



**NOISE AND VIBRATION TECHNICAL
MEMORANDUM**

Residential Development at Avenue L and
70th Street West Cul-de-Sac, City of
Lancaster, California

DRAFT

October 27, 2023

Prepared for:
KB Homes Coastal Inc.

Prepared by:
Stantec Consulting Services Inc.

Project Number: 185806035

Noise and Vibration Technical Memorandum

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Prepared by:

Signature

Zoe Dascalos, Staff Environmental Scientist

Printed Name

Reviewed by:

DRAFT

Signature

StephAnnie Roberts, Principal Environmental Planner

Printed Name

Approved by:

Signature

Lindsay McDonough, Principal Environmental Planner

Printed Name

Table of Contents

1	INTRODUCTION.....	1.1
1.1	Project Description	1.1
1.2	Environmental Setting	1.1
1.2.1	Terminology and Fundamentals of Environmental Acoustics	1.1
1.2.2	Fundamentals of Ground Vibration	1.4
1.3	Existing Setting	1.5
1.3.1	Sensitive Receptors and Existing Noise Environment	1.5
1.4	Significance Thresholds	1.6
1.5	Methodology	1.7
2	FINDINGS.....	2.1
2.1	Noise.....	2.1
2.2	Vibration	2.3

LIST OF TABLES

Table 1 Predicted Project Sound Levels CNEL	2.2
Table 2 Highest Vibration Impact - R4	2.3

LIST OF FIGURES

Figure 1 Site Location	F.1
Figure 2 Sensitive Receptor Locations	F.2

LIST OF APPENDICES

APPENDIX A PHOTO LOG.....	A.1
APPENDIX B FIELD LOG	B.1



1 INTRODUCTION

This Noise and Vibration Technical Memorandum for the KB Homes Residential Project (the Project) was prepared by Stantec Consulting Services Inc. The purpose of this memorandum is to support the California Environmental Quality Act (CEQA) impact analysis.

1.1 Project Description

The proposed Project would include development of an 18.07-acre area into a residential development with 56 single-family homes. The Project is located at the southwestern corner of 70th Street West and Avenue L within the City of Lancaster, Los Angeles County, California (**Figure 1 Project Site**).

1.2 Environmental Setting

1.2.1 TERMINOLOGY AND FUNDAMENTALS OF ENVIRONMENTAL ACOUSTICS

The decibel (dB) is the preferred unit used to measure sound levels utilizing a logarithmic scale to account for large range in audible sound intensities. A general rule for the decibel scale is that a 10-dB increase in sound is perceived as a doubling of loudness by the human ear. For example, a 55-dB sound level will sound twice as loud as a 45-dB sound level. The average healthy person cannot detect differences of 1-dB whereas a 5-dB change is noticeable to most.

Several sound measurement descriptors are used to assess the effects of sound on the human environment. These include the equivalent continuous sound level, L_{eq} , which is the level of a constant sound that has the same acoustic energy as the actual fluctuating sound. It is similar to the average sound level. The day-night average sound level (L_{dn}) is similar to the 24-hour L_{eq} except that a 10-dB penalty is added to sound levels between 10 p.m. and 7 a.m. to account for the greater sensitivity of people to sound at night. The Community Noise Equivalent Level (CNEL) additionally places a 5-dB penalty on sound occurring in the evening hours.

Acoustics is defined as the science of sound, including the generation, transmission, and effects of sound waves, both audible and inaudible. Noise, on the other hand, is generally defined as unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The objectionable nature of sound is caused by its pitch and loudness. Pitch is a subjective response to the frequencies making up the sound. Higher pitched signals (higher frequencies) sound louder to humans than sounds with a lower pitch. Loudness is a subjective response of the human ear to the intensity of sound waves. Sound intensity reflects the rate with which the acoustic energy is being transmitted and is a measure of the amplitude or height of the sound wave. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in dB.



Noise and Vibration Technical Memorandum

1 INTRODUCTION

The dB is the preferred unit for measuring sound that indicates the relative amplitude (height) of a particular sound wave. The zero (0) on the decibel scale is based on the lowest sound level that a healthy, unimpaired human ear can detect. The A-weighted decibel (dBA) is a method of sound measurement which assigns weighted values to selected frequency bands in an attempt to reflect how the human ear responds to sound. The range of human hearing is from 0 dBA (the threshold of hearing) to about 140 dBA which is the threshold of pain. Examples of noise and their A-weighted decibel levels are shown in the chart below.

At a Given Distance from Noise Source	A-Weighted Sound Level in dBA	Noise Environments	Subjective Impression
Civil Defense Siren (100')	140	Rock Music Concert	Pain Threshold
Jet Takeoff (200')	130		
	120		
Diesel Pile Driver (100')	110	Boiler Room Printing Press Plant	Very Loud
	100		
	90		
Freight Cars (50')	80	In Kitchen with Garbage Disposal Running	Moderately Loud
Pneumatic Drill (50')			
Freeway (100')	70		
Vacuum Cleaner (10')	60	Data Processing Center	Quiet
Light Traffic (100')	50	Department Store	
Large Transformer (200')	40	Private Business Office	
Soft Whisper (5')	30	Quiet Bedroom	Threshold of Hearing
	20	Recording Studio	
	10		
	0		

In general, a 3- to 5-dBA change in community noise levels starts to become noticeable, while 1- to 3-dBA changes are generally not perceived. Quiet suburban areas typically have noise levels in the range of 40 to 50 dBA, while those along arterial streets are in the 50 to 60 dBA or greater range. Normal conversational levels are in the 60 to 65 dBA ranges. The C-weighted decibel scale (dBC) was originally developed to reflect the frequency sensitivity of the human ear to high sound levels (above 85 dB). However, currently, the C-weighting is almost exclusively used to assess the low frequency content of sound, often in combination with the A-weighted scale. C-weighting is generally flat, and thus includes more of the low-frequency range of sounds.

In addition to the actual instantaneous measurements of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. To analyze the overall noise levels in an area, time-varying noise is averaged over a specific time period in a way that represents the same acoustic energy as the time-varying noise. Such average is referred to as equivalent continuous sound level and represented by Leq. Statistical sound levels, Ln, are also frequently used as environmental noise descriptors. The subscript n denotes the percentage of time that the noise level is exceeded during the measurement



Noise and Vibration Technical Memorandum

1 INTRODUCTION

period. Common levels in environmental acoustics are L10, L50, and L90. L10 indicates the sound level that is exceeded 10 percent of the time and is generally taken to be indicative of the highest noise levels experienced at the Project Site. Construction noise criteria are often based on L10. The L90 is the level exceeded 90 percent of the time and this level is often called the base or background level of noise at a location. The L50 sound (that level exceeded 50 percent of the time) is frequently used in standards and ordinances dealing with traffic noise.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within ± 1 dBA. The data is then imported into computer sound models. These computer models are used to predict environmental noise levels over a given area. The accuracy of the predicted models depends on the accuracy of the noise sources data, the distance from the source to receptor, atmospheric conditions, and ground representation and its effective attenuation. The closer to the noise source, the greater is the model's accuracy.

Terms and Definitions are listed below:

Terms	Definitions
dB, Decibel	Unit of measurement of sound level
dBA, decibel A-Weighted	A unit of measurement of sound level corrected using the A-weighting network (scale), as defined in American National Standards Institute, Inc. ((ANSI) S1.4-1971 (R1976), using a reference level of 20 micropascals (0.00002 Newtons per square meter).
A – Weighted Scale	A frequency weighting scale, which corrects the sound pressures in individual frequency bands according to human sensitivities. The scale is based upon the fact that the region of highest sensitivity for the average ear is between 2,000 and 4,000 Hz. Sound levels are measured on a logarithmic scale in decibels, dB. The universal measure for environmental sound is the A-weighted sound level, dBA.
C—Weighted Scale	A frequency weighting scale which currently is most commonly used to assess the low frequency noise component of environmental sound. The scale of C-weighting is generally flat, and thus includes more of the low-frequency range of sounds.
Hz, Hertz	Unit of measurement of frequency, numerically equal to cycles per second.
Loudness	A listener's perception of sound pressure incident on his ear.
L01, L10, L50, L90	The A-weighted noise levels that are exceeded 1 %, 10 %, 50 %, and 90 % of the time during the measurement period.
Leq, Equivalent Noise Level	Also, called the equivalent continuous noise level. It is the continuous sound level that is equivalent, in terms of noise energy content, to the actual fluctuating noise existing at the location over a given period, usually one hour. Leq is usually measured in hourly intervals over long periods in order to develop 24-hour noise levels.
CNEL, Community Noise Equivalent Level	The CNEL is a measure of the cumulative noise exposure in the community. This noise descriptor represents the noise level averaged over a 24-hour period with penalties applied to the evening and nighttime noise levels when residents are more sensitive to intrusive noise. The daytime period is from 7:00 a.m. to 7:00 p.m.; evening from 7:00 p.m. to 10:00 p.m.; and nighttime from 10:00 p.m. to 7:00 a.m. No penalty is applied to the measured day levels defined as 7:00 a.m. to 7:00 p.m. A 5-dB penalty is applied to the evening levels (7:00 p.m. to 10:00 p.m.) and a 10-dB penalty is applied to the nighttime levels (10:00 p.m. to 7:00 a.m.).
Ldn, Day/Night Noise Level	The same as CNEL except that the evening time period is not considered separately, but instead it is included as part of the daytime period. Measurements of both CNEL and Ldn in the same



Noise and Vibration Technical Memorandum

1 INTRODUCTION

Terms	Definitions
	residential environments reveal that CNEL is usually slightly higher (usually less than 1 dB) than Ldn due to the penalties applied during evening hours.
Lmin, Lmax	The minimum and maximum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

1.2.2 FUNDAMENTALS OF GROUND VIBRATION

The ground vibration can be defined as oscillatory displacement of the ground as a result of a disturbance (excitation) from vibration source. The disturbance propagates away from the source by means of vibration waves. The main vibration waves are the: “primary” or “compression” waves (P-waves), “secondary” or “shear” waves (S-waves), and Rayleigh waves (R-waves). The first two waves are called “body waves”. The third one is a type of a surface wave as it is confined to a zone near the surface. The motion of ground particles associated with a P-wave is the back and forth movements along the direction of the wave travel. The motion of ground particles associated with an S-wave is in a direction transverse to the direction of the wave. For R-waves, the motion of ground particles has both horizontal and vertical components and these movements attenuate rapidly with depth. Since Rayleigh waves are confined to a narrow zone along the surface of the ground, they tend to carry more energy and do not attenuate with distance as much as the P-waves or S-waves. The main properties of ground vibration are the vibration amplitude – the maximum displacement and the vibration frequencies.

Ground vibration can induce vibration of buildings and structures that it supports. Construction as well as traffic induced vibration in buildings can be a common source of annoyance affecting residents and, in some cases, can degrade the performance of precision measuring equipment (MRI, etc.). Any perceptible vibration from extraneous sources tends to result in residential concerns about possible building (structure) damage, even when the associated amplitudes of vibration are much, much lower than those barely sufficient to cause superficial damage such as cracks stucco or drywall. Also, vibration below the threshold of perception can affect people through their sense of hearing if causes airborne noise from rattling objects or building surfaces. Traffic (including heavy trucks) on major highways, rarely generates vibration amplitudes high enough to cause any type of structural or cosmetic damage and in most instances the resulting vibrations would not be perceptible. Traffic along secondary roadways closer to residences where vehicles travel over potholes or other discontinuities in the pavement can induce high enough vibration levels to result in complaints from the residents. Freight trains and light-rail trains can also be significant sources of ground vibration.

Most construction and traffic induced vibration involve sources of vibration at or near the surface, making the R-waves the primary waves of concern. Even when the actual vibration sources are below the surface (e.g., pile driving) R-waves form at the surface within a short distance from the location of the source. Therefore, propagation of vibration from construction or traffic sources is typically modeled assuming R-waves. Vibration can be continuous or transient. According to the California Department of Transportation



Noise and Vibration Technical Memorandum

1 INTRODUCTION

(Caltrans) Vibration Guidance Manual (2013), the following vibration sources result in the continuous vibration:

- excavation equipment,
- static compaction equipment,
- tracked vehicles,
- traffic on a highway,
- vibratory pile drivers,
- pile-extraction equipment, and
- vibratory compaction equipment.

Transient and low-rate repeated vibration may result from the following activities:

- impact pile drivers,
- blasting,
- drop balls,
- “pogo stick” compactors, and
- crack-and-seat equipment

The effects of vibration on people or structures are primarily a function its amplitude and frequency. The typical frequency range of interest in ground and building vibration is from 1 to 80 Hz. Most of construction and traffic induced vibration occurs in the frequency range of 10 to 30 Hz. Single-number vibration amplitude limits for construction are generally set assuming the corresponding vibration frequencies are between 10 and 30 Hz.

The ground and building vibration can be measured directly using velocity transducers or accelerometers. The most common descriptors for ground and building vibration amplitude is the peak particle velocity (PPV) and peak particle acceleration (PPA) defined in inches per second (in/s) and inches per second squared (in/s²), respectively. Similarly, to noise, the amplitude of vibration is also commonly expressed in decibels. The most common descriptors here are the vibration velocity level (Lv) and vibration acceleration level (La).

1.3 Existing Setting

1.3.1 SENSITIVE RECEPTORS AND EXISTING NOISE ENVIRONMENT

Some land uses are recognized as being more sensitive than others to noise levels and vibration. Residences, motels and hotels, schools, libraries, houses of worship, hospitals, nursing homes, auditoriums, parks, and outdoor recreation areas are generally more sensitive to noise and vibration than are commercial and industrial land uses. The land use of the Project site is residential and is adjacent to a school.

The Project is located within an undeveloped parcel of land at the corner of Avenue L and 70th Street West in the City of Lancaster (City), California and is approximately 5.5 miles west of Highway 14. The Project site is situated in Section 34, Township 7 North, Range 13 West of the United States (U.S.)



Noise and Vibration Technical Memorandum

1 INTRODUCTION

Geographical Survey (USGS) Lancaster West, California, 7.5-minute topographic quadrangle. Residential developments are located east, west, and south and undeveloped land is located north. The topography of the Project site is relatively flat. Elevation ranges from approximately 2,440 to 2,500 feet above sea level. The area surrounding the proposed Project is primarily residential and undeveloped parcels. The closest sensitive receptors are residential properties to the east, south, and west, and SOAR Prep Academy to the east (**Figure 2 Sensitive Receptor Locations**).

The primary noise sources in the Project area include traffic on adjacent roadways, residential land uses, and a school to the east.

- **Receptor Location 1** is located approximately 0.39 miles east of the Project site. Readings were collected outside of the fence on the west side of SOAR Prep Academy, approximately 50 feet east of 65th Street West.
- **Receptor Location 2** is located approximately 0.14 miles southeast from the Project site. Readings were collected on the north side of the West Avenue L4 dead end, west of the intersection with Meridian Way. This location is on the edge of the neighborhood bordering vacant lot.
- **Receptor Location 3** is located approximately 0.31 miles south from the Project site. Readings were collected on the corner of the vacant lot located on the east side of 70th Street West, between West Avenue L-8 and West Avenue L-11.
- **Receptor Location 4** is located approximately 0.02 miles west from the Project Site. Readings were collected outside of the neighborhood gate, adjacent to 70th Street on the northwest side of the paved area between the landscaped hedges.

Photos of each location can be found in **Appendix A**.

1.4 Significance Thresholds

The City of Lancaster General Plan Policy outlines Noise Objectives for the City. Objective 4.3 lists the maximum Exterior CNEL for Rural, Single Family, Multiple Family Residential as 65dBA. Specific Action 4.3.1(b) states “Enforce California Noise Insulation Standards which apply to new multiple family development within a 60 CNEL noise contour adjacent to roads, transit lines, and manufacturing areas to ensure that the units have been designed to limit interior noise levels in habitable rooms to 45 CNEL with doors and windows closed (City of Lancaster General Plan 2023, July 9, 2009).”

Existing noise sources in the Project area include roadways, existing single-family homes, a school, and activities associated with these uses. Because project operations would not create perceptible noise (no heavy equipment or construction) and noise-generating maintenance and repair activities would be reduced after project implementation, this assessment only considers construction noise.



1.5 Methodology

To characterize the existing noise environment around the Project site, ambient noise was collected using a Brüel and Kjaer, G-4 Type 2270 Noise Meter. A Brüel and Kjaer, Type 4189 Microphone was used, and the equipment was calibrated using a Brüel and Kjaer, Type 4231 Acoustical Calibrator. Readings were collected during the day, evening, and night in 15-minute increments for each location. Field logs are included as **Appendix B**.

The time of day represents a typical construction time without the added noise source of peak hour traffic. Passing cars and barking dogs were the primary sources of noise at each site.



2 FINDINGS

2.1 Noise

The noise levels are shown as average maximum in Table 9.1 RCNM Default Noise Emission Reference Levels and Usage Factors of FHWA Handbook and augmented by specific equipment levels in the subsequent tables in the Handbook were used for this analysis. All equipment listed below was included in this analysis.

Equipment List

1. CAT DOZER D6T (1EA)
2. CAT DOZER D8T (1 EA)
3. CAT 631 WATER PULL 10000 GAL (1EA)
4. CAT ROBBER TIRE DOZER 824C (1 EA)
5. CAT 637G SCRAPER (6 EA)
6. JD DOZER 850 (1 EA)
7. CAT 140M MOTOR GRADER (1EA)
8. CAT 623 SCRAPER (1EA)
9. 330 Excavator (John Deere 892 (2 EA)
10. Loader (John Deere 644) (1 EA)
11. Backhoe John Deere 410 (1 EA)
12. John Deere 310 (2 EA)
13. Volvo 7170
14. Cat CB7
15. Cat CB 4

The ground was assumed as mixed (i.e., having some porosity). It was also assumed that Project-related construction activities would take place between 7 am and 7 pm, which equates to 12 hours that were used to calculate CNEL from predicted Leq.

Since we do not know the location of specific pieces of equipment, it was assumed equal probability distribution over the entire Project area, and accordingly, distributed noise emissions equally everywhere. Results included approximately 75 dBA per square meter for the entire 12-hour activity, which is generally high. Therefore, the maximum long-term levels at each of the four receptors are expected to be below what is shown in the table below.

Based on the analysis, all receptors would be below the City's CNEL limit of 65 dB. Noise contours have been provided for overall distribution.

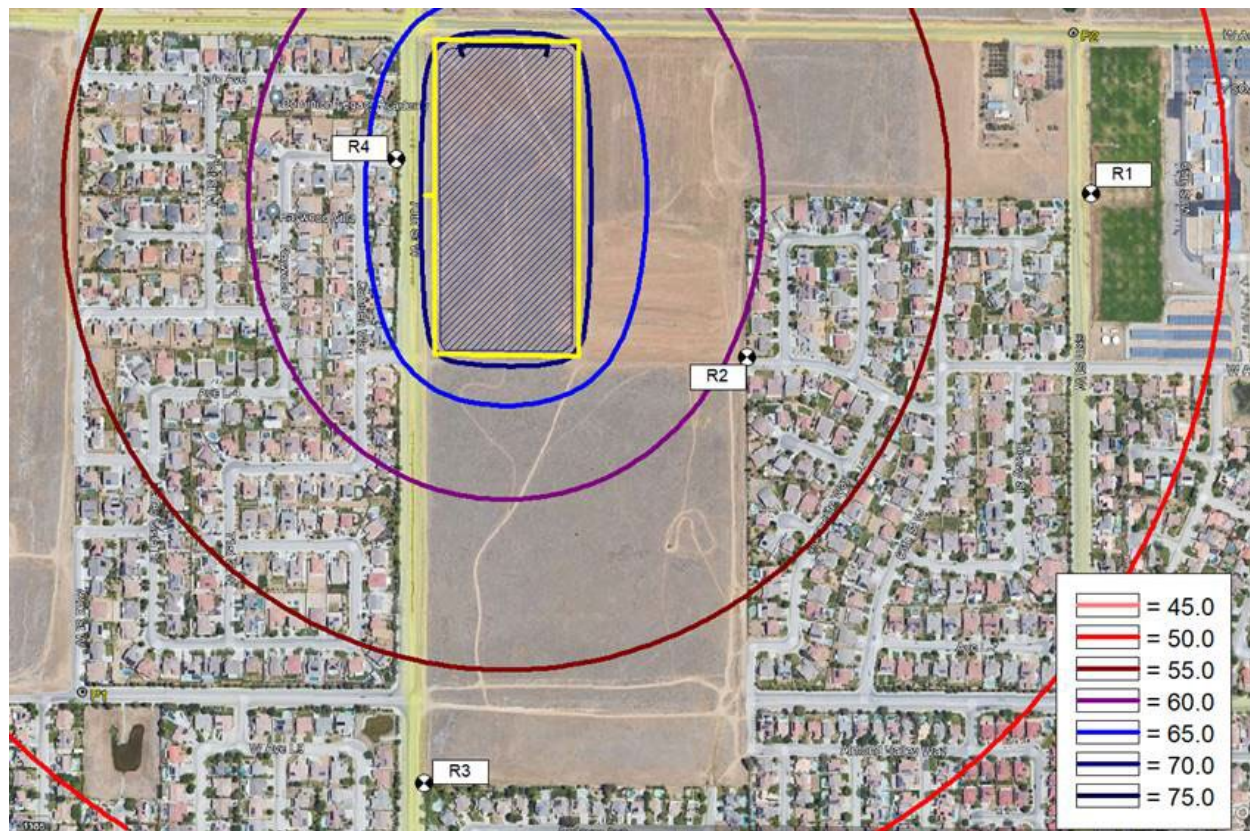


Noise and Vibration Technical Memorandum 2 FINDINGS

Table 1 Predicted Project Sound Levels CNEL

Receptor	Predicted Project Sound Level Leq	Predicted Project CNEL (Assumes construction from 7 am to 7 pm) (dB)	CNEL Limit (dB)	Measured Ambient/Background CNEL (dB)
R1 (school)	52.2	49.2	65	65.7
R2 (residential)	59.4	56.4	65	43.7
R3 (residential)	52.5	49.5	65	69.3
R4 (residential)	67.2	64.2	65	68.9

Noise Contours



2.2 Vibration

For this analysis, only construction vibration was considered, as residential use would not create vibration. Operation of residential occupancy The criteria for vibration are set using the PPV as a descriptor. The vibration predictions were made using the Wiss method (referenced in CalTran's Transportation- and Construction-Induced Vibration Guidance Manual) with the attenuation exponent $n = 1.1$.

Equipment List and Typical PPV at 25 feet

Construction Equipment	Typical PPV @ 25 ft
Vibratory Roller	0.22
Excavator	0.91
Large bulldozer	0.91
Grader	0.91
Water pull	0.75
Loaded trucks	0.75

During construction, groundborne vibration and noise may be generated by large trucks and other heavy equipment during demolition, grading, and construction of buildings. The largest vibrations will be caused by the vibratory rollers used for soil compaction working along the edge of the construction zone facing the residences around R4 on the west side of 70th Street W. The distance from the edge of the construction zone to residences was measured at 130 feet. As outlined in Table 2, the maximum predicted PPV level at R4 is estimated to be 0.04 in/s which is within the acceptable range specified in CalTran's Transportation and Construction Induced Vibration Guidance Manual. Therefore, groundbourne vibration and noise from Project-related construction would have a minimal impact on nearby receptors.

Table 2 Highest Vibration Impact - R4

Equipment	Typical Vibration PPV at 25 ft	Predicted PPV Level at Nearest Residential Building, R4 (130 ft from edge of construction area) (in/s)	Preferred Vibration Limit PPV (in/s)
Vibratory Roller	0.22	0.04	0.20
1. Prediction made using the Wiss method in CalTran's Transportation- and Construction-Induced Vibration Guidance Manual with the attenuation exponent of 1.1 (conservative)			

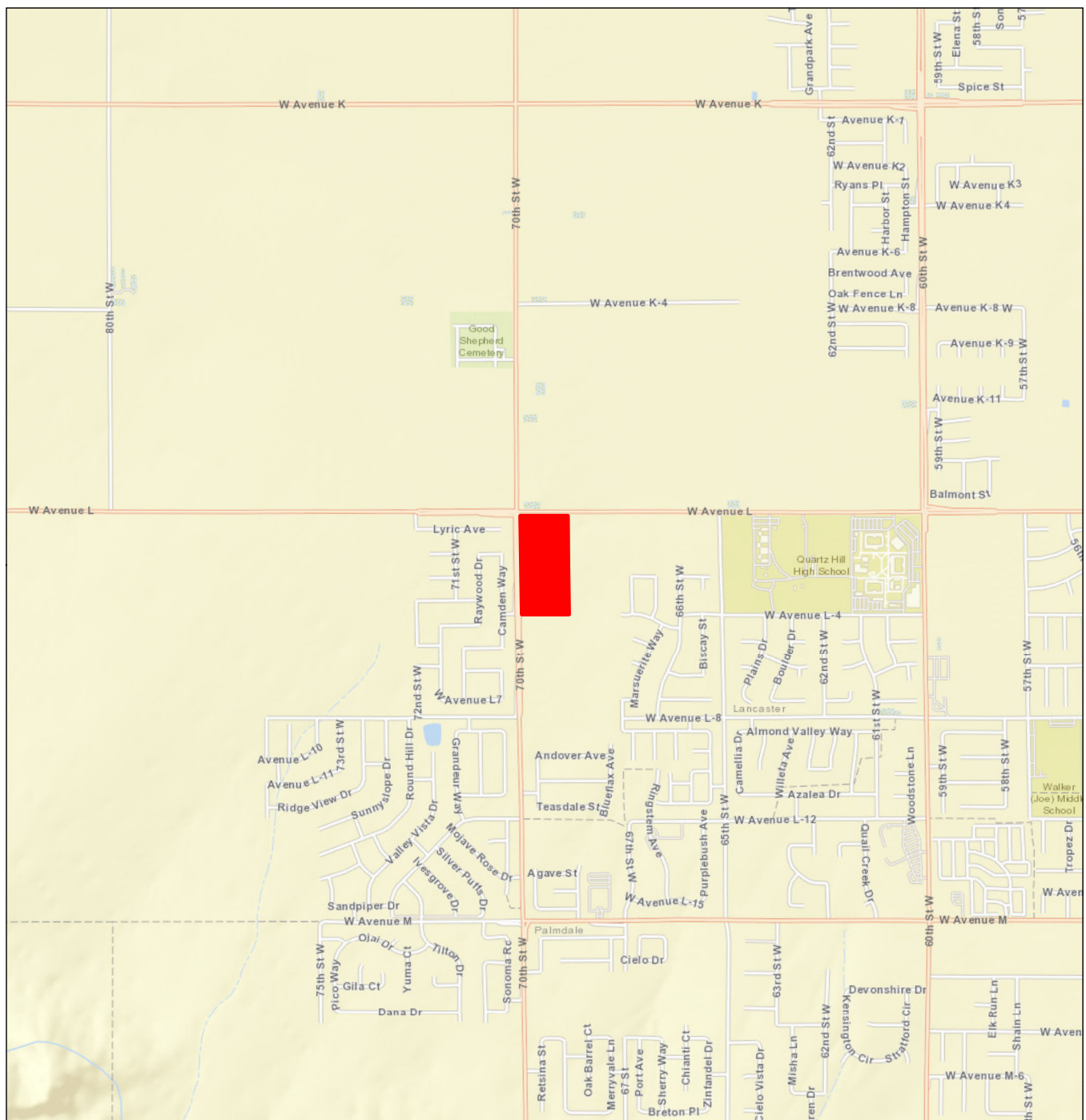


FIGURES

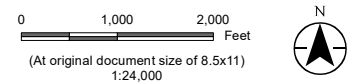
Figure 1 Site Location

Figure 2 Sensitive Receptor Locations





Project Location



<i>Project Location</i>	Prepared by DL on 2023-10-11
City of Lancaster,	TR by SET on 2023-10-11
Los Angeles County, California	IR by SR on 2023-10-11

Client/Project	185806035
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KB Home
Lancaster 70th St. W.
Noise and Vibration Technical Memorandum

Figure No.

1

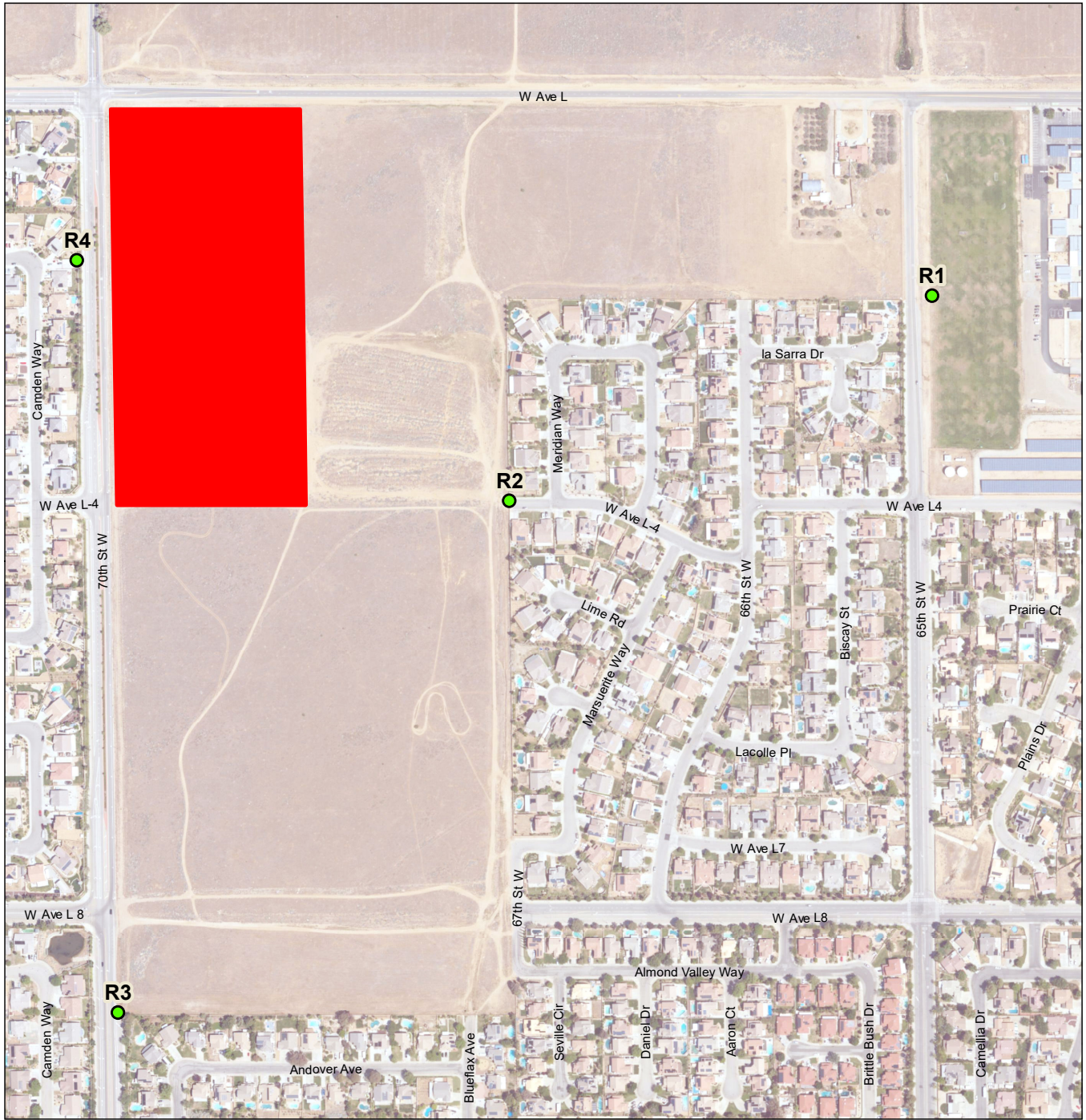
Project Location

Notes

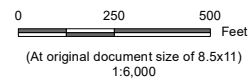
- NOTES**
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
 2. Data Sources: Stantec 2023.Parcel from LA County 2022.
 3. Background: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors
- Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
- Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

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V:\1858\active\185806035_KBHome_AvenueL_70thSt_W03_data\gis_cad\gis\NV\TM_Figure2_SensitiveReceptorLocations_20231011.mxd Revised: 2023-10-11 By: Dalaw



-  Project Location
-  Sensitive Receptor Locations



Project Location City of Lancaster, Los Angeles County, California
Prepared by DL on 2023-10-11
TR by SET on 2023-10-11
IR by SR on 2023-10-11

Client/Project KB Home
Lancaster 70th St. W.
Noise and Vibration Technical Memorandum

Figure No. 2
Title Sensitive Receptor Locations

- Notes**
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
 2. Data Sources: Stantec 2023.Parcel from LA County 2022.
 3. Background: California 60cm NAIP 2022 Imagery

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Appendix A Photo Log



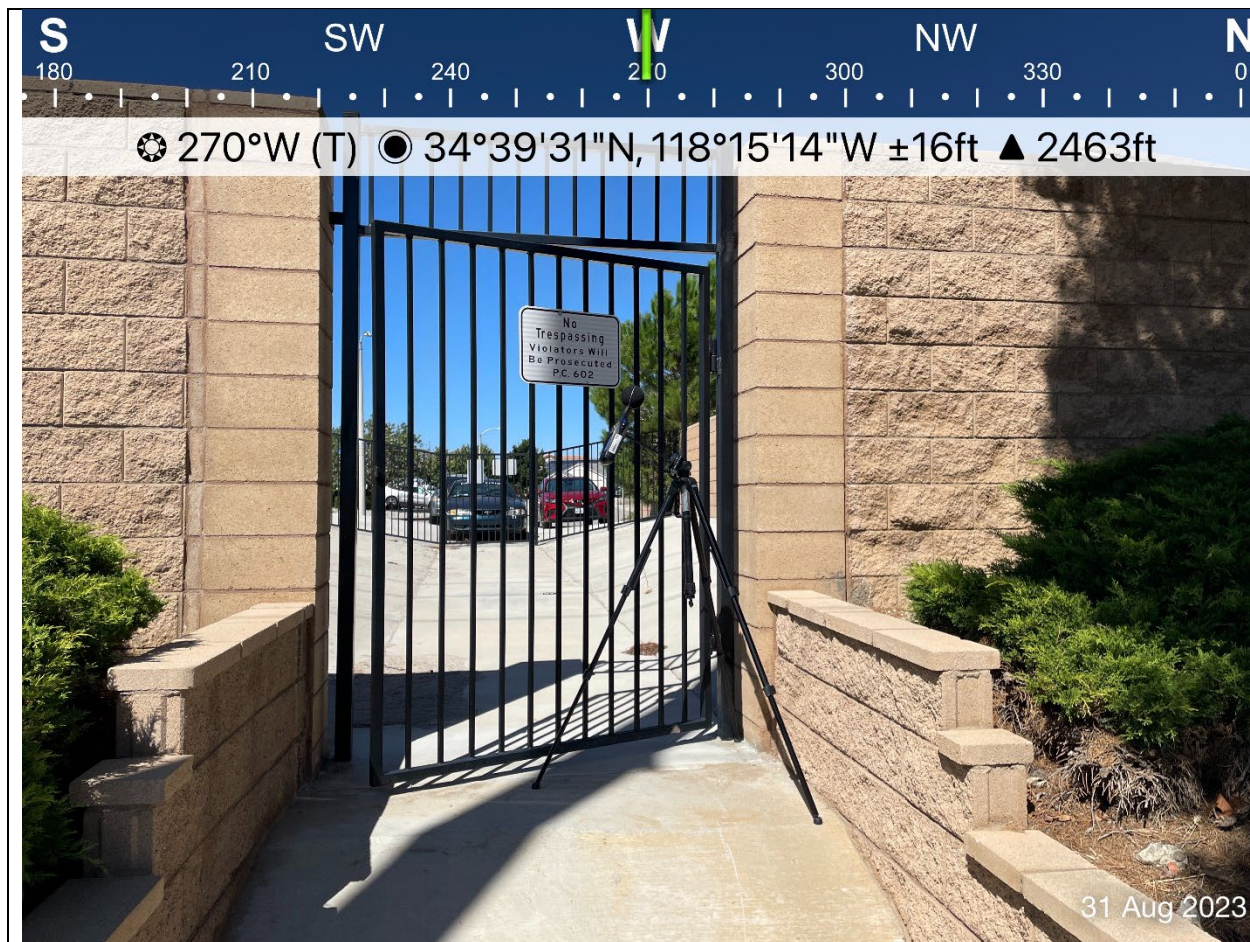
Noise and Vibration Technical Memorandum
Appendix A Photo Log



Receptor Location 1 is located approximately 0.39 miles east of the Project site. Readings were collected outside of the fence on the west side of SOAR Prep Academy, approximately 50 feet east of 65th Street West.



Noise and Vibration Technical Memorandum
Appendix A Photo Log



Receptor Location 2 is located approximately 0.14 miles southeast from the Project site. Readings were collected on the north side of the West Avenue L4 dead end, west of the intersection with Meridian Way. This location is on the edge of the neighborhood bordering vacant lot.



Noise and Vibration Technical Memorandum
Appendix A Photo Log



Noise and Vibration Technical Memorandum
Appendix A Photo Log



Appendix B Field Log



Project Name:	F + KB Home / Lancaster / 70th St
Project Number:	185806035
Noise Meter Make and Type:	Brüel & Kjær, G-4 Type 2270
Microphone:	Brüel & Kjær, Type 4189
Acoustical Calibrator:	
Date of Measurement:	08/30/23
Stantec Technician:	Jamie Penigo & Megan Wong

Location and Description of Measurement (Receptor Location):

Sample Location #1: Outside of fence on W side of SOAR Prep Academy field; approximately 50' east of 65th Street W.

Approximate Distance from Receptor:

0.39 miles from Project Site

Time Measurement Began:	2056	Time Measurement Ended:	2112
Data Stored as Recorded #?:	15		
L _{Aeq} [REDACTED]:	42.61-87.25	dBA	

Description/sources of ambient noise:

2057 Two cars pass by; 2058 Single car drives by; 2059 single car drives by; 2101 two cars drive by; 2102 five cars drive by; 2103 dogs barking across street; 2104 car drive by; 2107 two cars drive by; 2109 two cars drive by; 2112 car drive by

Did activity exceed 60 dBA: Yes

Time Measurement Began:	2331	Time Measurement Ended:	2347
Data Stored as Recorded #?:	19		
L _{Aeq} [REDACTED]:	37.36-61.17	dBA	

Description/sources of ambient noise:

Crickets, cars, owl, dogs

Did activity exceed 60 dBA: Yes

AMBIENT NOISE MEASUREMENT DATA SHEET

Project Name: FRKB Home / Lancaster / 70th St
Project Number: 185806035
Noise Meter Make and Type: Brüel & Kjær, G-4 Type 2270
Microphone: Brüel & Kjær, Type 4189
Acoustical Calibrator: Brüel & Kjær, Type 4231
Date of Measurement: 08/30/23
Stantec Technician: Jamie Penigo & Megan Wong

Location and Description of Measurement (Receptor Location):

Sample Location 2: On N side of W Avenue 14 dead end, west of intersection with Meridian Way. On edge of neighborhood bordering vacant lot.

Approximate Distance from Receptor:

0.14 miles from Project Site

Time Measurement Began: 2029
Data Stored as Recorded #?: 14
LAeq: 34.25-46.72

Time Measurement Ended: 2046

dBA

Description/sources of ambient noise:

2030-2041 Nearby AC system running behind residence,
2045 Kid rode by on bike talking loudly, followed by car driving by

Did activity exceed 60 dBA: No

Time Measurement Began: 2306
Data Stored as Recorded #?: 18
LAeq: 29.32-39.61

Time Measurement Ended: 2322

dBA

Description/sources of ambient noise:

Crickets, sprinklers

Did activity exceed 60 dBA: No

AMBIENT NOISE MEASUREMENT DATA SHEET

Project Name: F+KB Home / Lancaster / 70th St
Project Number: 185806035
Noise Meter Make and Type: Brüel & Kjær, G-4 Type 2270
Microphone: Brüel & Kjær, Type 4189
Acoustical Calibrator: Brüel & Kjær, Type 4231
Date of Measurement: 08/30/23
Stantec Technician: Jamie Pengo & Megan Wong

Location and Description of Measurement (Receptor Location):

Sample Location #3: On E side of 70th Street West, between W Avenue L-8 and W Avenue L-11; on corner of vacant lot.

Approximate Distance from Receptor:

0.31 miles from Project Site

Time Measurement Began: 1957 Time Measurement Ended: 2013
Data Stored as Recorded #?: 13
LAeq 1min: ~~49.15~~ dBA
42.01-80.29

Description/sources of ambient noise:

1959 Plane flies overhead. 2012 Plane flies overhead.
Cars passing continuously throughout duration of survey.

Did activity exceed 60 dBA: Yes

Time Measurement Began: 2239 Time Measurement Ended: 2255
Data Stored as Recorded #?: 17
LAeq 1min: 35.25-71.39 dBA

Description/sources of ambient noise: ~~Planes~~

Sprinklers, cars

Did activity exceed 60 dBA: Yes

AMBIENT NOISE MEASUREMENT DATA SHEET

Project Name: F+KB Home / Lancaster / 70th St
Project Number: 185806035
Noise Meter Make and Type: Brüel & Kjær, G-4 Type 2270
Microphone: Brüel & Kjær, Type 4189
Acoustical Calibrator: Brüel & Kjær, Type 4231
Date of Measurement: 08/30/23
Stantec Technician: Jamie Penigo & Megan Wong

Location and Description of Measurement (Receptor Location):

Outside of gate for neighborhood, adjacent to 70th Street W;
on NW side of paved area between landscaped hedges.
(Sample Location 4)

Approximate Distance from Receptor:

~~1932 Dog barked~~ 0.02 miles from Project Site

Time Measurement Began: 1926 Time Measurement Ended: 1942
Data Stored as Recorded #?: 12
LAeq: ~~70.02~~ 40.36-83.37 dBA

Description/sources of ambient noise:

1932 Dog barked. 1933 Dog barking 1934-1936 Dog barking
1940 Motorcycle passed by. Cars passing continuously over
duration of survey. Songbirds calling

Did activity exceed 60 dBA: Yes

Time Measurement Began: 2207 Time Measurement Ended: 2223
Data Stored as Recorded #?: 16
LAeq: 32.57-75.81 dBA

Description/sources of ambient noise:

Cars driving by, motorcycles, trucks

Did activity exceed 60 dBA: Yes

AMBIENT NOISE MEASUREMENT DATA SHEET

Project Name: F+KB Home / Lancaster 170th St
Project Number: 185806035
Noise Meter Make and Type: Brüel & Kjær, G-4 Type 2270
Microphone: Brüel & Kjær, Type 4189
Acoustical Calibrator: Brüel & Kjær, Type 4231
Date of Measurement: 08/31/23
Stantec Technician: Jamie Penigo

Location and Description of Measurement (Receptor Location):

Sample Location #1: Outside fence on W side of SOAR Prep Academy field; approximately 50' east of 65th Street West.

Approximate Distance from Receptor:

0.39 miles from Project Site

Time Measurement Began: 1150
Time Measurement Ended: 1206
Data Stored as Recorded #?: 23
LAeq CNEI: 40.34-62.27 dBA

Description/sources of ambient noise:

Cars, dog barking, jingling noise from fence, crows, songbirds, 1201 Umbrella Bell over, landscaping equipment in distance

Did activity exceed 60 dBA: Yes

Time Measurement Began:
Time Measurement Ended:
Data Stored as Recorded #?:
CNEL: dBA

Description/sources of ambient noise:

Did activity exceed 60 dBA:

AMBIENT NOISE MEASUREMENT DATA SHEET

Project Name:	F+KB Home / Lancaster / 70th St
Project Number:	185806035
Noise Meter Make and Type:	Brüel & Kjaer, G-4 Type 2270
Microphone:	Brüel & Kjaer, Type 4189
Acoustical Calibrator:	Brüel & Kjaer, Type 4231
Date of Measurement:	08/31/23
Stantec Technician:	Jamie Pengo

Location and Description of Measurement (Receptor Location):

Sample Location #2: on N side of W Avenue 64. dead end, west of intersection with Mendon Way. on edge of neighborhood bordering vacant lot.

Approximate Distance from Receptor:

0.14 miles from Project Site

Time Measurement Began:	1121	Time Measurement Ended:	1137
Data Stored as Recorded #?:	22		
LAeq [REDACTED]:	36.94 - 50.02	dBA	

Description/sources of ambient noise:

Dog barking, landscaping equipment in distance

Did activity exceed 60 dBA: No

Time Measurement Began:		Time Measurement Ended:	
Data Stored as Recorded #?:			
[REDACTED]:		dBA	

Description/sources of ambient noise:

Did activity exceed 60 dBA:

AMBIENT NOISE MEASUREMENT DATA SHEET

Project Name:	F+KB Home / Lancaster / 70th St
Project Number:	185806035
Noise Meter Make and Type:	Brüel & Kjær, G-4 Type 2270
Microphone:	Brüel & Kjær, Type 4189
Acoustical Calibrator:	Brüel & Kjær, Type 4231
Date of Measurement:	08/31/23
Stantec Technician:	Jamie Penigo

Location and Description of Measurement (Receptor Location):

Sample Location #3: On E side of 70th Street W, between W Avenue L-8 and W Avenue L-11; on corner of vacant lot.

Approximate Distance from Receptor:

0.31 miles from Project Site

Time Measurement Began:	1052	Time Measurement Ended:	1108
Data Stored as Recorded #?:	21		
L _{Aeq} [REDACTED]:	41.44 - 46.82	dBA	

Description/sources of ambient noise:

Cars

Did activity exceed 60 dBA: Yes

Time Measurement Began:		Time Measurement Ended:	
Data Stored as Recorded #?:			
CNEL:		dBA	

Description/sources of ambient noise:

Did activity exceed 60 dBA:

AMBIENT NOISE MEASUREMENT DATA SHEET

Project Name:	F+KB Home / Lancaster / 70th St
Project Number:	185806035
Noise Meter Make and Type:	Brüel & Kjær, G-4 Type 2270
Microphone:	Brüel & Kjær, Type 4189
Acoustical Calibrator:	Brüel & Kjær, Type 4231
Date of Measurement:	08/31/23
Stantec Technician:	Jamie Perigo

Location and Description of Measurement (Receptor Location):

Sample Location #4: Outside of gate for neighborhood, adjacent to 70th Street W; on NW side of paved area between landscaped hedges.

Approximate Distance from Receptor:

0.02 miles from Project Site.

Time Measurement Began:	1028	Time Measurement Ended:	1044
Data Stored as Recorded #?:	20		
L _{Aeq} []:	40.41-67.55	dB	

Description/sources of ambient noise:

Passing cars, people talking, dogs barking

Did activity exceed 60 dBA: Yes

Time Measurement Began:		Time Measurement Ended:	
Data Stored as Recorded #?:			
CNEL:		dB	

Description/sources of ambient noise:

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Did activity exceed 60 dBA:

AMBIENT NOISE MEASUREMENT DATA SHEET