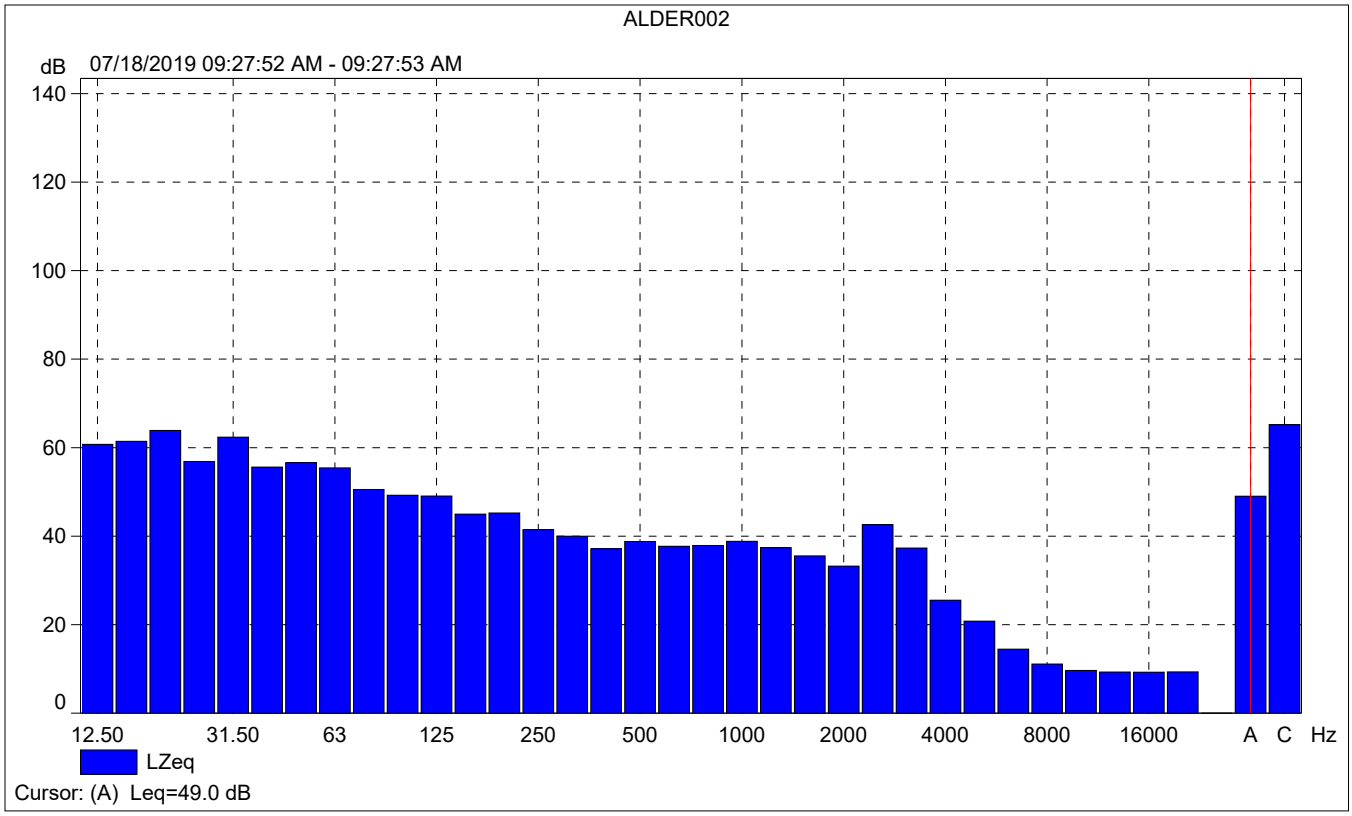

ALDER002
dB
07/18/2019 09:22:53 AM - 09:32:53 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=53.2 dB LFmax=65.9 dB LFmin=44.0 dB

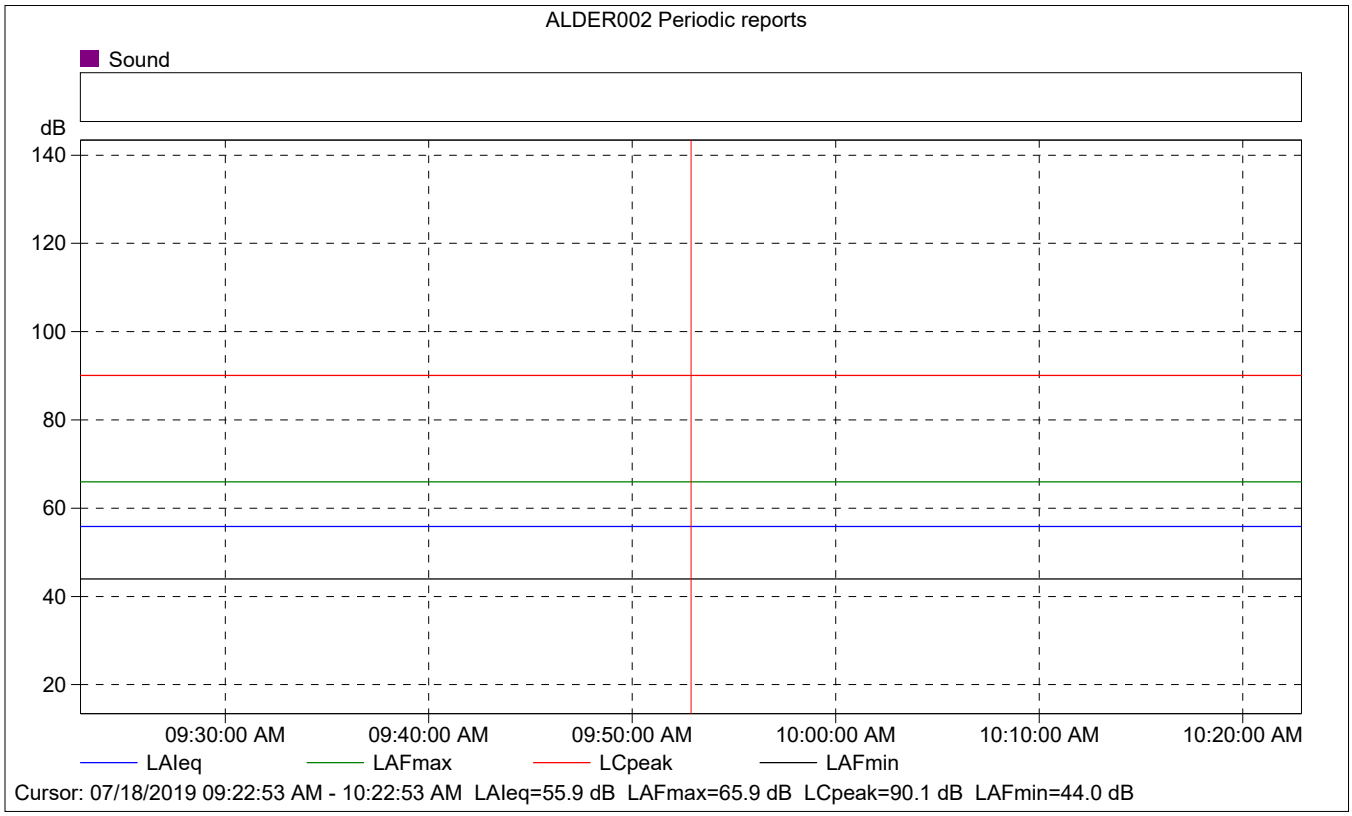

ALDER002
%
Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 09:22:53 AM - 09:32:53 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 62.8 dB
L5 = 58.5 dB
L10 = 56.5 dB
L50 = 50.1 dB
L90 = 46.8 dB
L95 = 46.2 dB
L99 = 45.1 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.0%



ALDER002

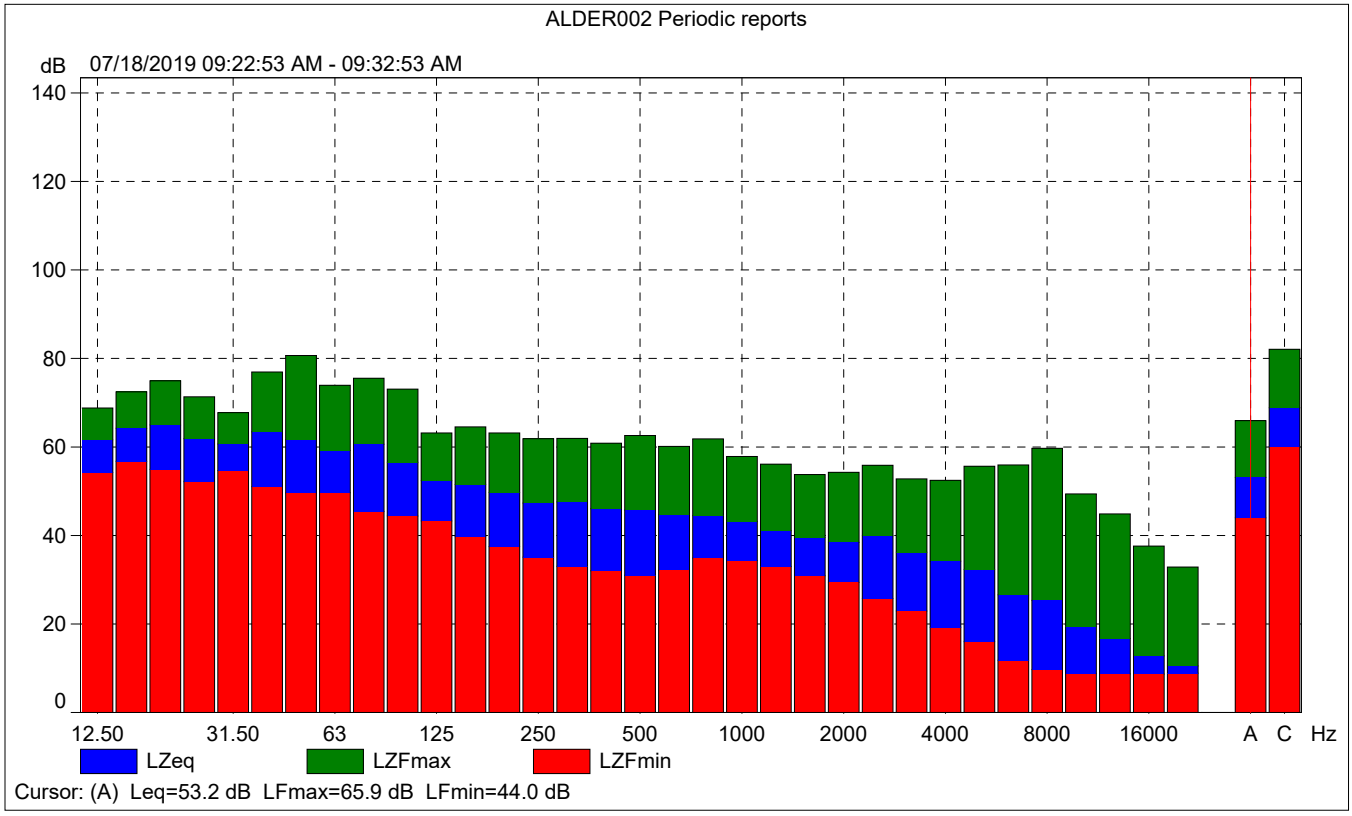
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			53.1	51.7	47.3
Time	09:27:52 AM	0:00:01			
Date	07/18/2019				

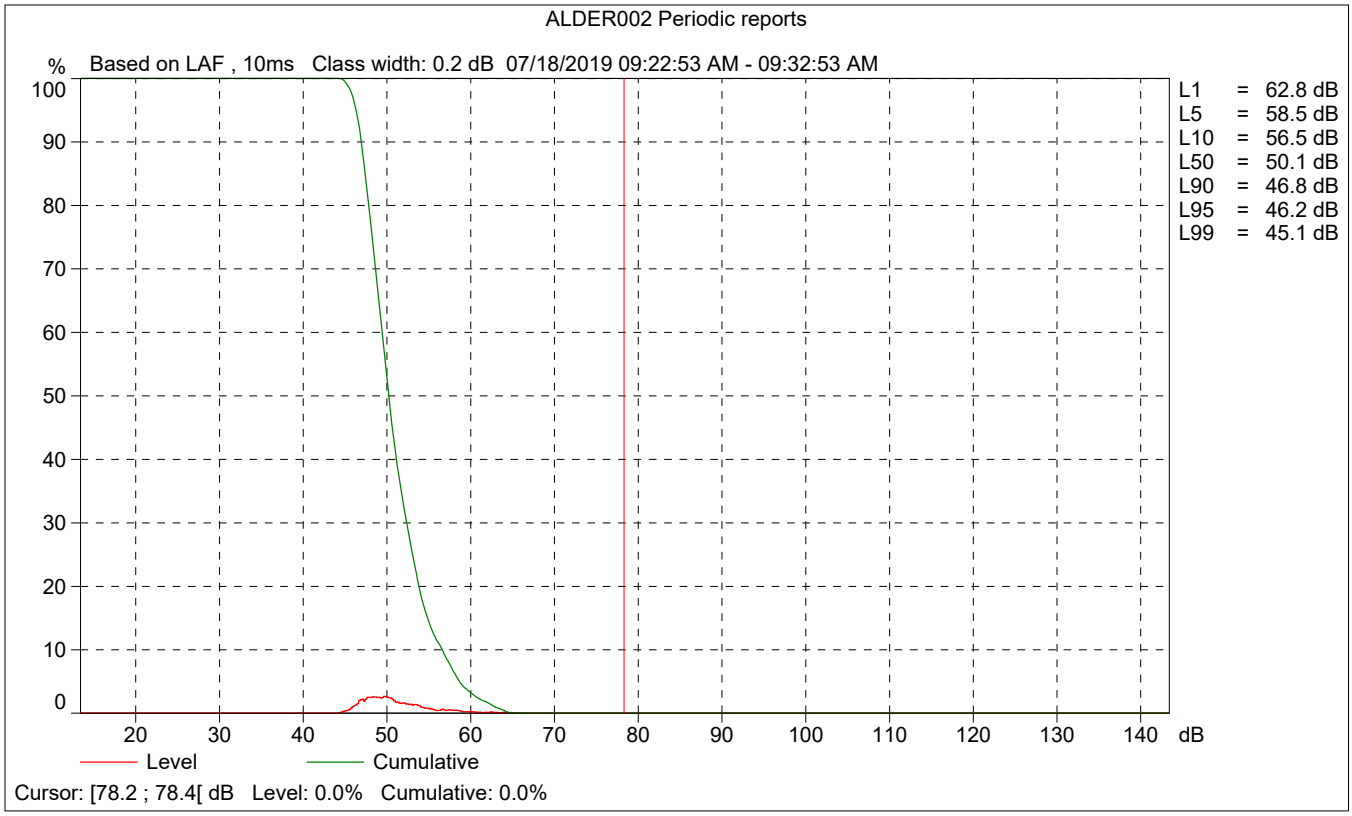

ALDER002
dB
07/18/2019 09:27:52 AM - 09:27:53 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=49.0 dB


ALDER002 Periodic reports
Sound
dB
140
120
100
80
60
40
20
09:30:00 AM
09:40:00 AM
09:50:00 AM
10:00:00 AM
10:10:00 AM
10:20:00 AM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 07/18/2019 09:22:53 AM - 10:22:53 AM LAIeq=55.9 dB LAFmax=65.9 dB LCpeak=90.1 dB LAFmin=44.0 dB

ALDER002 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	55.9	65.9	44.0
Time	09:22:53 AM	0:10:00				
Date	07/18/2019					




ALDER002 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 09:22:53 AM - 09:32:53 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 62.8 dB
L5 = 58.5 dB
L10 = 56.5 dB
L50 = 50.1 dB
L90 = 46.8 dB
L95 = 46.2 dB
L99 = 45.1 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.0%

Site Number: Alder Logistics Site #3			
Recorded By: Pierre Glaize & Clara Eddy			
Job Number: 173563			
Date: 07/18/2019			
Time: 9:43 a.m.			
Location: Corner of Alder Avenue and Slover Avenue.			
Source of Peak Noise: Traffic on Slover Avenue			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
66.2	48.8	82.2	105.2

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**04/08/2019**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**04/08/2019**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**04/08/2019**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**04/08/2019**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = -0.01		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	2 mph	76°	29.94

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.4
Start Time:		07/18/2019 09:43:52
End Time:		07/18/2019 09:53:52
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.11

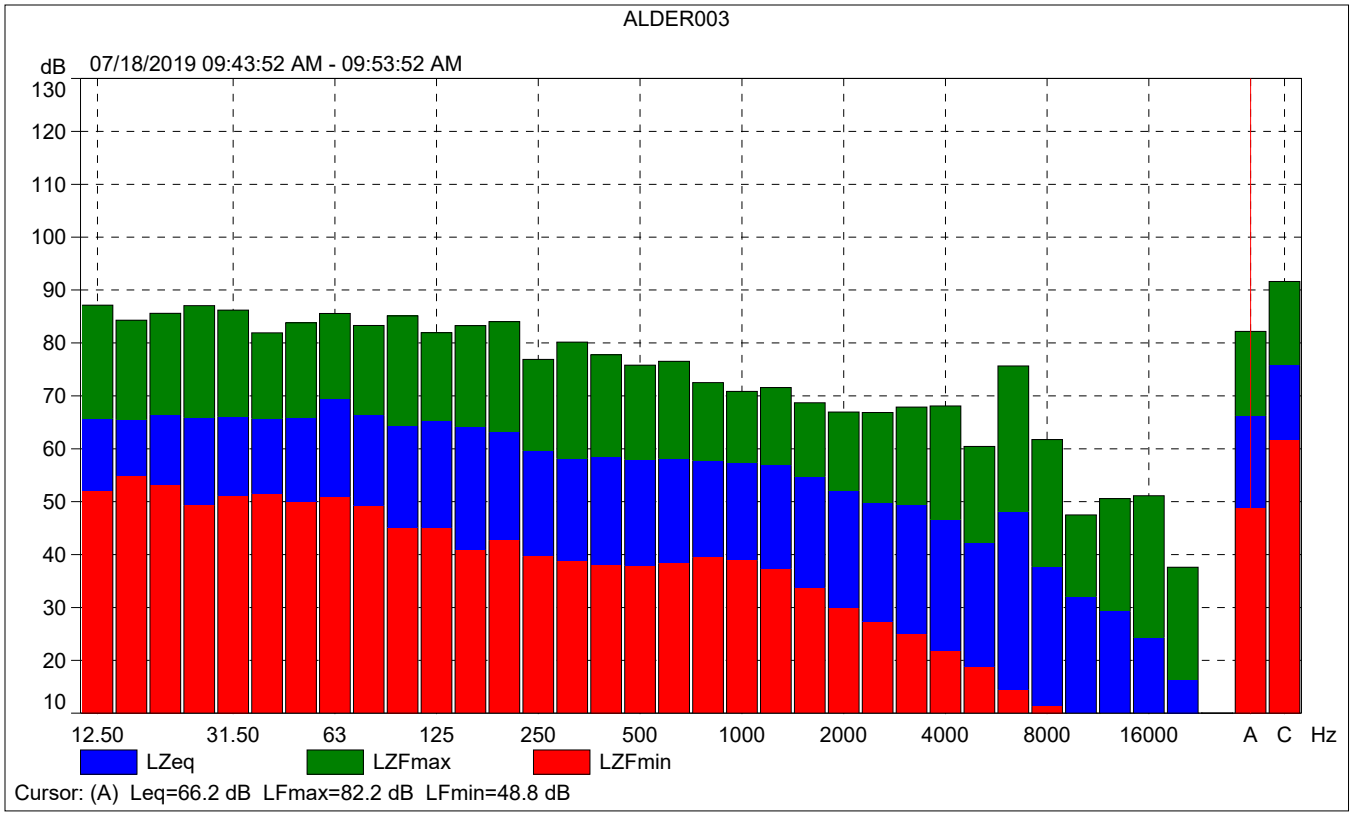
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

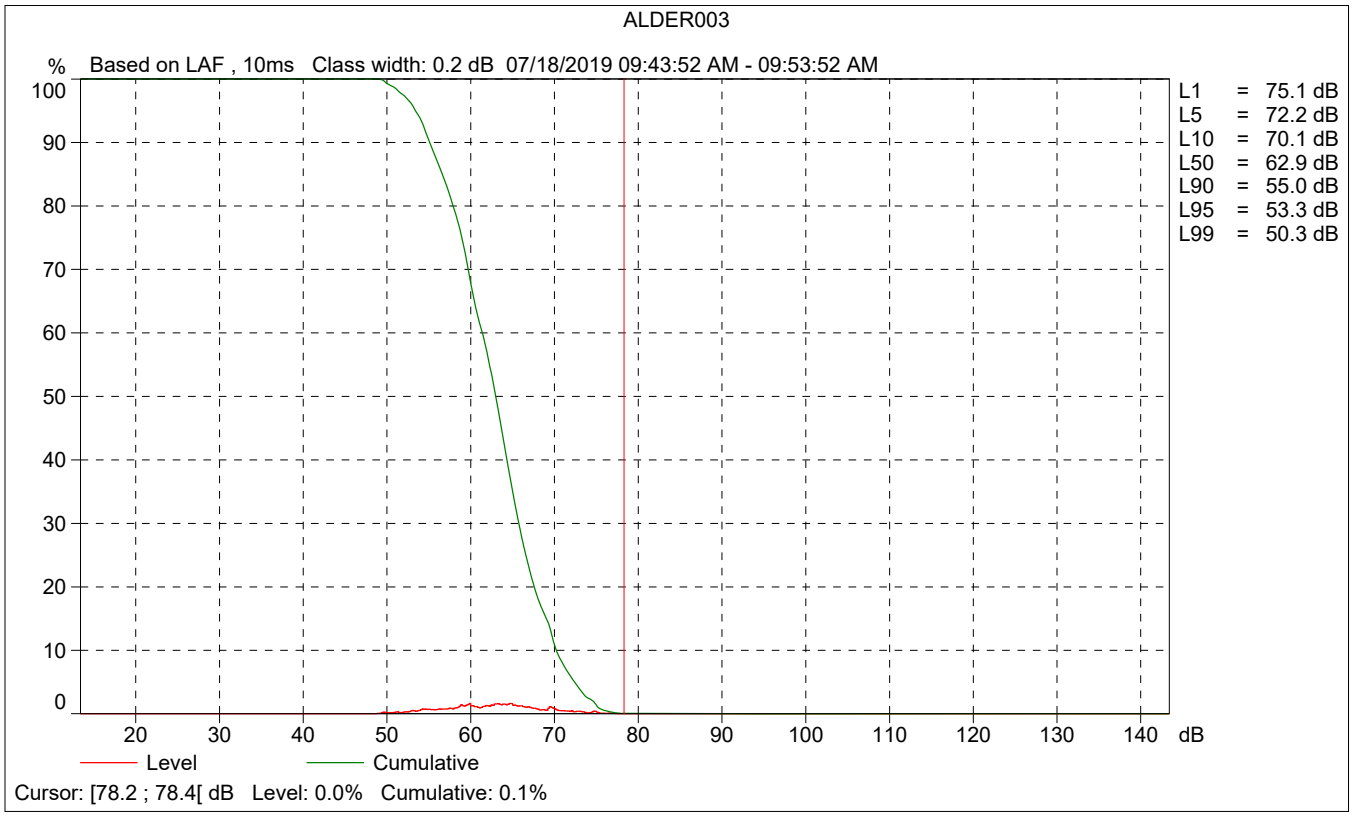
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

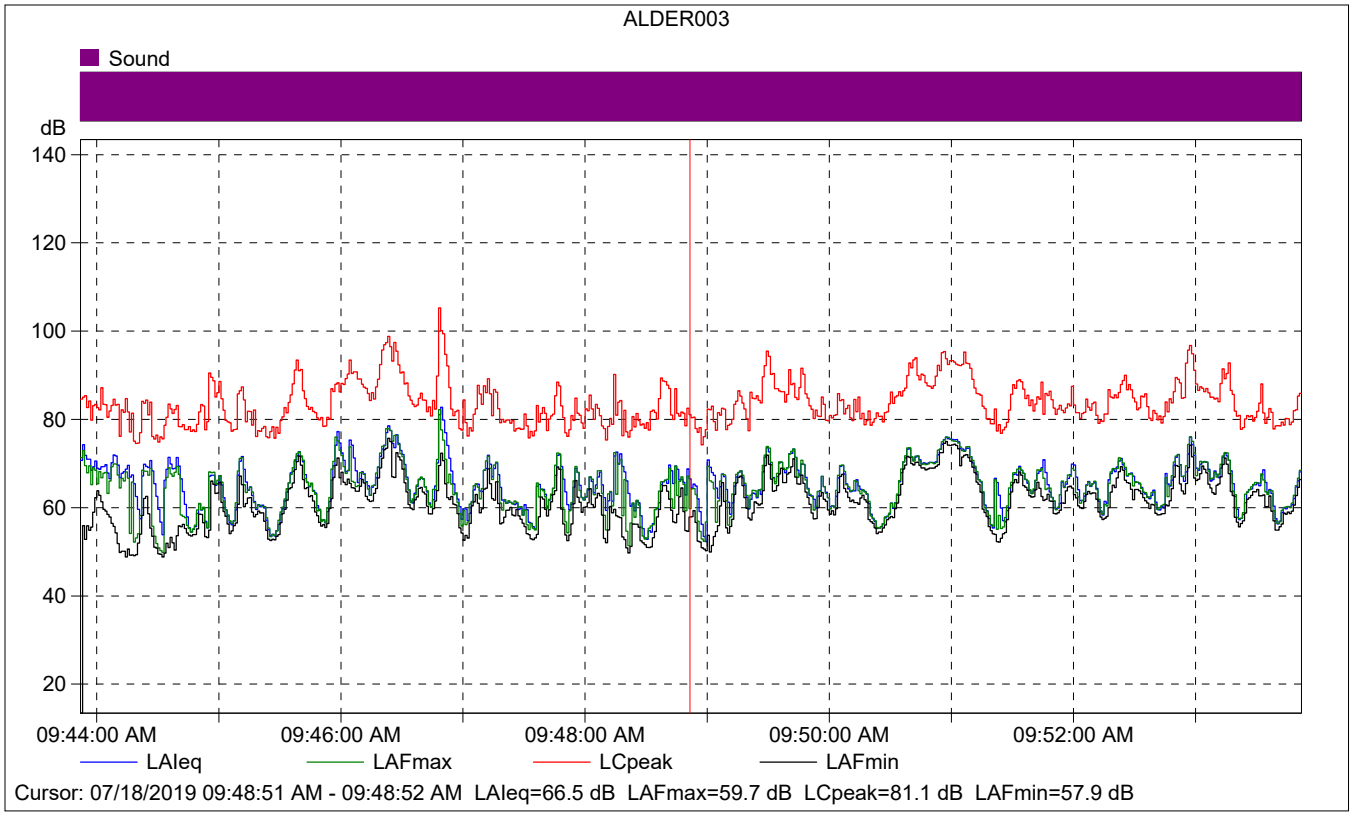
Calibration Time:		07/18/2019 07:38:08
Calibration Type:		External reference
Sensitivity:		43.69230940938 mV/Pa

ALDER003

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	66.2	82.2	48.8
Time	09:43:52 AM	09:53:52 AM	0:10:00				
Date	07/18/2019	07/18/2019					

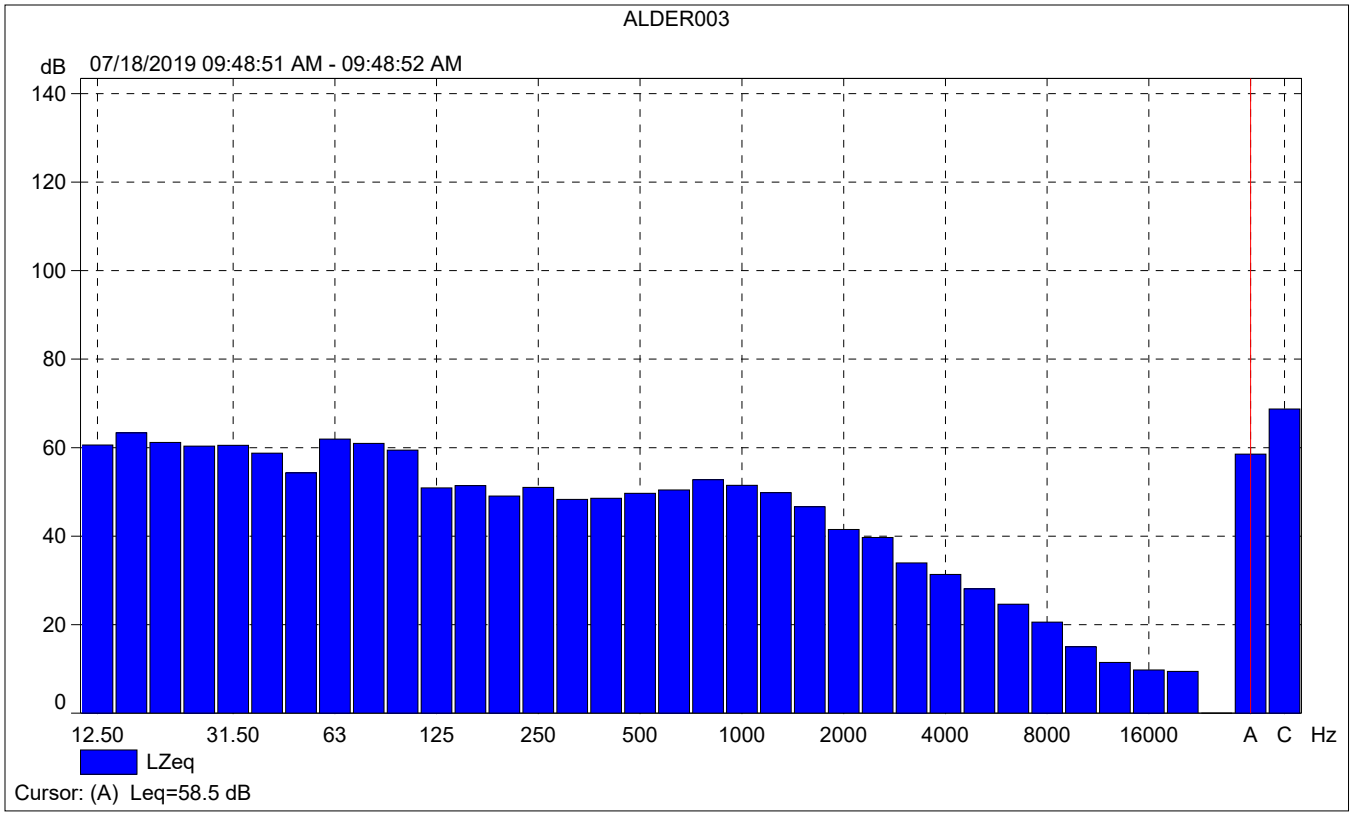

ALDER003
dB
07/18/2019 09:43:52 AM - 09:53:52 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=66.2 dB LFmax=82.2 dB LFmin=48.8 dB

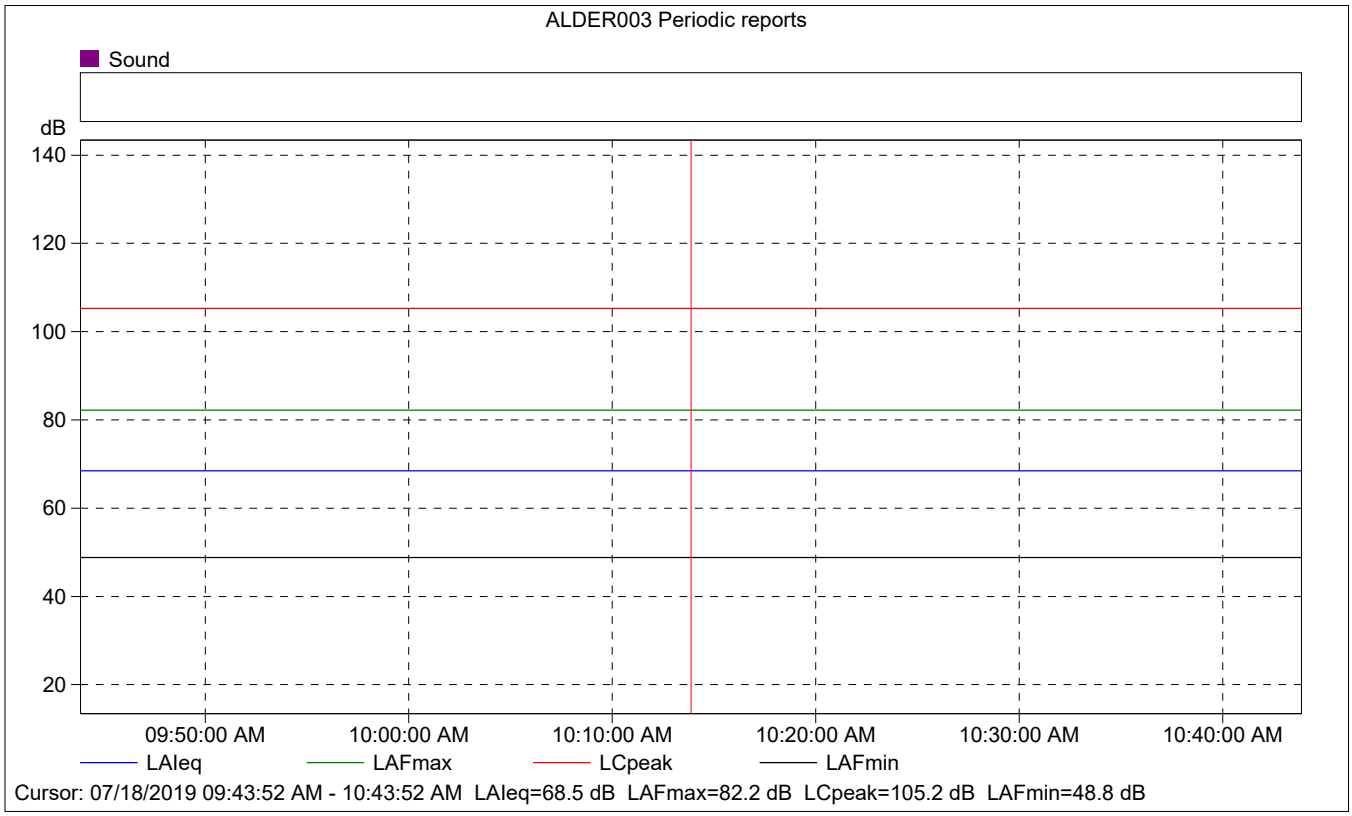

ALDER003
%
Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 09:43:52 AM - 09:53:52 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 75.1 dB
L5 = 72.2 dB
L10 = 70.1 dB
L50 = 62.9 dB
L90 = 55.0 dB
L95 = 53.3 dB
L99 = 50.3 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.1%



ALDER003

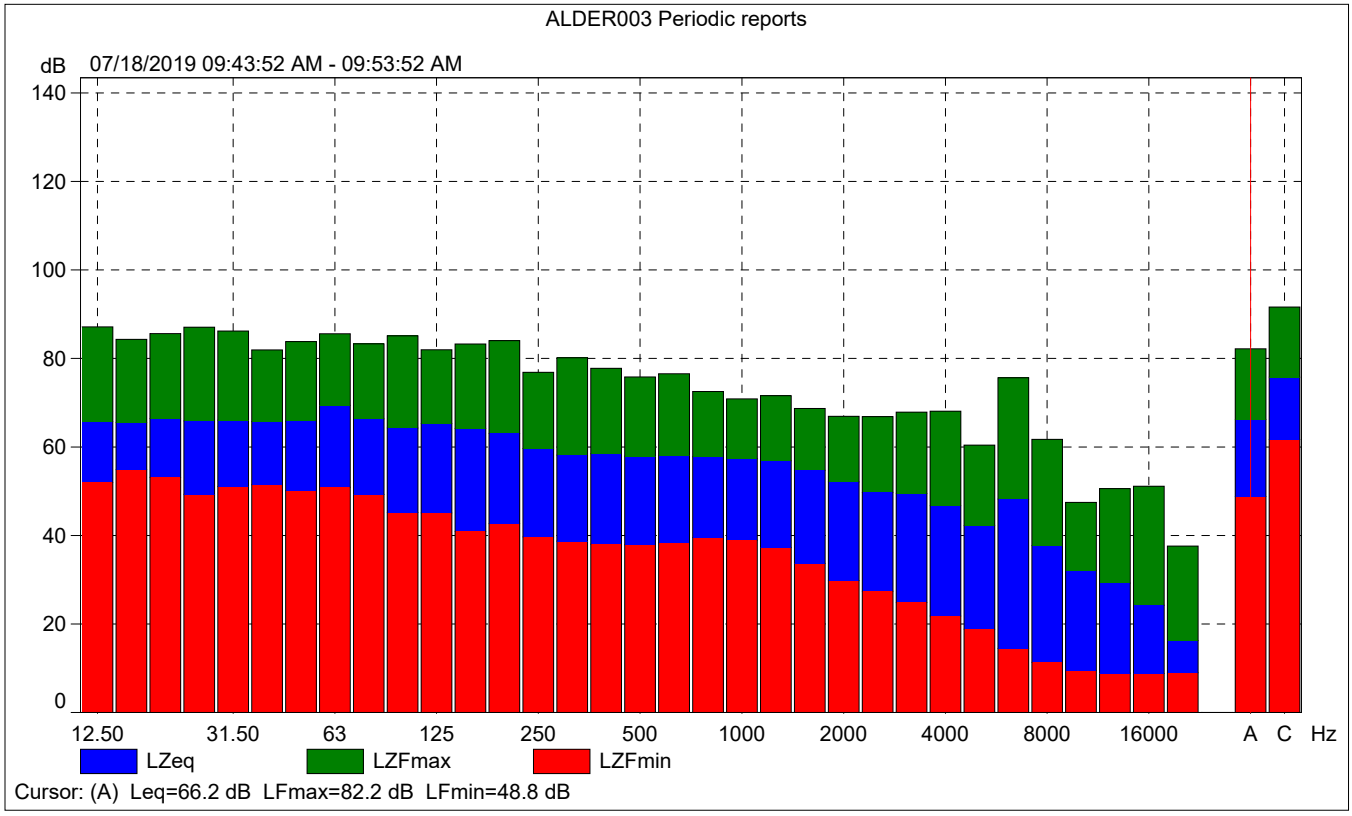
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			66.5	59.7	57.9
Time	09:48:51 AM	0:00:01			
Date	07/18/2019				

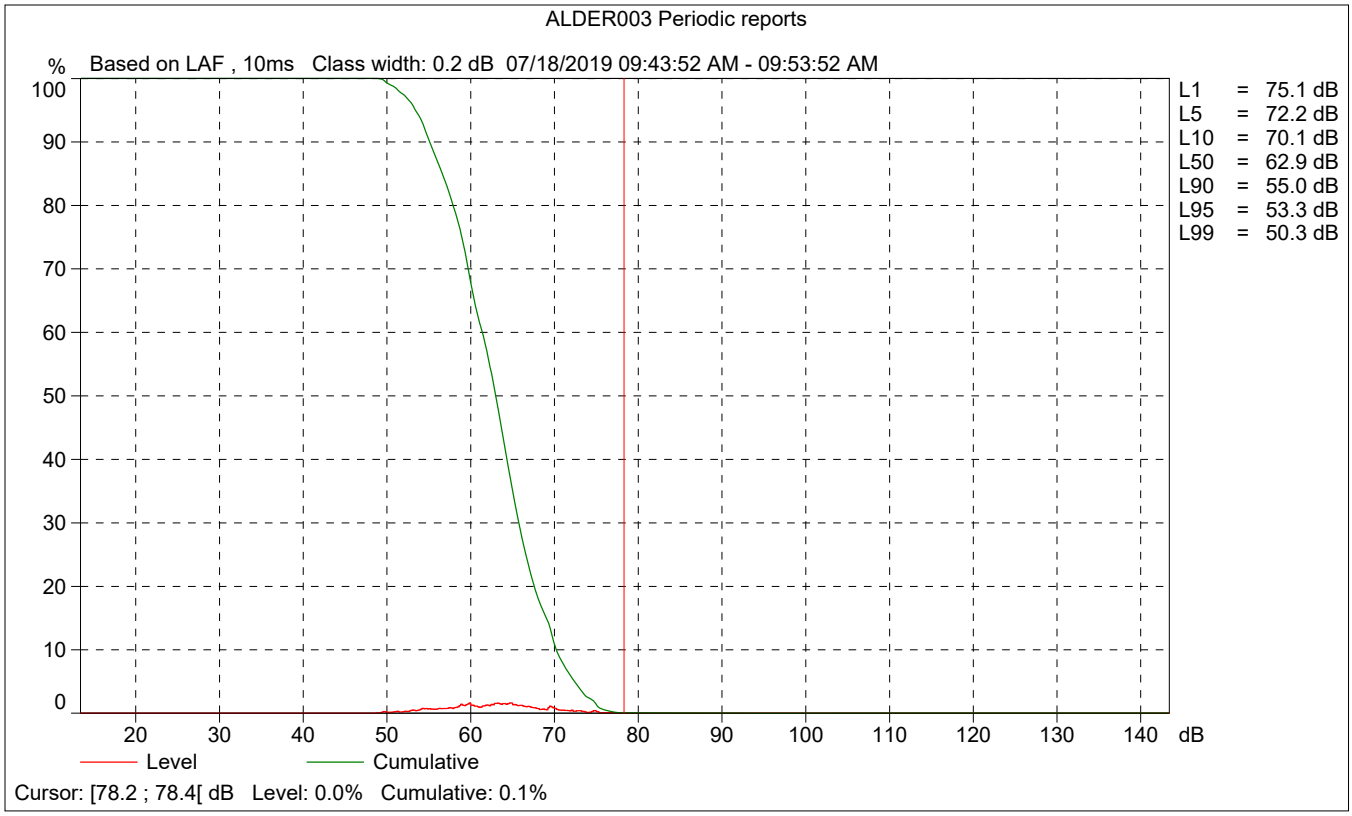

ALDER003
dB
07/18/2019 09:48:51 AM - 09:48:52 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=58.5 dB


ALDER003 Periodic reports
Sound
dB
140
120
100
80
60
40
20
09:50:00 AM
10:00:00 AM
10:10:00 AM
10:20:00 AM
10:30:00 AM
10:40:00 AM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 07/18/2019 09:43:52 AM - 10:43:52 AM LAIeq=68.5 dB LAFmax=82.2 dB LCpeak=105.2 dB LAFmin=48.8 dB

ALDER003 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	68.5	82.2	48.8
Time	09:43:52 AM	0:10:00				
Date	07/18/2019					




ALDER003 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 09:43:52 AM - 09:53:52 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 75.1 dB
L5 = 72.2 dB
L10 = 70.1 dB
L50 = 62.9 dB
L90 = 55.0 dB
L95 = 53.3 dB
L99 = 50.3 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.1%

Site Number: Alder Logistics Site #4			
Recorded By: Pierre Glaize & Clara Eddy			
Job Number: 173563			
Date: 07/18/2019			
Time: 10:03 a.m.			
Location: Off of Slover Avenue, adjacent to 17820 Slover Avenue (Prologic warehouse) and water main.			
Source of Peak Noise: Traffic along Slover Avenue.			
Noise Data			
Leq (dB)	**Lmin (dB)**	**Lmax (dB)**	**Peak (dB)**
65.3	45.3	79.2	104.7

Equipment						
Category	**Type**	**Vendor**	**Model**	**Serial No.**	**Cert. Date**	**Note**
Sound	Sound Level Meter	**Brüel & Kjær**	**2250**	**3011133**	**04/08/2019**	
	Microphone	**Brüel & Kjær**	**4189**	**3086765**	**04/08/2019**	
	Preamp	**Brüel & Kjær**	**ZC 0032**	**25380**	**04/08/2019**	
	Calibrator	**Brüel & Kjær**	**4231**	**2545667**	**04/08/2019**	

Weather Data			
Est.	**Duration:** 10 minutes		**Sky:** Sunny
	Note: dBA Offset = -0.01		**Sensor Height (ft):** 5 ft
	Wind Ave Speed (mph / m/s)	**Temperature (degrees Fahrenheit)**	**Barometer Pressure (inches)**
	4 mph	77°	29.94

Photo of Measurement Location

2250

Instrument:		2250
Application:		BZ7225 Version 4.7.4
Start Time:		07/18/2019 10:03:20
End Time:		07/18/2019 10:13:20
Elapsed Time:		00:10:00
Bandwidth:		1/3-octave
Max Input Level:		142.11

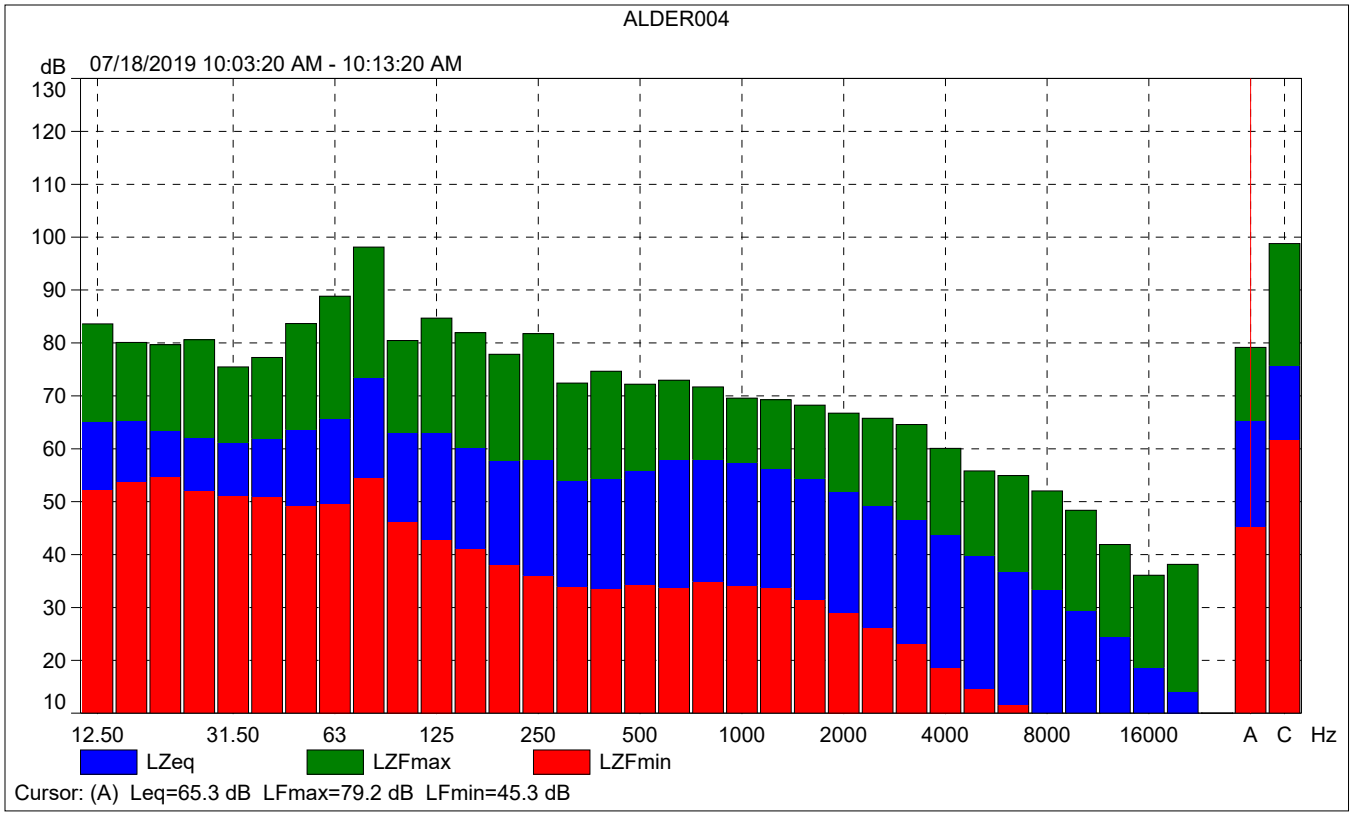
	Time	Frequency
Broadband (excl. Peak):	FSI	AC
Broadband Peak:		C
Spectrum:	FS	Z

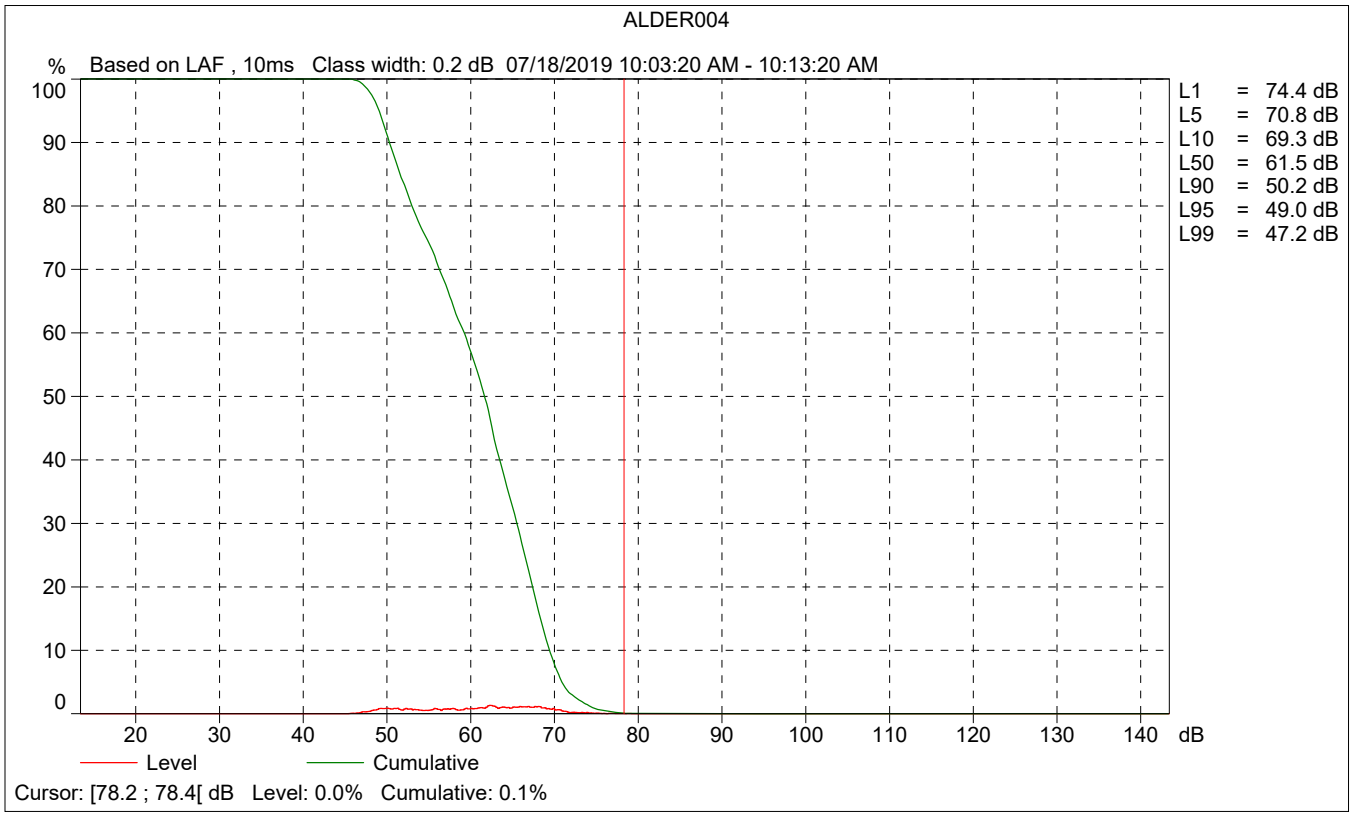
Instrument Serial Number:		3011133
Microphone Serial Number:		3086765
Input:		Top Socket
Windscreen Correction:		UA-1650
Sound Field Correction:		Free-field

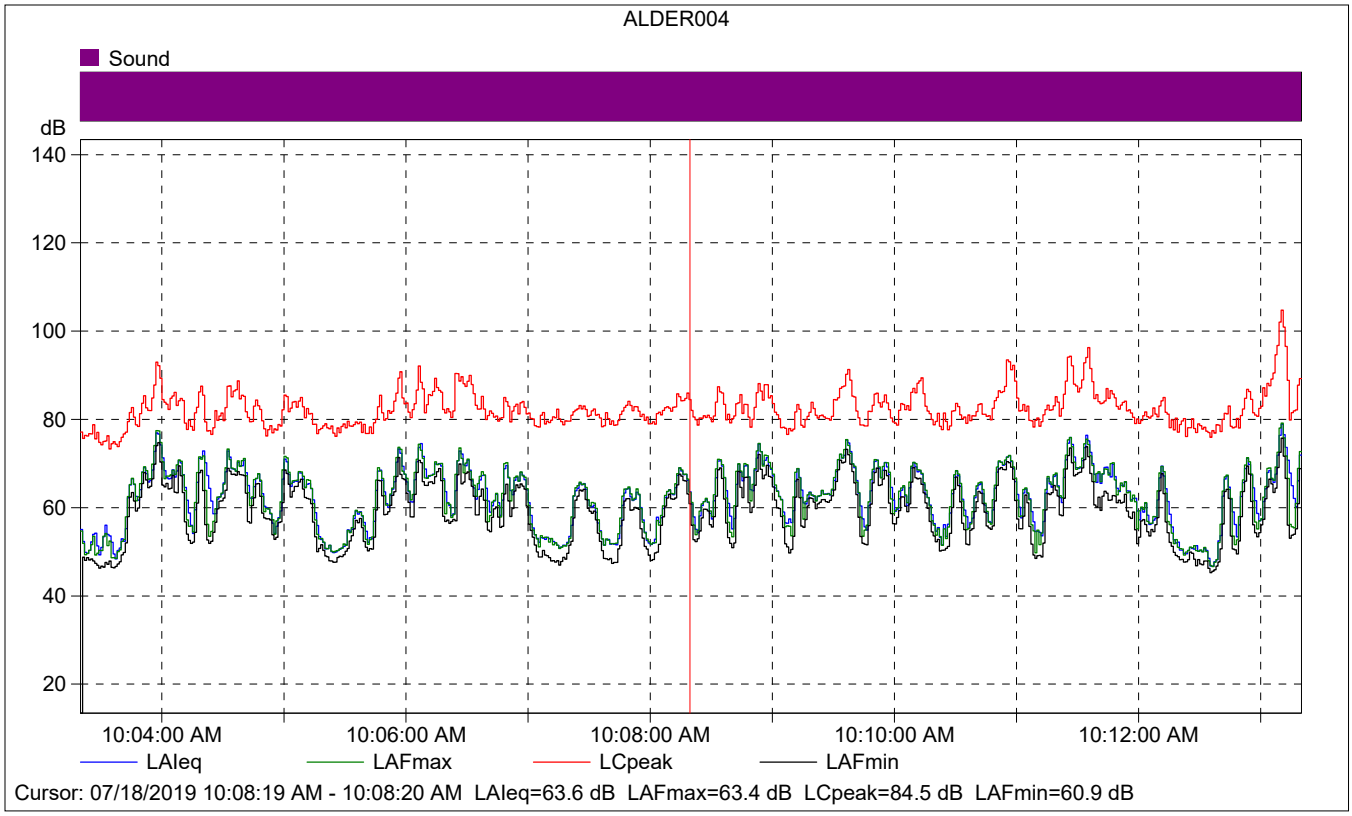
Calibration Time:		07/18/2019 07:38:08
Calibration Type:		External reference
Sensitivity:		43.69230940938 mV/Pa

ALDER004

	Start time	End time	Elapsed time	Overload [%]	LAeq [dB]	LAFmax [dB]	LAFmin [dB]
Value				0.00	65.3	79.2	45.3
Time	10:03:20 AM	10:13:20 AM	0:10:00				
Date	07/18/2019	07/18/2019					

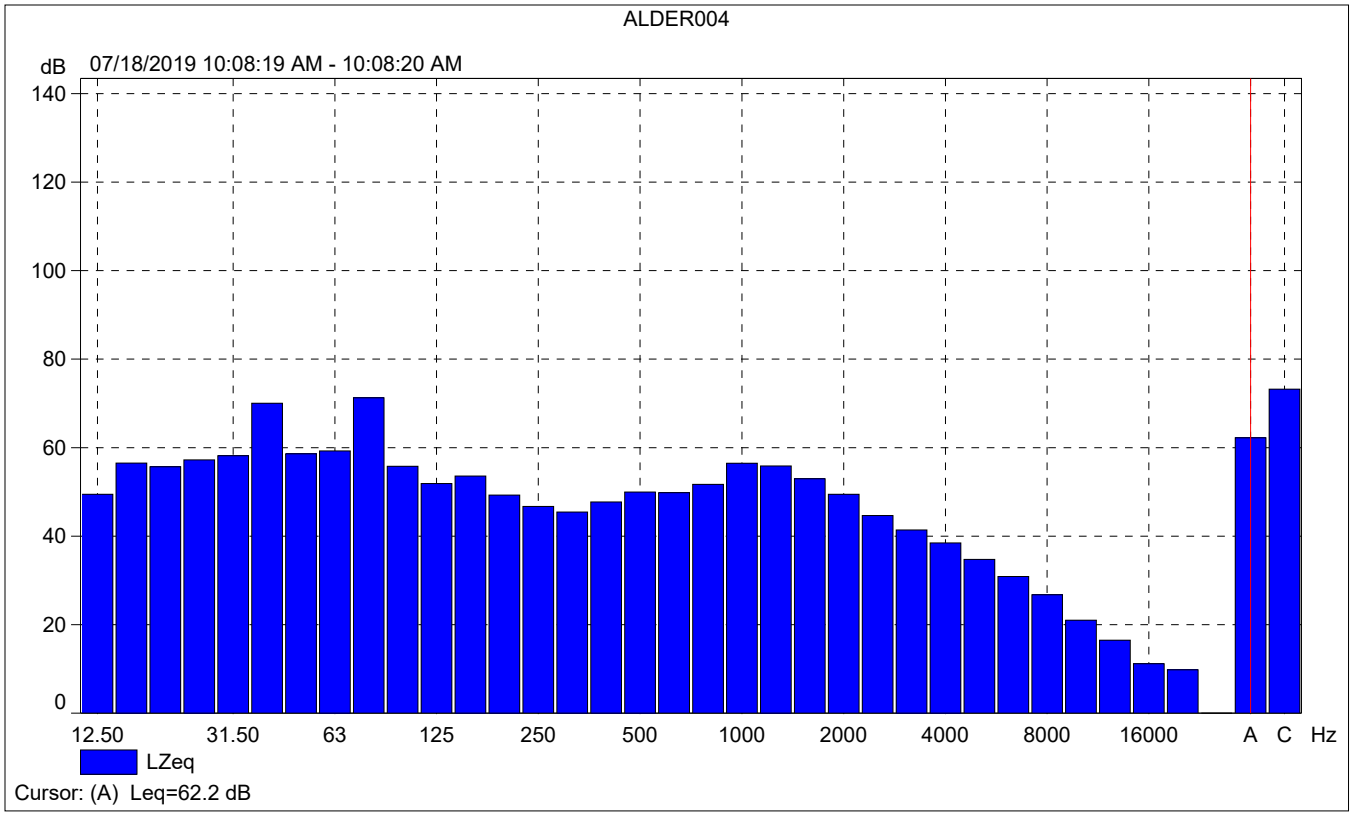

ALDER004
dB
07/18/2019 10:03:20 AM - 10:13:20 AM
130
120
110
100
90
80
70
60
50
40
30
20
10
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
LZFmax
LZFmin
Cursor: (A) Leq=65.3 dB LFmax=79.2 dB LFmin=45.3 dB

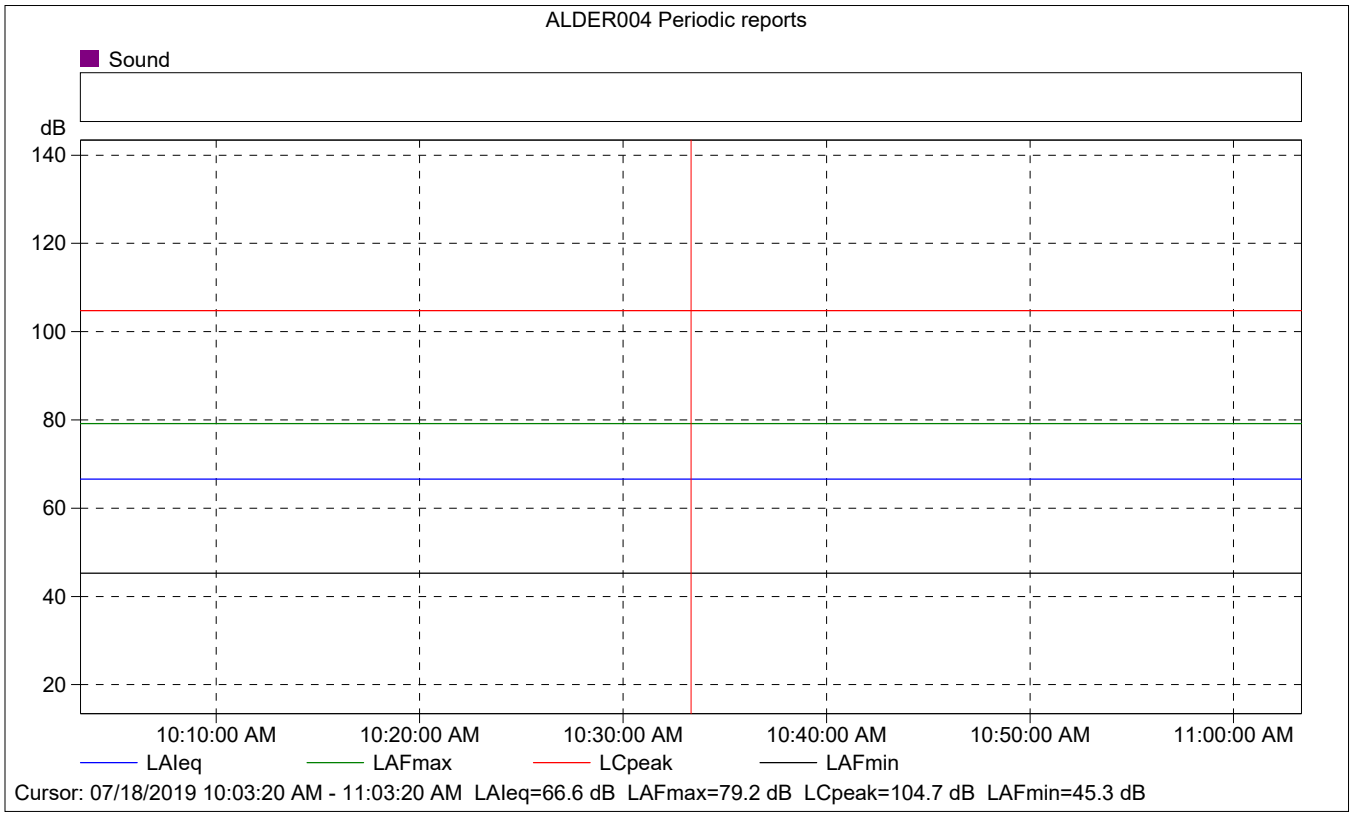

ALDER004
%
Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 10:03:20 AM - 10:13:20 AM
100
90
80
70
60
50
40
30
20
10
0
20
30
40
50
60
70
80
90
100
110
120
130
140
dB
L1 = 74.4 dB
L5 = 70.8 dB
L10 = 69.3 dB
L50 = 61.5 dB
L90 = 50.2 dB
L95 = 49.0 dB
L99 = 47.2 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.1%



ALDER004

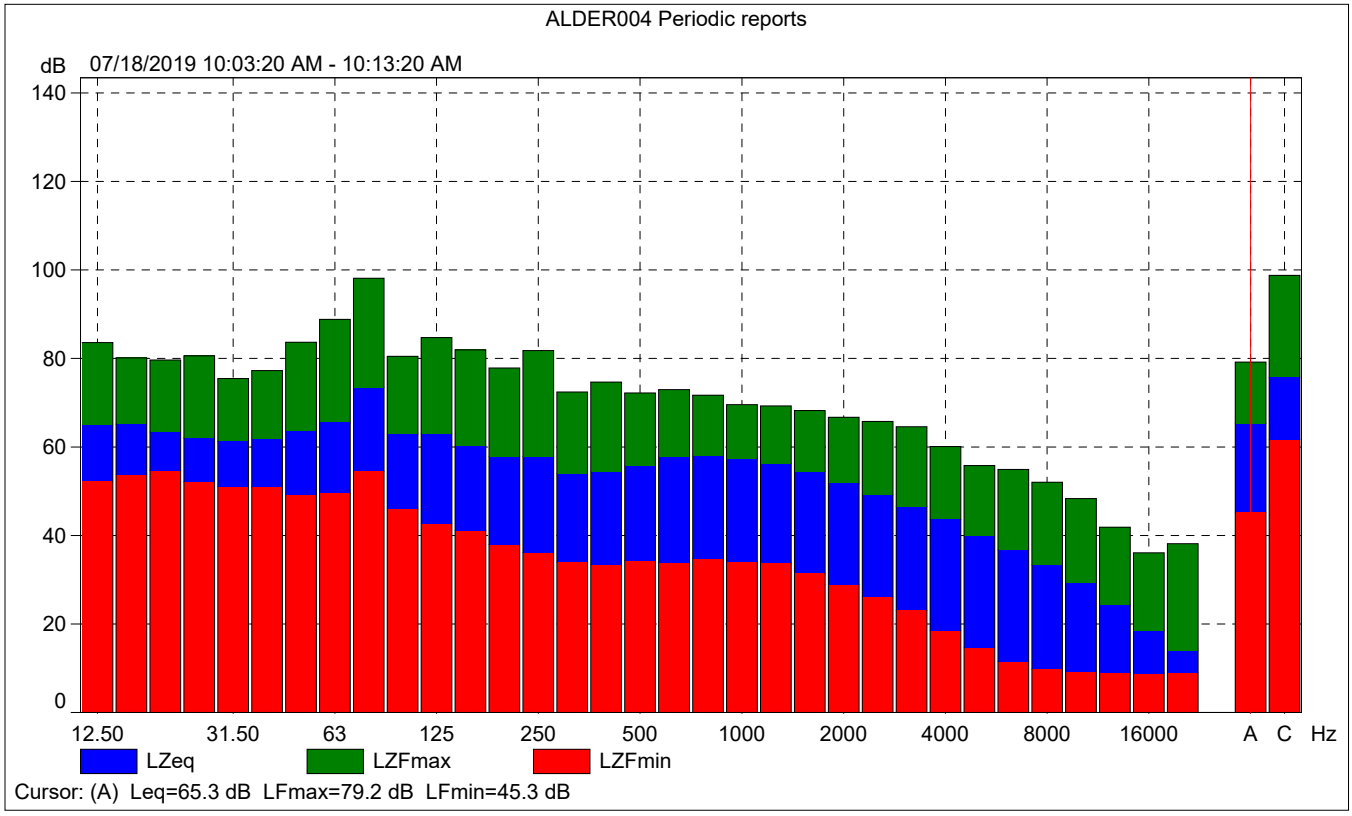
	Start time	Elapsed time	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			63.6	63.4	60.9
Time	10:08:19 AM	0:00:01			
Date	07/18/2019				

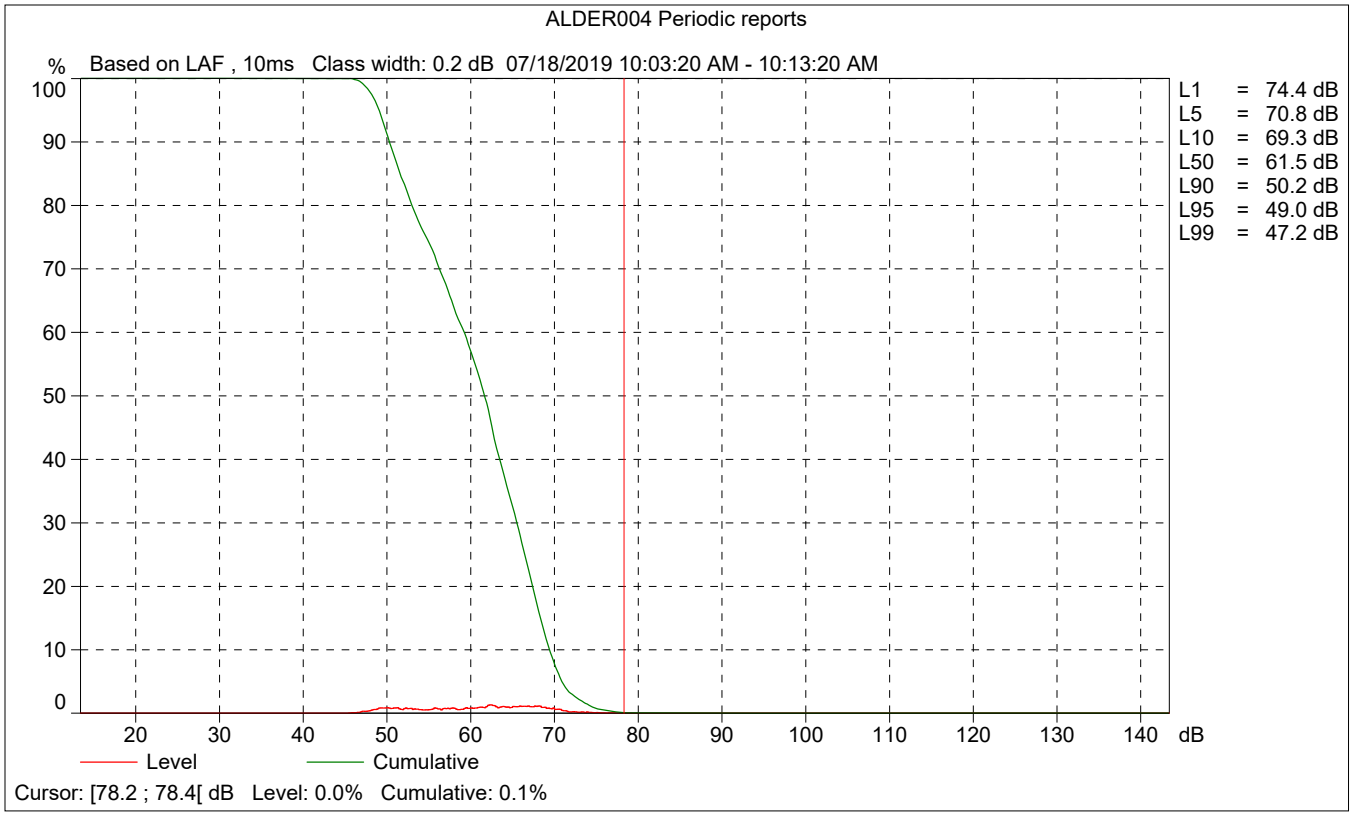

ALDER004
dB
07/18/2019 10:08:19 AM - 10:08:20 AM
140
120
100
80
60
40
20
0
12.50
31.50
63
125
250
500
1000
2000
4000
8000
16000
A
C
Hz
LZeq
Cursor: (A) Leq=62.2 dB


ALDER004 Periodic reports
Sound
dB
140
120
100
80
60
40
20
10:10:00 AM
10:20:00 AM
10:30:00 AM
10:40:00 AM
10:50:00 AM
11:00:00 AM
LAIeq
LAFmax
LCpeak
LAFmin
Cursor: 07/18/2019 10:03:20 AM - 11:03:20 AM LAIeq=66.6 dB LAFmax=79.2 dB LCpeak=104.7 dB LAFmin=45.3 dB

ALDER004 Periodic reports

	Start time	Elapsed time	Overload [%]	LAIeq [dB]	LAFmax [dB]	LAFmin [dB]
Value			0.00	66.6	79.2	45.3
Time	10:03:20 AM	0:10:00				
Date	07/18/2019					




ALDER004 Periodic reports
% Based on LAF , 10ms Class width: 0.2 dB 07/18/2019 10:03:20 AM - 10:13:20 AM
100
90
80
70
60
50
40
30
20
10
0
20 30 40 50 60 70 80 90 100 110 120 130 140 dB
L1 = 74.4 dB
L5 = 70.8 dB
L10 = 69.3 dB
L50 = 61.5 dB
L90 = 50.2 dB
L95 = 49.0 dB
L99 = 47.2 dB
Level
Cumulative
Cursor: [78.2 ; 78.4[dB Level: 0.0% Cumulative: 0.1%

Session Report

7/18/2019

Information Panel

Name	S151_BIJ090043_18072019_122654
Start Time	7/17/2019 10:32:13 AM
Stop Time	7/18/2019 10:34:07 AM
Device Name	BIJ090043
Model Type	SoundPro DL
Device Firmware Rev	R.13H
Comments	

Summary Data Panel

Description	Meter	Value	Description	Meter	Value
Leq	1	61.5 dB			
Exchange Rate	1	3 dB	Weighting	1	A
Response	1	SLOW	Bandwidth	1	1/1
Exchange Rate	2	3 dB	Weighting	2	C
Response	2	SLOW			

Statistics Table

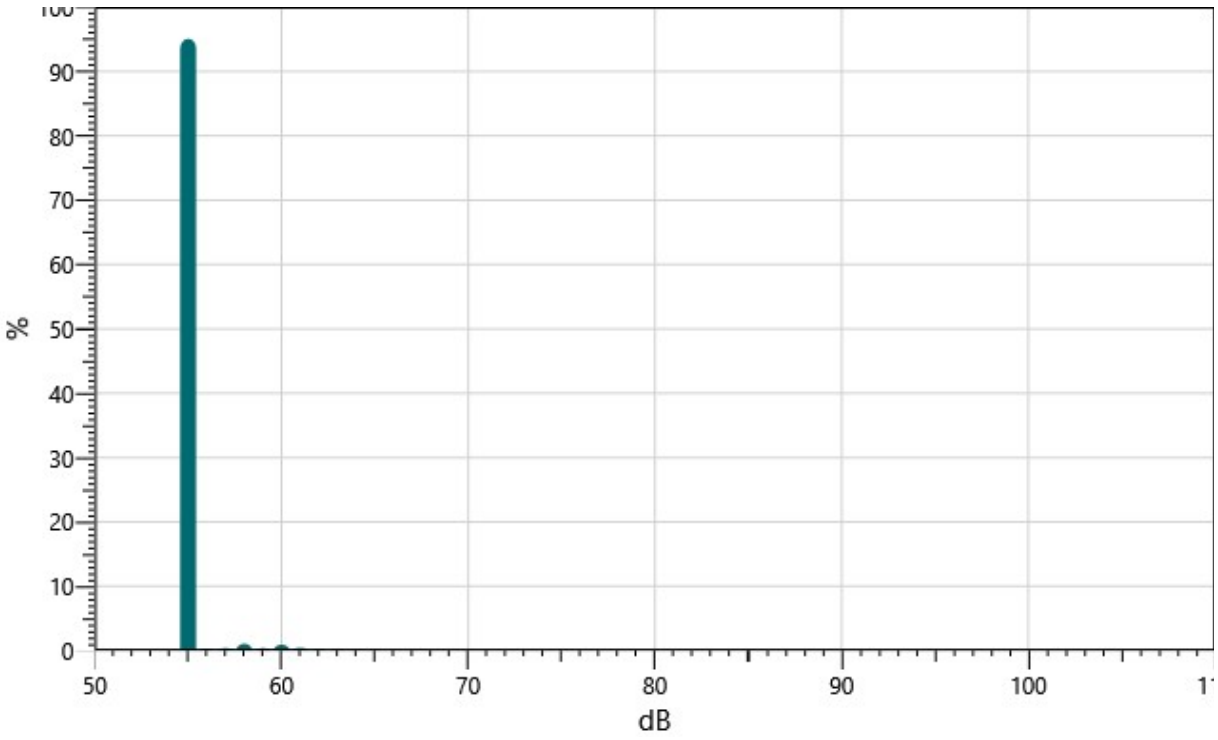
dB:	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	%
50:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
51:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55:	0.00	0.00	0.00	94.42	0.42	0.08	0.05	0.04	0.04	0.04	95.08
56:	0.04	0.04	0.01	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.30
57:	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.41
58:	0.06	0.07	0.11	0.51	0.15	0.05	0.04	0.04	0.04	0.03	1.09
59:	0.03	0.04	0.02	0.03	0.03	0.03	0.03	0.04	0.06	0.10	0.42
60:	0.24	0.42	0.06	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.95
61:	0.04	0.04	0.05	0.09	0.06	0.04	0.04	0.04	0.03	0.03	0.47
62:	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.23
63:	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.21
64:	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.17
65:	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.13

66:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.10
67:	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.08
68:	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05
69:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
70:	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.06
71:	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.06
72:	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.04
73:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
74:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
75:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
76:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
77:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
78:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
79:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
80:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
81:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
87:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
89:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
91:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
93:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
96:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
97:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
98:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
99:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
101:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
102:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
103:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

106:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
108:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
109:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Statistics Chart

S151_BIJ090043_18072019_122654: Statistics Chart

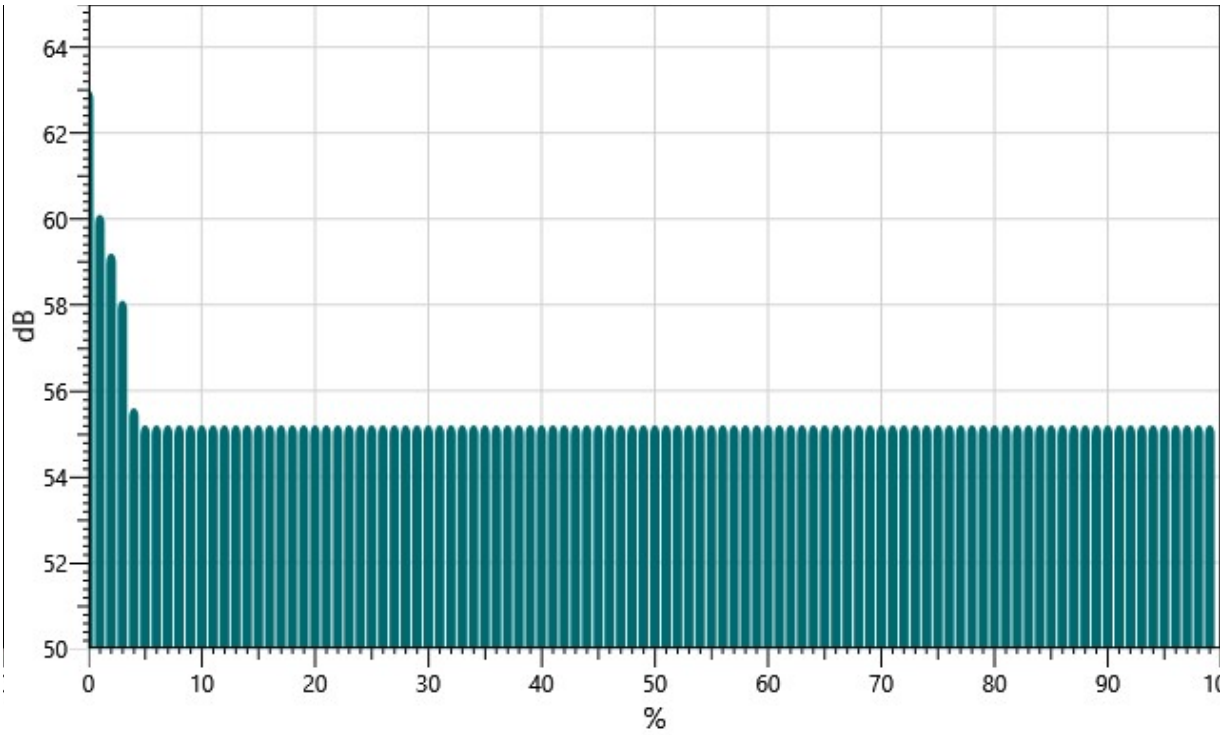


Exceedance Table

.	0%	1%	2%	3%	4%	5%	6%	%7	%8	%9
0%:		63.0	60.1	59.2	58.1	55.6	55.2	55.2	55.2	55.2
10%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
20%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
30%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
40%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
50%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
60%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
70%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
80%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
90%:	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2	55.2
100%:	55.2									

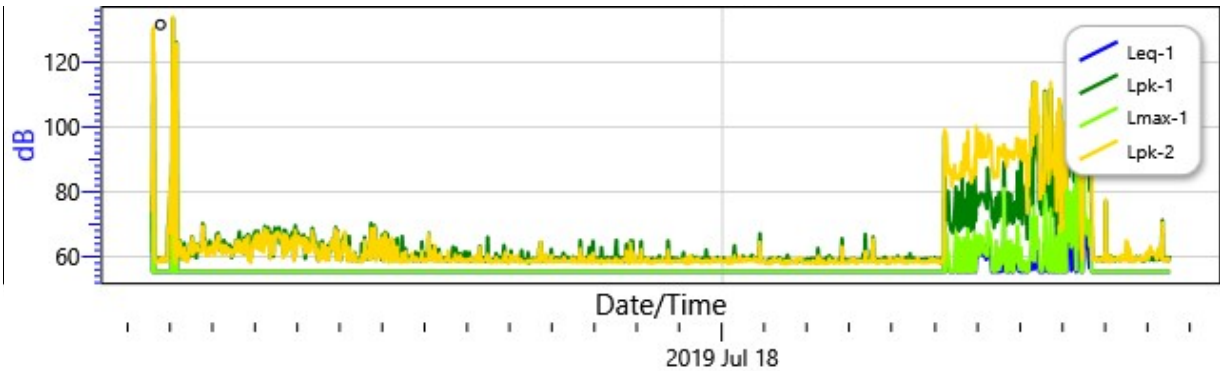
Exceedance Chart

S151_BIJ090043_18072019_122654: Exceedance Chart



Logged Data Chart

S151_BIJ090043_18072019_122654: Logged Data Chart



Session Report

7/18/2019

General Information

Name	S151_BIJ090043_18072019_122654
Comments	
Start Time	7/17/2019 10:32:13 AM
Stop Time	7/18/2019 10:34:07 AM
Run Time	1.00:01:54
Model Type	SoundPro DL
Serial Number	BIJ090043
Device Firmware Rev	R.13H
Company Name	
Description	
Location	
User Name	

Summary Data

Description	Meter	Value	Description	Meter	Value
Dose	1	0.4 %	Pdose (1.00:00)	1	0.4 %
Lavg	1	--	Lpk	1	133.4 dB
Leq	1	61.5 dB	TWA	1	66.3 dB
UL Time	1	00:00:00	SEL	1	110.9 dB
ProjectedTWA (1.00:00)	1	66.3 dB	Mntime	1	7/17/2019 10:32:13 AM
Mxtime	1	7/17/2019 11:03:02 AM	PKtime	1	7/17/2019 11:03:01 AM
Weighting	1	--	Range Ceiling	1	--
Criterion Level	1	--	ULL	1	--
Dynamic Range	1	--	Exchange Rate	1	--
Response	1	--	Int Threshold	1	--
Alarm Level 1	1	--	AlarmLevel2	1	--
Dosimeter Name	1	--			
Dose	2	6.5 %	Pdose (1.00:00)	2	2.2 %
Lavg	2	--	Lpk	2	133.9 dB
Leq	2	73.3 dB	TWA	2	78.1 dB
UL Time	2	00:00:00	SEL	2	122.7 dB
ProjectedTWA (1.00:00)	2	73.3 dB	Mntime	2	7/17/2019 10:32:13 AM
Mxtime	2	7/17/2019 11:03:02 AM	PKtime	2	7/17/2019 11:03:01 AM

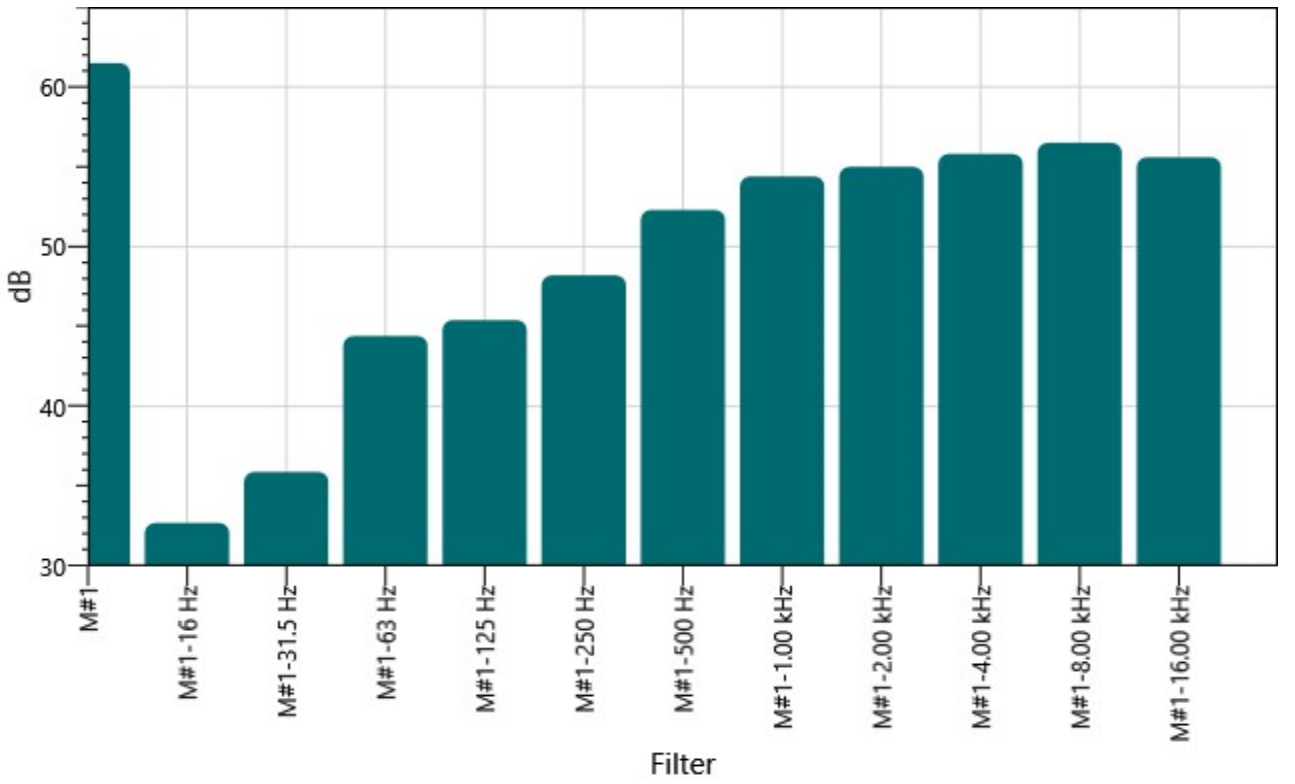
Description	Meter	Value	Description	Meter	Value
Weighting	2	C	Range Ceiling	2	--
Criterion Level	2	90 dB	ULL	2	115 dB
Dynamic Range	2	--	Exchange Rate	2	3 dB
Response	2	SLOW	Integrating Threshold	2	80 dB
Alarm Level 1	2	--	AlarmLevel2	2	--
Dosimeter Name	2	--			

Calibration History

Date	Calibration Action	Level	Cal. Model Type	Serial Number	Cert. Due Date
7/15/2019 2:34:00 PM	Calibration	114.0			

Filter Summary Chart

S151_BIJ090043_18072019_122654: Filter Summary Chart - Leq



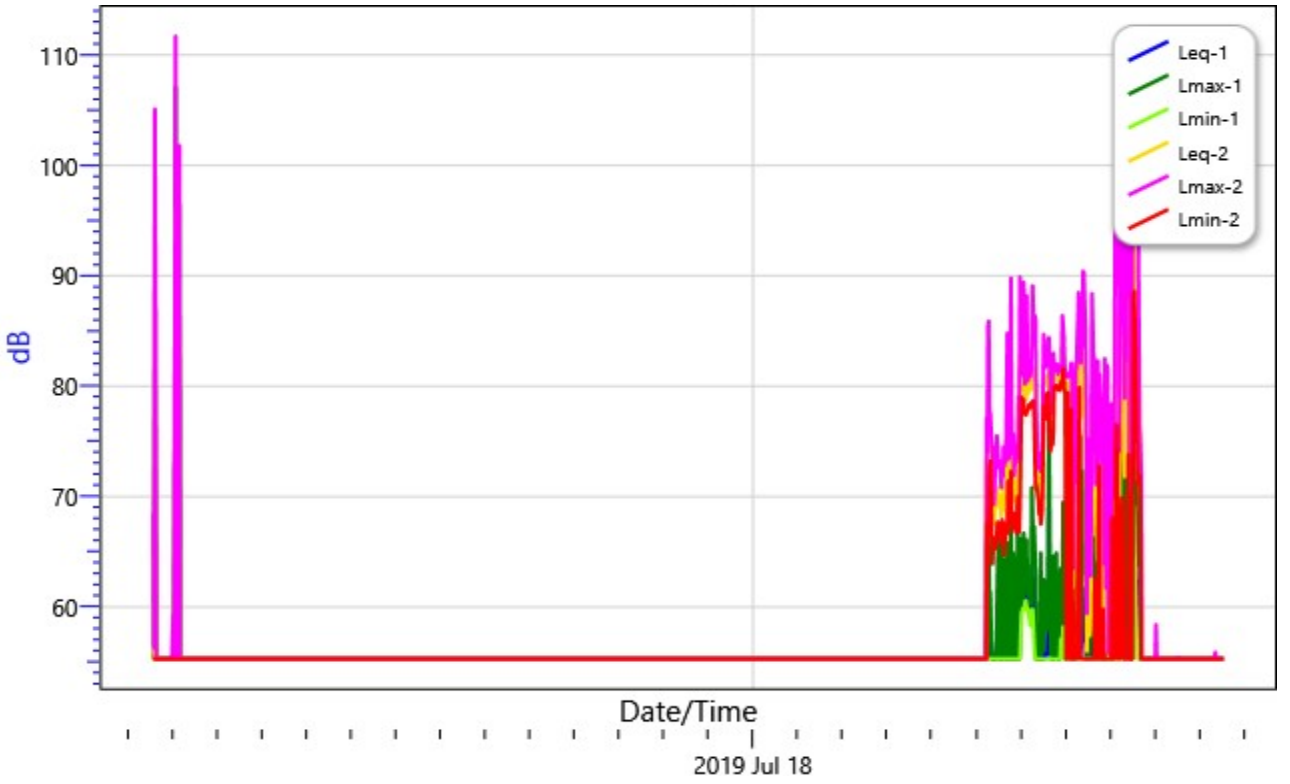
Filter Summary - Dose

Filter	Dose
M#1	0.4 %
M#1-16 Hz	0 %
M#1-31.5 Hz	0 %
M#1-63 Hz	0 %
M#1-125 Hz	0 %

Filter	Dose
M#1-250 Hz	0 %
M#1-500 Hz	0.1 %
M#1-1.00 kHz	0.1 %
M#1-2.00 kHz	0.1 %
M#1-4.00 kHz	0.1 %
M#1-8.00 kHz	0.1 %
M#1-16.00 kHz	0.1 %

Logged Data Chart

S151_BIJ090043_18072019_122654: Logged Data Chart - Read Only



Michael Baker International
Pierre Glaize

21 August 2019
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing Lden	Impact Criteria Lden	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
SR 1	1	1	942.3	616.1	1,095.00	4.92	0.00	66	10.0	8.0	Y
SR 2	2	1	915.7	576.7	1,095.00	4.92	0.00	66	10.0	8.0	Y
SR 3	3	1	916.6	547.4	1,095.00	4.92	0.00	66	10.0	8.0	Y
SR 4	4	1	956.8	51.9	1,085.00	4.92	0.00	66	10.0	8.0	Y
SR 5	5	1	739.8	-22.5	1,085.00	4.92	0.00	66	10.0	8.0	Y
SR 6	6	1	720.1	-151.1	1,085.00	4.92	0.00	66	10.0	8.0	Y

Michael Baker International 21 August 2019
Pierre Glaize TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
N_Alder Avenue1	12.0	point1	1	861.2	-396.9	1,085.00				Average	
		point2	2	856.5	56.6	1,090.00					
S_Alder Avenue	12.0	point8	8	834.9	707.6	1,100.00				Average	
		point7	7	839.9	343.5	1,095.00				Average	
		point6	6	843.0	49.3	1,090.00					
W_Slover Avenue	24.0	point10	10	1,950.4	-410.1	1,085.00				Average	
		point9	9	-476.7	-434.2	1,085.00					
E_Slover Avenue	24.0	point11	11	-468.6	-465.8	1,085.00				Average	
		point12	12	1,958.5	-441.6	1,085.00					
N_Alder Avenue	12.0	point14	14	856.5	56.6	1,090.00				Average	
		point3	3	853.4	350.8	1,095.00				Average	
		point4	4	847.2	714.3	1,100.00					
S_Alder Avenue 1	12.0	point16	16	843.0	49.3	1,090.00				Average	
		point5	5	845.6	-399.9	1,085.00					

Michael Baker International 21 August 2019
Pierre Glaize TNM 2.5

INPUT: TRAFFIC FOR Lden
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing

Roadway	Points		Segment																					
Name	Name	No.	ADT	Autos				MTrucks				HTrucks				Buses				Motorcycles			
				%D	%E	%N	S	%D	%E	%N	S	%D	%E	%N	S	%D	%E	%N	S	%D	%E	%N	S
			veh/24hrs	%	%	%	mph	%	%	%	mph	%	%	%	mph	%	%	%	mph	%	%	%	mph
N_Alder Avenue1	point1	1	306	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0
	point2	2																					
S_Alder Avenue	point8	8	306	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0
	point7	7	306	80	80	80	15	3	3	3	15	17	17	17	15	0	0	0	0	0	0	0	0
	point6	6																					
W_Slover Avenue	point10	10	9537	90	90	90	45	5	5	5	45	5	5	5	45	0	0	0	0	0	0	0	0
	point9	9																					
E_Slover Avenue	point11	11	9227	90	90	90	45	5	5	5	45	5	5	5	45	0	0	0	0	0	0	0	0
	point12	12																					
N_Alder Avenue	point14	14	328	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0
	point3	3	328	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0
	point4	4																					
S_Alder Avenue 1	point16	16	306	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0
	point5	5																					

Michael Baker International
Pierre Glaize

21 August 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing Lden Calculated	No Barrier Lden Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	With Barrier Type Impact	With Barrier Calculated Lden	Noise Reduction Calculated	Noise Reduction Goal	Noise Reduction Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
SR 1	1	1	0.0	51.3	66	51.3	10	----	51.3	0.0	8	-8.0
SR 2	2	1	0.0	55.4	66	55.4	10	----	55.4	0.0	8	-8.0
SR 3	3	1	0.0	56.1	66	56.1	10	----	56.1	0.0	8	-8.0
SR 4	4	1	0.0	58.5	66	58.5	10	----	58.5	0.0	8	-8.0
SR 5	5	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
SR 6	6	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Michael Baker International 21 August 2019
Pierre Glaize TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing with Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing Lden	Impact Criteria Lden	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
SR 1	1	1	942.3	616.1	1,095.00	4.92	0.00	66	10.0	8.0	Y
SR 2	2	1	915.7	576.7	1,095.00	4.92	0.00	66	10.0	8.0	Y
SR 3	3	1	916.6	547.4	1,095.00	4.92	0.00	66	10.0	8.0	Y
SR 4	4	1	956.8	51.9	1,085.00	4.92	0.00	66	10.0	8.0	Y
SR 5	5	1	739.8	-22.5	1,085.00	4.92	0.00	66	10.0	8.0	Y
SR 6	6	1	720.1	-151.1	1,085.00	4.92	0.00	66	10.0	8.0	Y

Michael Baker International 21 August 2019
Pierre Glaize TNM 2.5

INPUT: ROADWAYS
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing with Project

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with the approval of FHWA

Roadway Name	Width	Points Name	No.	Coordinates (pavement) X	Y	Z	Flow Control Control Device	Speed Constraint	Percent Vehicles Affected	Segment Pvmt Type	On Struct?
	ft			ft	ft	ft		mph	%		
N_Alder Avenue1	12.0	point1	1	861.2	-396.9	1,085.00	Stop	0.00	100	Average	
		point2	2	856.5	56.6	1,090.00					
S_Alder Avenue	12.0	point8	8	834.9	707.6	1,100.00				Average	
		point7	7	839.9	343.5	1,095.00				Average	
		point6	6	843.0	49.3	1,090.00					
W_Slover Avenue	24.0	point10	10	1,950.4	-410.1	1,085.00				Average	
		point9	9	-476.7	-434.2	1,085.00					
E_Slover Avenue	24.0	point11	11	-468.6	-465.8	1,085.00				Average	
		point12	12	1,958.5	-441.6	1,085.00					
N_Alder Avenue	12.0	point14	14	856.5	56.6	1,090.00				Average	
		point3	3	853.4	350.8	1,095.00				Average	
		point4	4	847.2	714.3	1,100.00					
S_Alder Avenue 1	12.0	point16	16	843.0	49.3	1,090.00				Average	
		point5	5	845.6	-399.9	1,085.00					

Michael Baker International **21 August 2019**
Pierre Glaize **TNM 2.5**

INPUT: TRAFFIC FOR Lden
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing with Project

Roadway	Points																							
Name	Name	No.	Segment																					
			ADT	Autos				MTrucks				HTrucks				Buses				Motorcycles				
				%D	%E	%N	S	%D	%E	%N	S	%D	%E	%N	S	%D	%E	%N	S	%D	%E	%N	S	
			veh/24hrs	%	%	%	mph	%	%	%	mph	%	%	%	mph	%	%	%	mph	%	%	%	mph	
N_Alder Avenue1	point1	1	634	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0	
	point2	2																						
S_Alder Avenue	point8	8	634	80	80	80	15	3	3	3	15	17	17	17	15	0	0	0	0	0	0	0	0	
	point7	7	634	80	80	80	15	3	3	3	15	17	17	17	15	0	0	0	0	0	0	0	0	
	point6	6																						
W_Slover Avenue	point10	10	9843	90	90	90	45	5	5	5	45	5	5	5	45	0	0	0	0	0	0	0	0	
	point9	9																						
E_Slover Avenue	point11	11	9227	90	90	90	45	5	5	5	45	5	5	5	45	0	0	0	0	0	0	0	0	
	point12	12																						
N_Alder Avenue	point14	14	634	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0	
	point3	3	634	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0	
	point4	4																						
S_Alder Avenue 1	point16	16	634	80	80	80	25	3	3	3	25	17	17	17	25	0	0	0	0	0	0	0	0	
	point5	5																						

Michael Baker International
Pierre Glaize

21 August 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 173563
RUN: Alder Logistics Existing with Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing Lden Calculated	No Barrier Lden Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated Lden	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
SR 1	1	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
SR 2	2	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
SR 3	3	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
SR 4	4	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
SR 5	5	1	0.0	61.8	66	61.8	10	----	61.8	0.0	8	-8.0
SR 6	6	1	0.0	63.8	66	63.8	10	----	63.8	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0