

TEMPORARY CONSTRUCTION NOISE INFORMATION

**Spring Valley Housing
San Diego County Tentative Map 5636
Record ID: PDS2019-TM-5636**

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Job #B80209N1

October 8, 2021

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EXECUTIVE SUMMARY

The proposed project, Spring Valley Housing (County of San Diego Record ID PDS2019-TM-5636), consists of the division of a parcel into seven single-family residential private lots. The project site is located at Grand Avenue and Eucalyptus Street in the unincorporated community of Spring Valley, County of San Diego, California.

According to the scoping letter prepared by the County of San Diego, no analysis of traffic or aircraft noise is required at this time. Temporary construction noise is the focus of this analysis.

Temporary construction noise was calculated to determine the impact this activity will have on surrounding occupied properties. Section 36.409 of the County of San Diego Noise Ordinance states it is unlawful to operate construction equipment that exceeds an average sound level of 75 dB for an eight-hour period between 7 a.m. and 7 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received. Section 36.410 of the Noise Ordinance provides noise level limits for impulsive noise, such as blasting or the use of equipment such as a rock crusher, pile driver, hoe ram, or drill rig. As no blasting or other impulsive construction activity will take place on site, the noise level limits within this section do not apply.

Calculations show that typical construction activities will not exceed the County of San Diego temporary construction noise limit of 75 dBA at adjacent property lines during the construction activity. General good practice measures should be followed to ensure that noise levels remain below the County of San Diego construction noise limits, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the County of San Diego.

1.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego for Tentative Map approval. Its purpose is to assess noise impacts from construction activities to identify project features or requirements necessary to remain in compliance with County of San Diego noise regulations for temporary construction noise.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ} , for a specified duration. Further explanation can be provided upon request.

1.1 Project Description

The proposed project, Spring Valley Housing (County of San Diego Record ID PDS2019-TM-5636), consists of the division of a parcel into seven single-family residential private lots. The gross lot area for each lot ranges from approximately 0.5 acre to 0.83 acre. Additional information is provided in the project plans, included as Appendix A.

1.2 Environmental Settings and Existing Conditions

1.2.1 Project Location

The project site is located at Grand Avenue and Eucalyptus Street in the unincorporated community of Spring Valley, County of San Diego, California. The Assessor's Parcel Number (APN) for the property is 578-161-02-00. The project location is shown on the Vicinity Map, Figure 1, following this report. An Assessor's Parcel Map, Satellite Aerial Photograph, and Topographic Map are also provided as Figures 2 through 4, respectively.

1.2.2 Existing Noise Conditions & Measured Noise Level

According to the scoping letter prepared by the County of San Diego, no analysis of traffic or aircraft noise is required at this time. Temporary construction noise is the focus of this analysis.

In order to determine ambient noise levels, an on-site inspection was conducted the morning of Tuesday, March 6, 2018. The weather conditions were as follows: winds at 6 mph, sunny skies, low humidity, and temperatures in the low 70s. An ambient noise measurement was taken along the east boundary of Lot 3 for a duration of 15 minutes. The microphone position was approximately five feet above the existing grade. The measured noise level and related weather conditions can be found in Table 1. The primary sources of noise during the measurement were wildlife noises, distant music, distant emergency sirens, minor aircraft, and some light traffic on surrounding roadways. The measurement location is shown in Figure 5.

Table 1. On-Site Noise Measurement Conditions and Results	
Date	Tuesday, March 6, 2018
Time	11:14 a.m. – 11:29 a.m.
Conditions	Sunny skies, winds at 6 mph, temperature in the low 70s with low humidity
Measured Noise Level	51.8 dBA L _{EQ}

1.3 Methodology

1.3.1 Cadna Noise Modeling

Modeling of the outdoor noise environment to determine temporary construction noise impacts is accomplished using Cadna Version 2018, which is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. Cadna (Computer Aided Noise Abatement) assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project information such as noise source data, barriers, structures, and topography to create a detailed model and uses the most up-to-date calculation standards to predict outdoor noise impacts.

In order to validate the results of the Cadna noise prediction model, the noise impacts from construction equipment were manually calculated as attenuation by distance at two representative receivers from a prior version of the noise model, for purposes of validation only. These values were compared to those predicted by Cadna. This data is summarized in Table 2 and Cadna data sheets are provided in Appendix C.

Table 2. Calculated Noise Levels for Model Comparison						
Noise Source	Receiver	Receiver Location	Distance from Source (ft)	Calculated Noise Level ¹ (dBA)	Cadna Model Noise Level ² (dBA)	Difference (dB)
Dozer and Tracked Excavator	R1	North	34.9	74.0	74.0	0.0
	R2	East	137.0	62.0	57.4	4.6
	R2 ³	East	137.0	61.6	61.3	0.3

¹Calculated as attenuation by distance only (see Section 1.3.2)

²As predicted by Cadna model

³Calculated without consideration of topography.

As shown above in Table 2, the calculated value for R1 was found to be equivalent to the Cadna noise level. The calculated value for R2 was found to be 4.6 dB higher than the Cadna noise level. It is the opinion of the undersigned that the difference between these two values is due to topography on the site. To further validate the results of the Cadna noise prediction model at R2, the calculations were performed without incorporating any topography. Without topography, the calculated value for R2 was found to be 0.3 dB higher than the Cadna noise level.

1.3.2 Formulas and Calculations

The following formulas and calculations have been used in the preparation of this analysis:

Decibel Addition

To determine the combined logarithmic noise level of two known noise source levels, the values are converted to the base values, added together, and then converted back to the final logarithmic value, using the following formula:

$$L_C = 10 \log(10^{L_1/10} + 10^{L_2/10} + 10^{L_N/10})$$

where L_C = the combined noise level (dB), and
 L_N = the individual noise sources (dB).

This procedure is also valid when used successively for each added noise source beyond the first two. The reverse procedure can be used to estimate the contribution of one source when the contribution of another concurrent source is known and the combined noise level is known. These methods can be used for L_{EQ} or other metrics (such as L_{DN} or CNEL), as long as the same metric is used for all components.

Attenuation Due To Distance

Attenuation due to distance is calculated by the equation:

$$SPL_2 = SPL_1 - 20 \log\left(\frac{D_2}{D_1}\right)$$

where SPL_1 = Known sound pressure level at known distance,
 SPL_2 = Calculated sound pressure level at distance,

D₁ = Distance from source to location of known sound pressure level, and
D₂ = Distance from source to location of calculated sound pressure level.

This is identical to the more commonly used reference of 6 dB reduction for every doubling of distance. This equation does not take into account reduction in noise due to atmospheric absorption.

Hourly L_{EQ} Summation

To determine the hourly average noise levels (L_{EQ}) when the noise is created for less than the full hour, convert the logarithm values to the base energy value, multiply by the percentage of the hour that the noise occurs, and then convert the sum back to a logarithmic value. This is done with the following formula:

$$L_{EQ} = 10 \log(P_H \times 10^{L_P/10})$$

where P_H = the percent or fraction of the hour noise is created, and
L_P = the partial hour noise level (dB).

1.3.3 Measurement Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis Model LxT Type 1 Sound Level Meter, Serial # 4084
- Larson Davis Model CA250 Calibrator, Serial # 1081
- Tripod, microphone windscreen

The sound level meter was field-calibrated immediately prior to the noise measurement and checked afterward, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI S1.4). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

2.0 PROJECT-GENERATED AIRBORNE NOISE

2.1 Guidelines for the Determination of Significance

Section 36.409 of the County of San Diego Noise Ordinance states that it is unlawful to operate construction equipment that exceeds an average sound level of 75 dBA for an eight-hour period, between 7 a.m. and 7 p.m. when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received. In addition, according to Section 36.408 of the ordinance, construction activities must be limited to the hours of 7 a.m. to 7 p.m., Monday through Saturday (except legal holidays). No construction activity is permitted on Sunday. Section 36.410 provides noise limits for impulsive noise, which is defined as a high peak noise level of short duration (one second or less). Impulsive activity includes blasting and the use of equipment such as a rock crusher, hoe ram, pile driver, or drill rig. None of this activity is anticipated to take place on the project site, and therefore, impulsive activity has not been evaluated in any further depth.

Please refer to Appendix B: Pertinent Sections of the County of San Diego Noise Ordinance.

2.2 Potential General Construction Noise Impacts

2.2.1 Potential Temporary Construction Noise Impacts without Mitigation

According to the County of San Diego Noise Ordinance, temporary construction noise must be adequately controlled at occupied properties. The occupied properties surrounding the site include receivers to the north, south, east, and west, with the nearest affected receivers to the north and east. Both receivers are residential properties.

An anticipated construction schedule was formulated using information provided by Mike Cole of Landmark Engineering, Inc., Mark Khouli of Lighthouse Builders, and Cecilia Balcazar. According to the grading plan, there will be 4,700 cubic yards of cut and 2,300 cubic yards of fill with 2,400 cubic yards of export from the site. This consideration was taken into account when making typical equipment assumptions. The anticipated construction activities are shown in Table 3.

Table 3. Anticipated Construction Activity	
Phase	Anticipated Large Equipment
1. Grading	Dozer, Tracked Excavator, Dump Truck
2. Utilities / Underground Facilities	Tracked Excavator
3. Foundation Excavation	Backhoe, Excavator with Auger
4. Foundation Pouring	Concrete Mixer Truck, Concrete Pump
5. Framing / Building Construction	Air Compressor, Telescopic Forklift
6. Paving	Paver, Roller

Please refer to Table 4 for typical noise levels of construction equipment expected to be used on site, as described above. All noise levels have been provided by the UK Department for Environment, Food and Rural Affairs (DEFRA).

Table 4. Typical Construction Equipment Noise Levels ¹		
Noise Source	Duty Cycle (%) ¹	Calculated Noise Level (L _{MAX}) at 32.8 feet (dBA)
Dozer	40	78
Tracked Excavator	40	69
Dump Truck	40	76
Backhoe	40	68
Excavator with Auger	40	69
Concrete Mixer Truck	40	75
Concrete Pump	20	75
Air Compressor	40	65

Table 4. Typical Construction Equipment Noise Levels ¹		
Noise Source	Duty Cycle (%) ¹	Calculated Noise Level (L _{MAX}) at 32.8 feet (dBA)
Telescopic Forklift	40	71
Paver	50	75
Roller	20	73

¹Duty cycle information from Federal Highway Administration.

As activity on Lot 1 would represent the worst-case condition where construction equipment would be operating at the closest distance to surrounding noise-sensitive properties, it has been used for a worst-case analysis of construction noise at the site. Receivers on property lines to the north and east were calculated for the phases of construction listed above considering construction activity centered on Lot 1. All other noise-sensitive receivers are located at a greater distance from potential construction activity and are expected to have lower noise levels. Construction equipment noise sources were placed at the center of Lot 1 in order to account for the varying distance from source to receiver as equipment moves around the site.

Noise levels of construction at the locations described above are shown in Table 5. Detailed calculations can be found in Appendix C. Source and receiver locations and graphical representations of construction noise contours for each phase are shown in Figures 6 through 11.

Table 5. Temporary Construction Noise Levels at Neighboring Properties				
Phase	Equipment Used	Receiver Location	Distance (ft)	8-Hour Average Noise Level (dBA)
1. Grading	Dozer, Tracked Excavator, Dump Truck	North (R1)	50	73.2
		East (R2)	137	60.9
2. Utilities / Underground Facilities	Tracked Excavator	North (R1)	50	61.2
		East (R2)	137	49.0
3. Foundation Excavation	Backhoe, Excavator with Auger	North (R1)	50	63.8
		East (R2)	137	51.6
4. Foundation Pouring	Concrete Mixer Truck, Concrete Pump	North (R1)	50	72.8
		East (R2)	137	61.1
5. Framing / Building Construction	Air Compressor, Telescopic Forklift	North (R1)	50	64.2
		East (R2)	137	51.3
6. Paving	Paver, Roller	North (R1)	50	69.2
		East (R2)	137	57.0

2.2.2 Design Considerations and Temporary Mitigation Measures

As shown above, worst-case noise levels from temporary construction activity are expected to be in compliance with the County of San Diego eight-hour average equivalent noise limit of 75 dBA for on-site and off-site activity.

For any project in which construction activity will take place near occupied residential properties, the following “good practice” recommendations should be adhered to whenever possible:

1. Turn off equipment when not in use.
2. Equipment used in construction should be maintained in proper operating condition, and all loads should be properly secured, to prevent rattling and banging.
3. Use equipment with effective mufflers.
4. Minimize the use of backup alarms.
5. Equipment staging areas should be placed at locations away from noise-sensitive (occupied) receivers.

These general recommendations, in addition to limiting construction equipment operation to the allowable hours detailed in the County of San Diego Noise Ordinance, will assist in maintaining the comfort of neighboring sensitive receivers during the construction of this site.

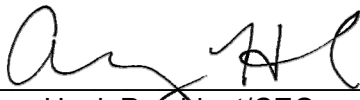
3.0 CONCLUSION

Calculations show that typical construction activities will not exceed the County of San Diego temporary construction noise limit of 75 dBA at adjacent property lines during the construction activity. General good practice measures should be followed to ensure that noise levels remain below the County of San Diego construction noise limits, including reasonable maintenance of equipment, conservative planning of simultaneous equipment operation, and using equipment with effective mufflers. Equipment operation must also be limited to the allowable hours of operation set by the County of San Diego.

4.0 CERTIFICATION

The findings and recommendations of this acoustical analysis report are based on the information available and are a true and factual analysis of the potential acoustical issues associated with the proposed Spring Valley Housing project, located at Grand Avenue and Eucalyptus Street in the unincorporated community of Spring Valley, County of San Diego, California. This report was prepared by Mo Ouwenga and Amy Hool.

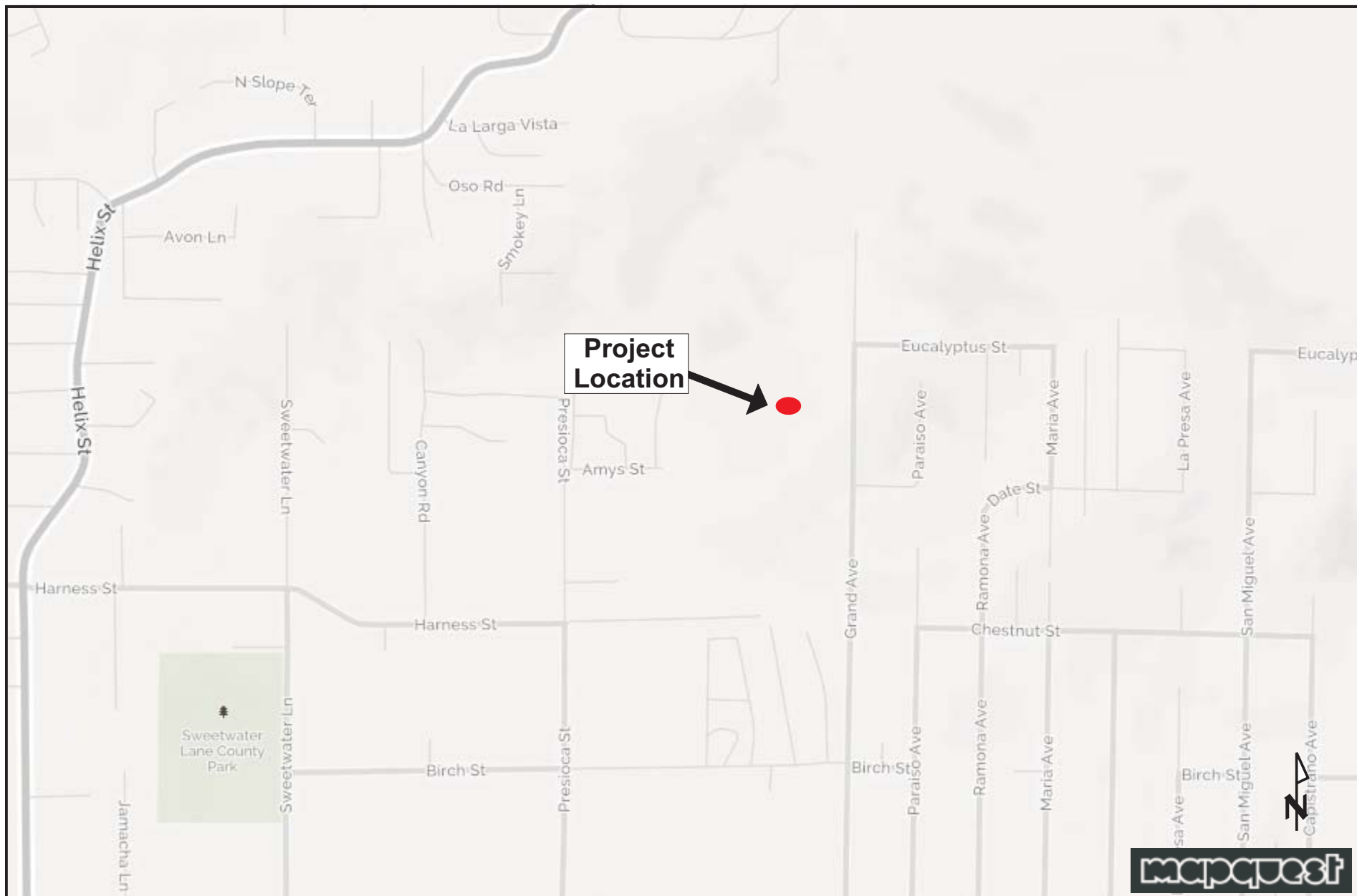

Mo Ouwenga, Acoustical Consultant


Amy Hool, President/CEO

5.0 REFERENCES

1. County of San Diego Noise Ordinance.
2. DataKustik, CadnaA (Computer Aided Noise Abatement), Version 2018.
3. UK Department for Environment, Food, and Rural Affairs (DEFRA) Construction Noise Database.
4. U.S. Department of Transportation Federal Highway Administration, Construction Noise Handbook, Construction Equipment Noise Levels and Ranges.

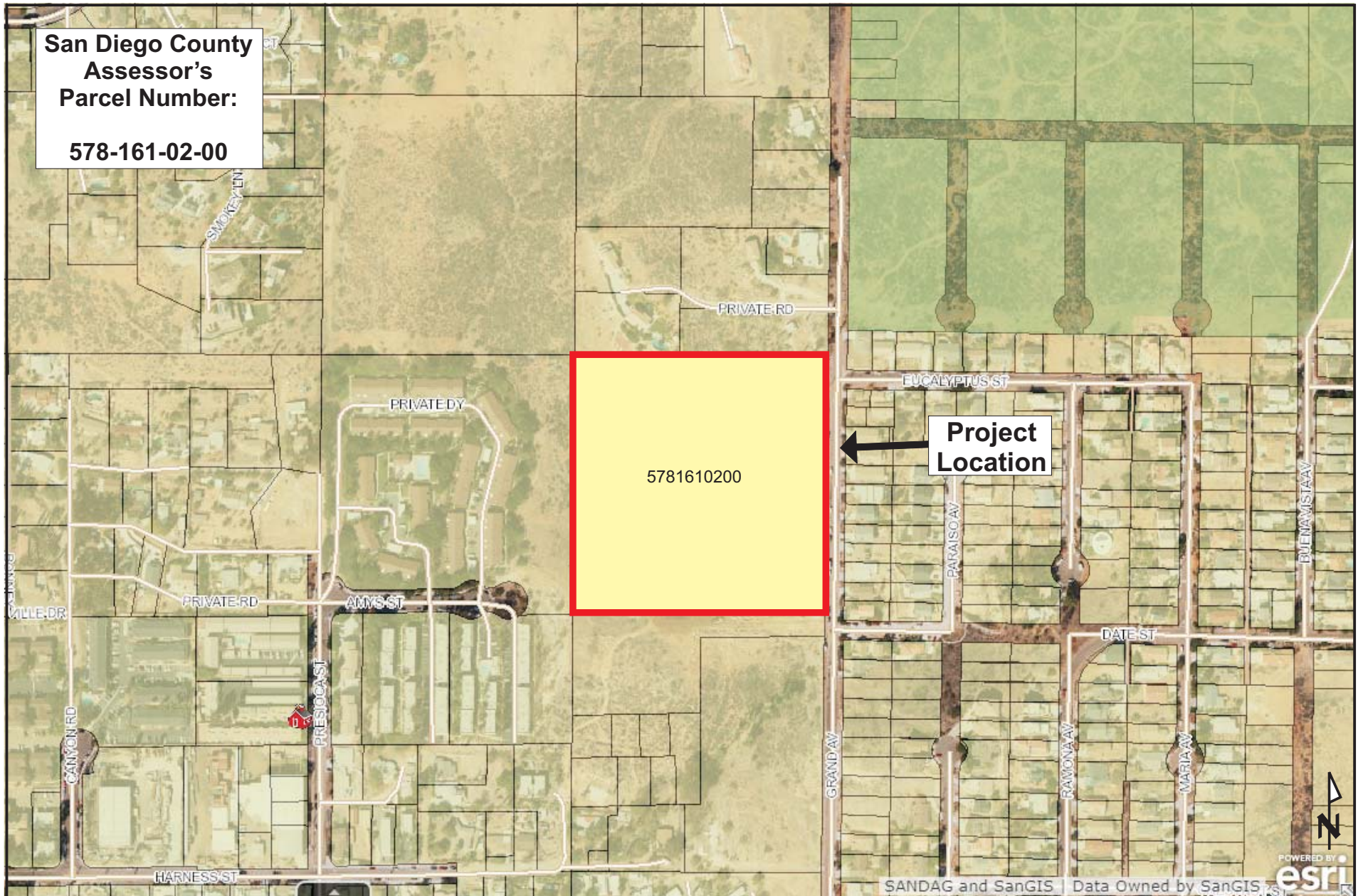
FIGURES



Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025
760-738-5570

Vicinity Map
Job # B80209N1

Figure 1



Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025
760-738-5570

Assessor's Parcel Map
Job # B80209N1

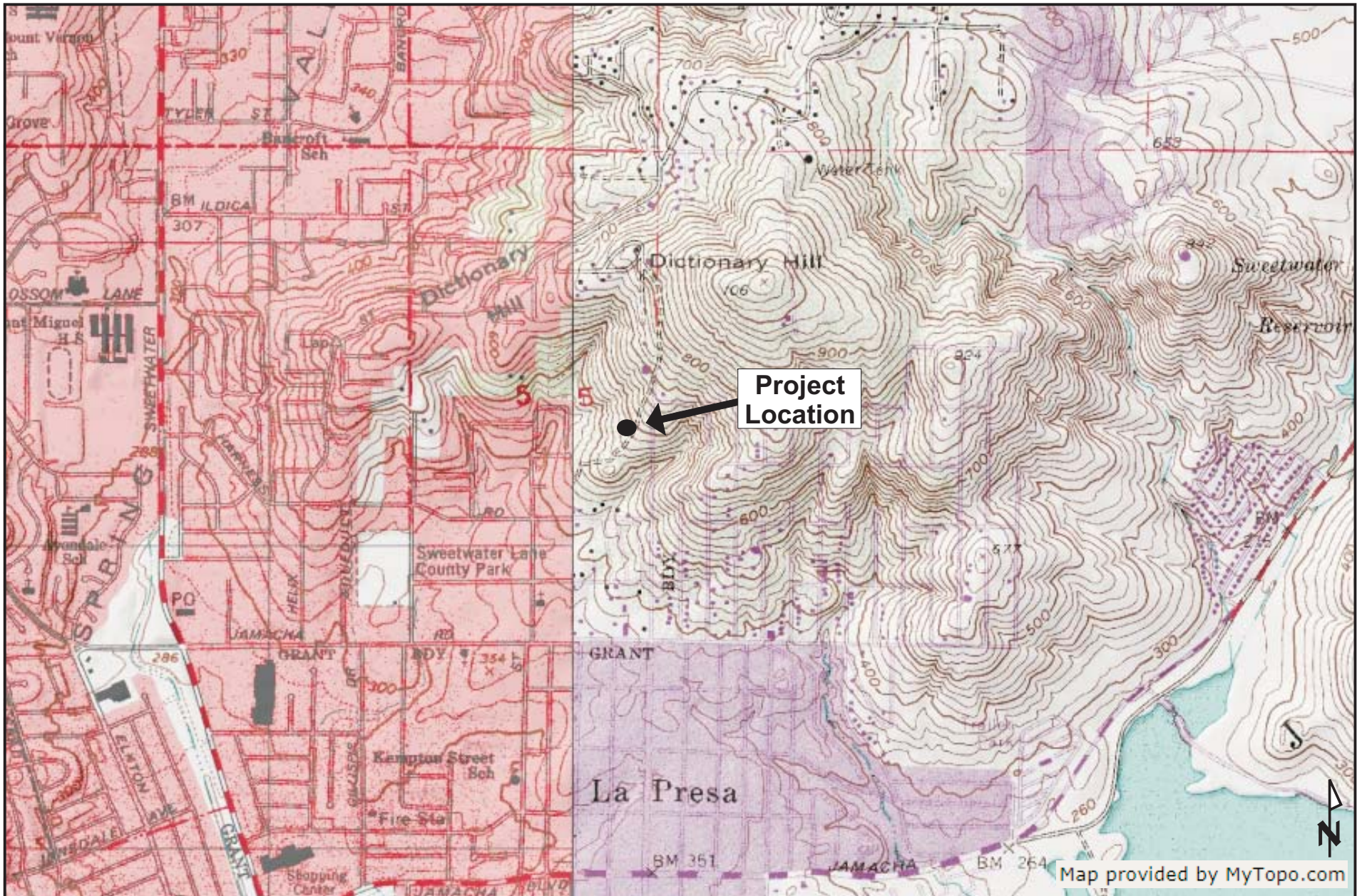
Figure 2



Eilar Associates, Inc.
 210 South Juniper Street, Suite 100
 Escondido, California 92025
 760-738-5570

Satellite Aerial Photograph
 Job # B80209N1

Figure 3



Eilar Associates, Inc.
 210 South Juniper Street, Suite 100
 Escondido, California 92025
 760-738-5570

Topographic Map
 Job # B80209N1

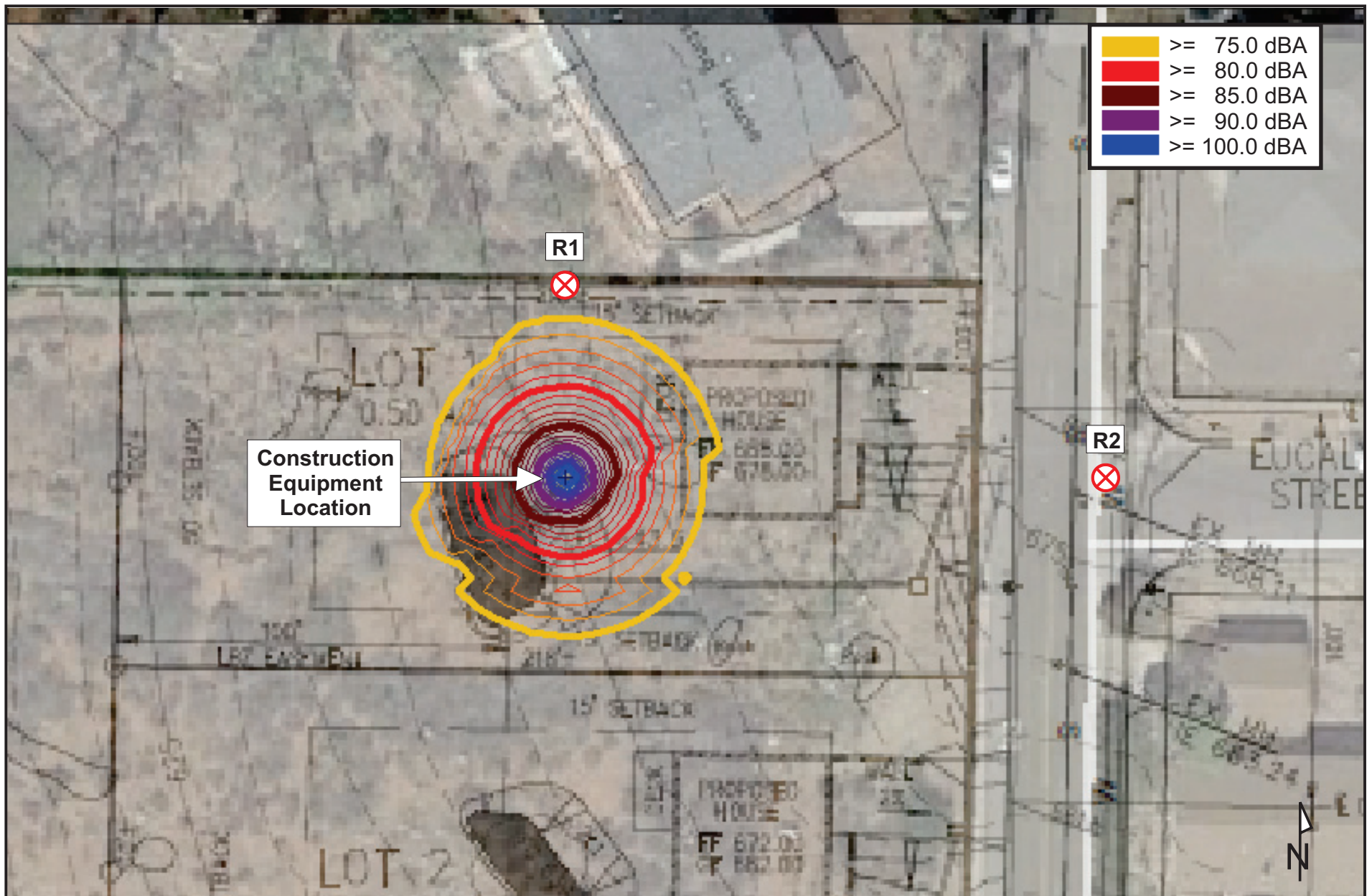
Figure 4



Eilar Associates, Inc.
 210 South Juniper Street, Suite 100
 Escondido, California 92025
 760-738-5570

Satellite Aerial Photograph Showing
 Site Plan and
 Noise Measurement Location
 Job # B80209N1

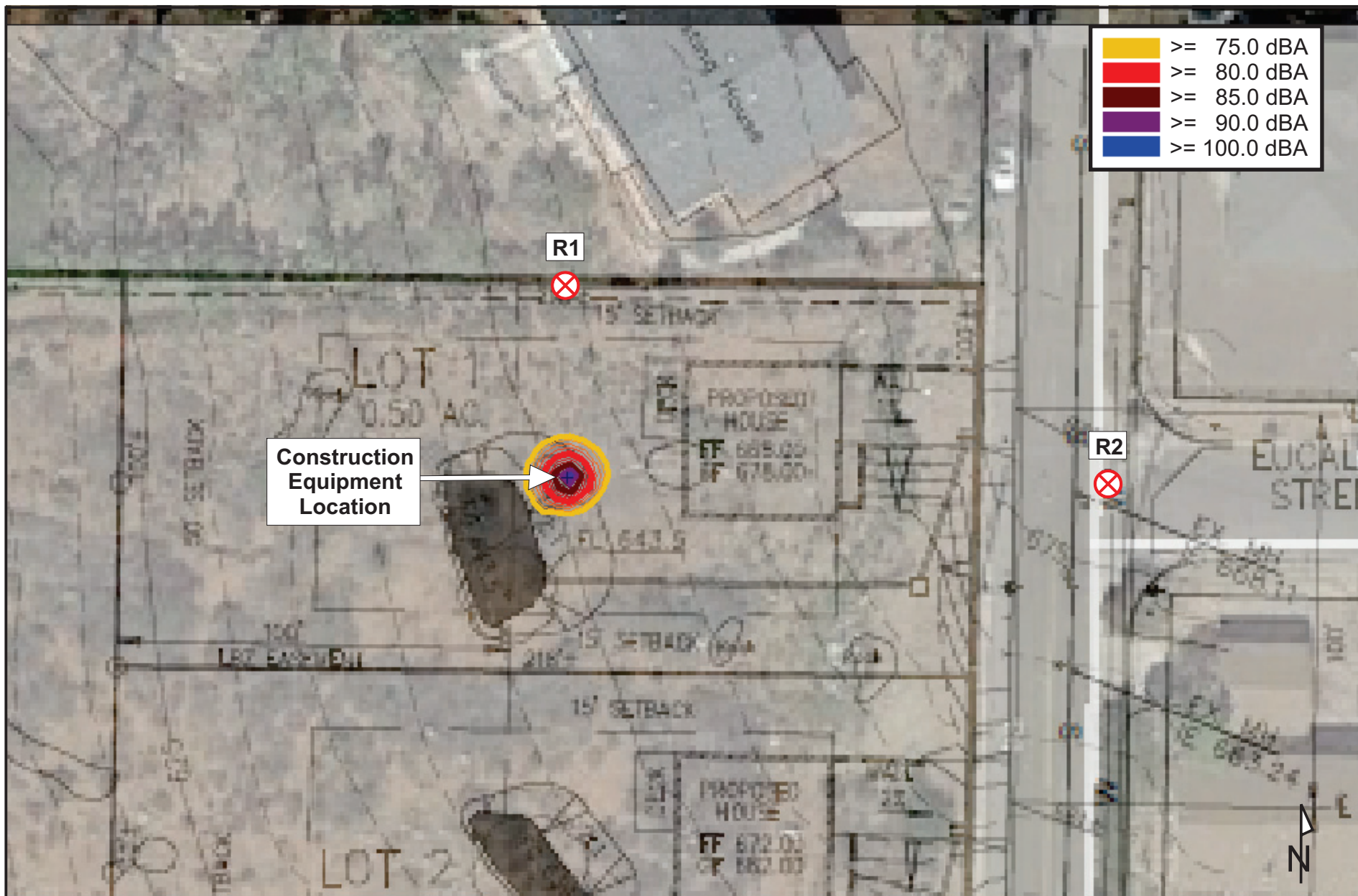
Figure 5



Eilar Associates, Inc.
 210 South Juniper Street, Suite 100
 Escondido, California 92025
 760-738-5570

Satellite Aerial Photograph Showing
 Site Plan and Construction Noise Contours
 for Phase 1
 Job # B80209N1

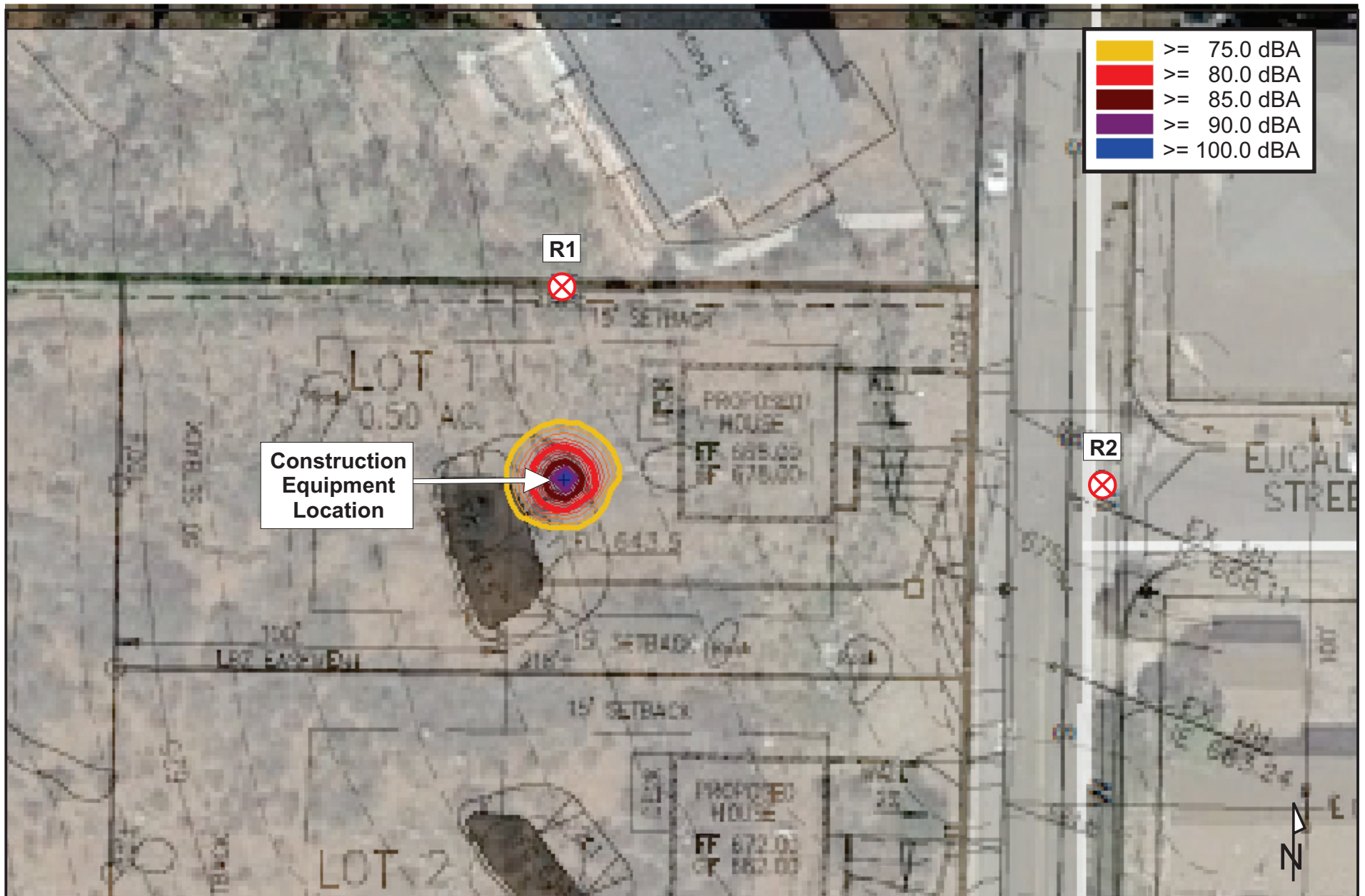
Figure 6



Eilar Associates, Inc.
 210 South Juniper Street, Suite 100
 Escondido, California 92025
 760-738-5570

Satellite Aerial Photograph Showing
 Site Plan and Construction Noise Contours
 for Phase 2
 Job # B80209N1

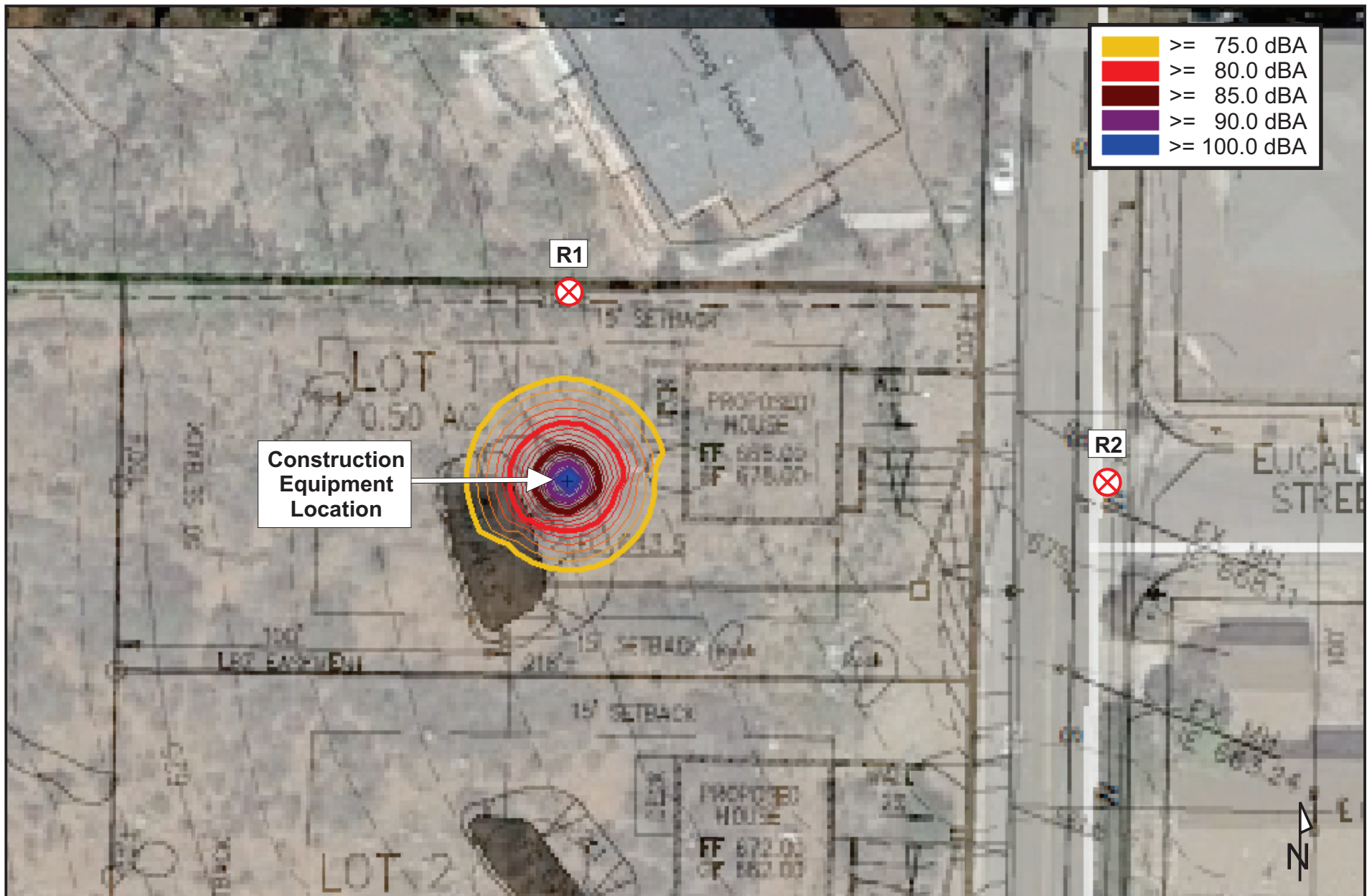
Figure 7



Eilar Associates, Inc.
 210 South Juniper Street, Suite 100
 Escondido, California 92025
 760-738-5570

**Satellite Aerial Photograph Showing
 Site Plan and Construction Noise Contours
 for Phase 5
 Job # B80209N1**

Figure 10



Eilar Associates, Inc.
210 South Juniper Street, Suite 100
Escondido, California 92025
760-738-5570

**Satellite Aerial Photograph Showing
Site Plan and Construction Noise Contours
for Phase 6
Job # B80209N1**

Figure 11

APPENDIX A

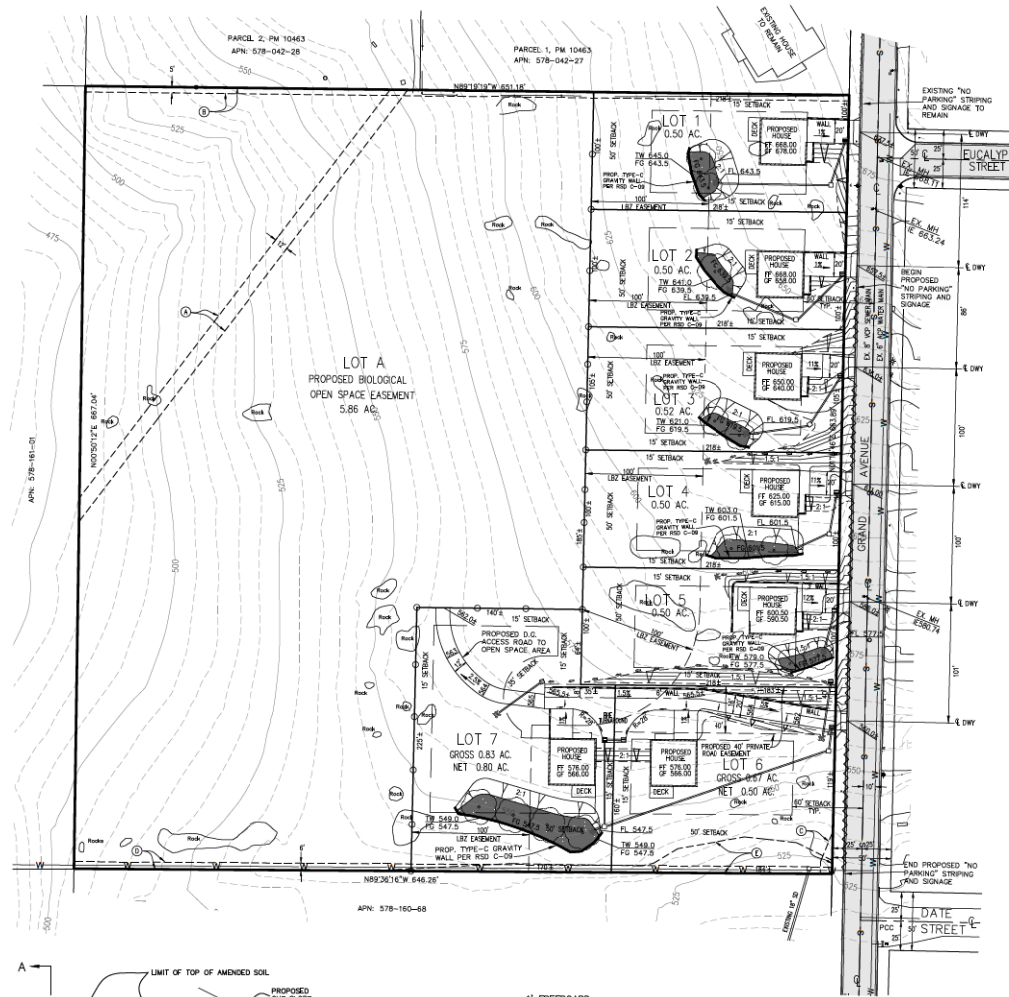
Project Plans

EASEMENTS

- ① ITEM 7. EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS GRANTED IN DOCUMENT:
 GRANTED TO: SAN DIEGO GAS AND ELECTRIC COMPANY
 PURPOSE: UNDERGROUND FACILITIES AND ABOVE GROUND STRUCTURES
 RECORDING DATE: FEBRUARY 13, 1998
 RECORDING NO: BOOK 6048, PAGE 398, OF OFFICIAL RECORDS
 SAID LAND MORE PARTICULARLY DESCRIBED THEREIN
- ① ITEM 9. EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS GRANTED IN DOCUMENT:
 GRANTED TO: SPRING VALLEY SANITATION DISTRICT
 PURPOSE: SEWER LINE
 RECORDING DATE: MARCH 5, 1962
 RECORDING NO: 40574, OF OFFICIAL RECORDS
- ③ ITEM 10. EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS GRANTED IN DOCUMENT:
 GRANTED TO: COUNTY OF SAN DIEGO
 PURPOSE: SLOPES
 RECORDING DATE: NOVEMBER 18, 1964
 RECORDING NO: 210201, OF OFFICIAL RECORDS
- ③ ITEM 11. EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN DOCUMENT:
 PURPOSE: RIGHTS OF WAY TO INSTALL AND MAINTAIN WATER LINES
 RECORDING DATE: OCTOBER 16, 1967
 RECORDING NO: 160118, OF OFFICIAL RECORDS
- ③ ITEM 14. EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN DOCUMENT:
 PURPOSE: Off-site drainage
 RECORDING DATE: JULY 18, 2017
 RECORDING NO: 2017-0322840, OF OFFICIAL RECORDS

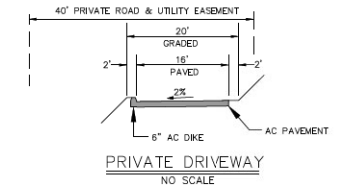
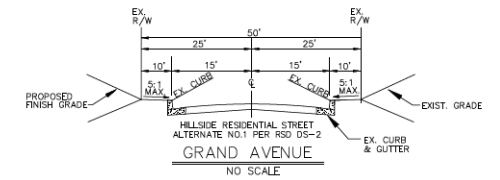
PRELIMINARY GRADING PLAN NOTE:
 THIS PLAN IS PROVIDED TO ALLOW FOR THE FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN A VALID GRADING PERMIT BEFORE COMMENCING SUCH ACTIVITY.

PRELIMINARY GRADING PLAN



LEGEND

- BOUNDARY
- LOT LINES
- EASEMENTS
- FF FINISH FLOOR ELEVATION
- GF GARAGE FLOOR ELEVATION
- PROPOSED CUT SLOPES
- PROPOSED FILL SLOPES (2:1 TYP)
- PROPOSED CATCH BASIN
- PROPOSED CLEANOUT
- PROPOSED PCC BROW DITCH
- PROPOSED RIP RAP
- PROPOSED RETAINING WALL
- EASEMENT DESCRIPTION
- OPEN SPACE FENCING AND SIGNAGE
- TREE IN TREE WELL (SEE TABLE BELOW FOR TREE CANOPY SIZES)
- EXISTING "NO PARKING" STRIPING AND SIGNAGE
- PROPOSED "NO PARKING" STRIPING AND SIGNAGE
- PROPOSED DRIVEWAY APRON PER RSD G-14A

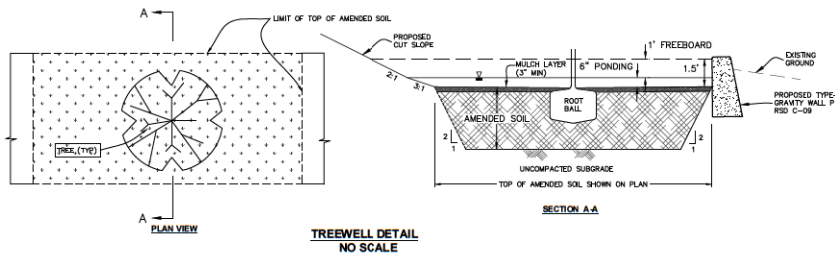
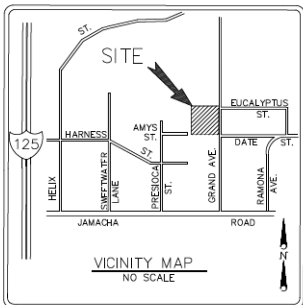


LOT #	MAX. ELEVATION DIFFERENCE BETWEEN 1ST FLOOR PERIMETER AND ADJACENT FINISHED GRADE (12' MAX. ALLOWABLE)	PERCENTAGE OF 1ST FLOOR PERIMETER THAT IS MORE THAN 6" ABOVE ADJACENT FINISHED GRADE (50% MAX. ALLOWABLE)
1	12.0'	50%
2	11.5'	50%
3	11.0'	40%
4	5.5'	0%
5	2.5'	0%
6	12.0'	45%
7	10.0'	50%

SITE ADDRESS:
 GRAND AVENUE
 SPRING VALLEY, CA 91977

APN:
 578-161-02

EARTHWORK:
 CUT: 4,700 C.Y.
 FILL: 2,300 C.Y.
 EXPORT: 2,400 C.Y.



TREE WELL SUMMARY

LOT #	DWA	NO. OF TREE WELLS	NATURE TREE CANOPY
1	1	2	25'
2	2	1	30'
3	3	2	25'
4	4	2	25'
5	5	2	25'
7	6	4	30'



PREPARED BY:
 LAWRENCE W. WALSH
Walsh Engineering & Surveying, Inc.
 4074 Miraflores Road, El Cerrito, CA 94500
 (916) 588-6747 (916) 792-0332 Fax

DATE

APPENDIX B

Pertinent Sections of the County of San Diego Noise Ordinance

(Amended by Ord. No. 7428 (N.S.), effective 2-4-88; amended by Ord. No. 9962 (N.S.), effective 1-9-09)

 SEC. 36.408. HOURS OF OPERATION OF CONSTRUCTION EQUIPMENT.

Except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment:

(a) Between 7 p.m. and 7 a.m.

(b) On a Sunday or a holiday. For purposes of this section, a holiday means January 1st, the last Monday in May, July 4th, the first Monday in September, December 25th and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10 a.m. and 5 p.m. at the person's residence or for the purpose of constructing a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limitations in sections [36.409](#) and [36.410](#).

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

 SEC. 36.409. SOUND LEVEL LIMITATIONS ON CONSTRUCTION EQUIPMENT.

Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 decibels for an eight-hour period, between 7 a.m. and 7 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

(Amended by Ord. No. 9700 (N.S.), effective 2-4-05; amended by Ord. No. 9962 (N.S.), effective 1-9-09)

 SEC. 36.410. SOUND LEVEL LIMITATIONS ON IMPULSIVE NOISE.

In addition to the general limitations on sound levels in section [36.404](#) and the limitations on construction equipment in section [36.409](#), the following additional sound level limitations shall apply:

(a) Except for emergency work or work on a public road project, no person shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in [Table 36.410A](#), when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in [Table 36.410A](#) are as described in the County Zoning Ordinance.

TABLE 36.410A.
MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA)

OCCUPIED PROPERTY USE	DECIBELS (dBA)
Residential, village zoning or civic use	82
Agricultural, commercial or industrial use	85

(b) Except for emergency work, no person working on a public road project shall produce or cause to be produced an impulsive noise that exceeds the maximum sound level shown in [Table 36.410B](#), when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is received, for 25 percent of the minutes in the measurement period, as described in subsection (c) below. The maximum sound level depends on the use being made of the occupied property. The uses in [Table 36.410B](#) are as described in the County Zoning Ordinance.

TABLE 36.410B.
MAXIMUM SOUND LEVEL (IMPULSIVE) MEASURED AT OCCUPIED PROPERTY IN DECIBELS (dBA)
FOR PUBLIC ROAD PROJECTS

OCCUPIED PROPERTY USE	dB(A)
Residential, village zoning or civic use	85
Agricultural, commercial or industrial use	90

(c) The minimum measurement period for any measurements conducted under this section shall be one hour. During the measurement period a measurement shall be conducted every minute from a fixed location on an occupied property. The measurements shall measure the maximum sound level during each minute of the measurement period. If the sound level caused by construction equipment or the producer of the impulsive noise exceeds the maximum sound level for any portion of any minute, it will be deemed that the maximum sound level was exceeded during that minute.

(Added by Ord. No. 9962 (N.S.), effective 1-9-09)

 SEC. 36.411. CONTAINERS AND CONSTRUCTION MATERIAL.

It shall be unlawful for any person to handle, transport, or cause to be handled or transported in any public place, any container or any construction material in such a way as to create a disturbing, excessive, or offensive noise as defined in section [36.402](#) of this chapter.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

 SEC. 36.412. SIGNAL DEVICE FOR FOOD TRUCKS.

No person shall operate or cause to have operated or used any sound signal device other than sound-amplification equipment attached to a motor vehicle wagon or manually propelled cart from which food or any other items are sold which emits a sound signal more frequently than once every ten minutes in any one street block and with a duration of more than ten seconds for any single emission. The sound level of this sound signal shall not exceed 90 decibels at 50 feet from the point of the noise source.

(Amended by Ord. No. 9962 (N.S.), effective 1-9-09)

 SEC. 36.413. MULTIPLE FAMILY DWELLING UNITS.

Notwithstanding any other provision of this chapter it shall be unlawful for any person to create, maintain or cause to be maintained any sound within the interior of any multiple family dwelling unit which causes the noises level to exceed those limits set forth below in another dwelling unit:

TABLE 36.413
ALLOWABLE INTERIOR NOISE LEVEL

Type of Land Use	Hours		Allowable Interior Noise Level (dBA)	
		No Time	1 min in 1 hour	5 min in 1 hour
Multifamily	10 pm- 7 am	> 45	40	35
Residential	7 am-10 pm	> 55	50	35

(> greater than)

APPENDIX C

Cadna Analysis Data and Results

Noise Attenuation by Distance Calculation

Job: Spring Valley Housing
Job #: B80209N1
Date: 3/6/2018
Source: Dozer
Receiver: R1

Noise Source

Noise Level (dBA) 78 at 32.8 feet

Distances

Source Elevation 653.5 feet at 5 feet above grade
Receiver Elevation: 656.5 feet at 5 feet above grade
Source to Receiver Distance: 34.9 feet

Path Calculation

Source to Receiver Direct Path Distance: 35 feet

Sound Pressure Level

77.4 at 35 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 73.4

Summation

Number of Sources: 2
Level during 8 hour day: 74.0

Noise Attenuation by Distance Calculation

Job: Spring Valley Housing
Job #: B80209N1
Date: 3/6/2018
Source: **Tracked Excavator**
Receiver: R1

Noise Source

Noise Level (dBA) 69 at 32.8 feet

Distances

Source Elevation 653.5 feet at 5 feet above grade
Receiver Elevation: 656.5 feet at 5 feet above grade
Source to Receiver Distance: 34.9 feet

Path Calculation

Source to Receiver Direct Path Distance: 35 feet

Sound Pressure Level 68.4 at 35 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 64.4

Noise Attenuation by Distance Calculation

Job: Spring Valley Housing
Job #: B80209N1
Date: 3/6/2018
Source: Dozer
Receiver: R2

Noise Source

Noise Level (dBA) 78 at 32.8 feet

Distances

Source Elevation 653.5 feet at 5 feet above grade
Receiver Elevation: 677.2 feet at 5 feet above grade
Source to Receiver Distance: 137 feet

Path Calculation

Source to Receiver Direct Path Distance: 139 feet

Sound Pressure Level 65.5 at 139 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 61.5

Summation

Number of Sources: 2
Level during 8 hour day: 62.0

Noise Attenuation by Distance Calculation

Job: Spring Valley Housing
Job #: B80209N1
Date: 3/6/2018
Source: **Tracked Excavator**
Receiver: R2

Noise Source

Noise Level (dBA) 69 at 32.8 feet

Distances

Source Elevation 653.5 feet at 5 feet above grade
Receiver Elevation: 677.1 feet at 5 feet above grade
Source to Receiver Distance: 137 feet

Path Calculation

Source to Receiver Direct Path Distance: 139 feet

Sound Pressure Level 56.5 at 139 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 52.5

Noise Attenuation by Distance Calculation

Job: Spring Valley Housing
Job #: B80209N1
Date: 3/6/2018
Source: Dozer
Receiver: R2 - No Terrain Contours

Noise Source

Noise Level (dBA) 78 at 32.8 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 0 feet at 5 feet above grade
Source to Receiver Distance: 137 feet

Path Calculation

Source to Receiver Direct Path Distance: 137 feet

Sound Pressure Level

65.6 at 137 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 61.6

Summation

Number of Sources: 2
Level during 8 hour day: 61.6

Noise Attenuation by Distance Calculation

Job: Spring Valley Housing
Job #: B80209N1
Date: 3/6/2018
Source: **Tracked Excavator**
Receiver: R2 - No Terrain Contours

Noise Source

Noise Level (dBA) 69 at 32.8 feet

Distances

Source Elevation 0 feet at 5 feet above grade
Receiver Elevation: 677.1 feet at 5 feet above grade
Source to Receiver Distance: 137 feet

Path Calculation

Source to Receiver Direct Path Distance: 691 feet

Sound Pressure Level 42.5 at 691 feet
Hours of Use: 8
Duty Cycle (%): 40
Level During 8 Hour day: 38.6

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Escondido, California 92025-4230

Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			74.0	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			57.4	-80.2	0.0	0.0				1.52	r	395.57	275.35	207.92

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)				dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Dozer	+		107.9	107.9	107.9	Lw	S1		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	275.27	200.72
Excavator	+		98.9	98.9	98.9	Lw	S2		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	275.27	200.72

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
c1	+			162.00		28.58	375.65	162.00
						19.05	364.54	162.00
c2	+			240.00		563.68	371.42	240.00
						574.26	358.72	240.00
c3	+			204.00		552.04	36.92	204.00
						560.50	52.79	204.00
c4	+			129.00		66.16	60.73	129.00
						66.69	42.74	129.00
c5	+			140.00		265.70	32.68	140.00
						324.98	32.68	140.00
c6	+			195.00		281.05	372.48	195.00
						295.87	373.54	195.00
1.480	+			146.30		168.55	260.29	146.30
						178.40	252.28	146.30
						191.30	240.04	146.30
						187.27	229.92	146.30
						183.60	173.58	146.30
						178.98	160.67	146.30
						178.77	147.12	146.30
						168.90	130.00	146.30
2.500	+			152.40		168.52	294.15	152.40
						185.45	270.40	152.40
						194.78	261.93	152.40
						209.20	255.91	152.40
						210.92	248.37	152.40
						207.68	243.01	152.40
						204.90	230.04	152.40
						204.40	203.62	152.40
						209.13	169.71	152.40
						209.02	152.69	152.40
						202.62	130.54	152.40
						184.20	107.28	152.40
						178.03	91.86	152.40
						177.63	71.03	152.40
						176.71	62.76	152.40
3.520	+			158.50		184.31	304.19	158.50
						184.78	295.21	158.50
						191.66	286.81	158.50
						190.34	278.25	158.50
						214.71	270.32	158.50
						220.01	271.37	158.50
						220.84	265.45	158.50
						224.84	253.29	158.50
						226.26	251.37	158.50

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.18	245.62	158.50
						224.84	232.12	158.50
						224.58	204.73	158.50
						232.25	181.57	158.50
						231.86	138.97	158.50
						228.02	120.32	158.50
						223.79	110.66	158.50
						215.98	97.29	158.50
						206.85	87.90	158.50
						204.93	76.73	158.50
						199.02	73.56	158.50
4.540	+			164.59		201.89	304.30	164.59
						218.64	284.03	164.59
						228.40	279.83	164.59
						240.59	261.04	164.59
						243.11	228.69	164.59
						246.89	207.69	164.59
						253.24	188.77	164.59
						255.09	168.00	164.59
						252.84	154.24	164.59
						252.31	133.60	164.59
						253.63	117.19	164.59
						253.44	98.47	164.59
						258.99	88.88	164.59
						295.78	81.73	164.59
						328.52	81.86	164.59
						335.07	87.68	164.59
						344.53	91.26	164.59
						353.66	93.90	164.59
						360.02	96.84	164.59
						368.73	98.47	164.59
						375.40	98.79	164.59
						377.45	99.89	164.59
						384.78	97.22	164.59
						400.79	94.72	164.59
5.560	+			170.69		225.56	304.39	170.69
						247.49	290.30	170.69
						251.95	278.97	170.69
						260.61	267.19	170.69
						260.48	255.68	170.69
						265.98	227.01	170.69
						278.82	179.33	170.69
						276.98	154.91	170.69
						274.90	147.15	170.69
						270.65	144.74	170.69
						275.73	134.15	170.69

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.15	125.73	170.69
						286.57	124.57	170.69
						296.32	118.06	170.69
						309.57	111.98	170.69
						325.83	108.39	170.69
						343.75	110.15	170.69
						356.79	111.44	170.69
						372.34	112.73	170.69
						374.03	115.31	170.69
						383.42	119.61	170.69
						395.53	118.05	170.69
						400.59	119.87	170.69
6.580	+			176.78		262.86	304.73	176.78
						263.95	299.15	176.78
						276.70	278.81	176.78
						277.03	268.22	176.78
						294.24	202.99	176.78
						304.03	175.07	176.78
						308.70	162.84	176.78
						320.46	145.66	176.78
						330.80	136.41	176.78
						347.84	134.54	176.78
						370.54	136.85	176.78
						380.83	140.92	176.78
						385.92	145.85	176.78
						394.95	144.90	176.78
						399.47	139.76	176.78
7.600	+			182.88		282.77	304.56	182.88
						292.52	288.80	182.88
						294.35	280.22	182.88
						294.94	258.13	182.88
						301.29	238.28	182.88
						314.92	203.61	182.88
						331.19	177.94	182.88
						334.45	174.16	182.88
						333.92	168.28	182.88
						339.91	162.93	182.88
						348.31	160.09	182.88
						363.01	161.24	182.88
						370.05	162.51	182.88
						382.85	162.71	182.88
						385.26	170.26	182.88
						394.97	169.63	182.88
						397.02	164.30	182.88
						400.89	163.84	182.88
8.620	+			188.98		304.26	304.63	188.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						312.24	294.23	188.98
						312.24	286.77	188.98
						313.82	280.15	188.98
						315.29	255.89	188.98
						316.65	247.81	188.98
						323.67	229.75	188.98
						333.06	216.91	188.98
						337.65	207.49	188.98
						344.66	200.21	188.98
						348.83	198.76	188.98
						360.93	190.75	188.98
						366.95	188.44	188.98
						379.13	186.05	188.98
						383.43	183.28	188.98
						400.37	181.95	188.98
9.640	+			195.07		330.96	304.52	195.07
						338.63	261.77	195.07
						342.93	246.12	195.07
						351.23	234.26	195.07
						361.94	223.96	195.07
						372.74	216.38	195.07
						383.91	211.79	195.07
						401.41	210.79	195.07
10.660	+			201.17		348.70	304.57	201.17
						355.84	294.06	201.17
						364.35	273.69	201.17
						368.34	264.55	201.17
						380.11	245.33	201.17
						383.15	243.86	201.17
						402.79	243.75	201.17
11.680	+			207.26		383.04	304.44	207.26
						384.72	296.09	207.26
						386.61	284.91	207.26
						396.59	284.33	207.26
						401.89	276.08	207.26
calib	-			0.00		719.69	111.07	0.00
						719.69	20.05	0.00
						841.40	19.52	0.00
						841.40	111.07	0.00
						719.69	111.07	0.00

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA

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Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			47.4	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			61.3	-80.2	0.0	0.0				1.52	r	395.57	275.35	1.52

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)				dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Dozer	+		107.9	107.9	107.9	Lw	S1		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	275.27	1.52
Excavator	+		98.9	98.9	98.9	Lw	S2		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	275.27	1.52

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA

Eilar Associates, Inc.

210 South Juniper Street, Suite 100

Escondido, California 92025-4230

Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			73.2	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			60.9	-80.2	0.0	0.0				1.52	r	395.83	270.78	207.39

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height	Coordinates			
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night					X	Y	Z	
			(dBA)	(dBA)	(dBA)				dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)	(m)	(m)	(m)	
Dozer	+		107.9	107.9	107.9	Lw	S1		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35
Dump Truck	+		107.1	107.1	107.1	Lw	S11		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35
Excavator	+		98.9	98.9	98.9	Lw	S2		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
c1	+			162.00		28.58	375.65	162.00
						19.05	364.54	162.00
c2	+			240.00		563.68	371.42	240.00
						574.26	358.72	240.00
c3	+			204.00		552.04	36.92	204.00
						560.50	52.79	204.00
c4	+			129.00		66.16	60.73	129.00
						66.69	42.74	129.00
c5	+			140.00		265.70	32.68	140.00
						324.98	32.68	140.00
c6	+			195.00		281.05	372.48	195.00
						295.87	373.54	195.00
1.480	+			146.30		168.55	260.29	146.30
						178.40	252.28	146.30
						191.30	240.04	146.30
						187.27	229.92	146.30
						183.60	173.58	146.30
						178.98	160.67	146.30
						178.77	147.12	146.30
						168.90	130.00	146.30
2.500	+			152.40		168.52	294.15	152.40
						185.45	270.40	152.40
						194.78	261.93	152.40
						209.20	255.91	152.40
						210.92	248.37	152.40
						207.68	243.01	152.40
						204.90	230.04	152.40
						204.40	203.62	152.40
						209.13	169.71	152.40
						209.02	152.69	152.40
						202.62	130.54	152.40
						184.20	107.28	152.40
						178.03	91.86	152.40
						177.63	71.03	152.40
						176.71	62.76	152.40
3.520	+			158.50		184.31	304.19	158.50
						184.78	295.21	158.50
						191.66	286.81	158.50
						190.34	278.25	158.50
						214.71	270.32	158.50
						220.01	271.37	158.50
						220.84	265.45	158.50
						224.84	253.29	158.50
						226.26	251.37	158.50

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.18	245.62	158.50
						224.84	232.12	158.50
						224.58	204.73	158.50
						232.25	181.57	158.50
						231.86	138.97	158.50
						228.02	120.32	158.50
						223.79	110.66	158.50
						215.98	97.29	158.50
						206.85	87.90	158.50
						204.93	76.73	158.50
						199.02	73.56	158.50
4.540	+			164.59		201.89	304.30	164.59
						218.64	284.03	164.59
						228.40	279.83	164.59
						240.59	261.04	164.59
						243.11	228.69	164.59
						246.89	207.69	164.59
						253.24	188.77	164.59
						255.09	168.00	164.59
						252.84	154.24	164.59
						252.31	133.60	164.59
						253.63	117.19	164.59
						253.44	98.47	164.59
						258.99	88.88	164.59
						295.78	81.73	164.59
						328.52	81.86	164.59
						335.07	87.68	164.59
						344.53	91.26	164.59
						353.66	93.90	164.59
						360.02	96.84	164.59
						368.73	98.47	164.59
						375.40	98.79	164.59
						377.45	99.89	164.59
						384.78	97.22	164.59
						400.79	94.72	164.59
5.560	+			170.69		225.56	304.39	170.69
						247.49	290.30	170.69
						251.95	278.97	170.69
						260.61	267.19	170.69
						260.48	255.68	170.69
						265.98	227.01	170.69
						278.82	179.33	170.69
						276.98	154.91	170.69
						274.90	147.15	170.69
						270.65	144.74	170.69
						275.73	134.15	170.69

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.15	125.73	170.69
						286.57	124.57	170.69
						296.32	118.06	170.69
						309.57	111.98	170.69
						325.83	108.39	170.69
						343.75	110.15	170.69
						356.79	111.44	170.69
						372.34	112.73	170.69
						374.03	115.31	170.69
						383.42	119.61	170.69
						395.53	118.05	170.69
						400.59	119.87	170.69
6.580	+			176.78		262.86	304.73	176.78
						263.95	299.15	176.78
						276.70	278.81	176.78
						277.03	268.22	176.78
						294.24	202.99	176.78
						304.03	175.07	176.78
						308.70	162.84	176.78
						320.46	145.66	176.78
						330.80	136.41	176.78
						347.84	134.54	176.78
						370.54	136.85	176.78
						380.83	140.92	176.78
						385.92	145.85	176.78
						394.95	144.90	176.78
						399.47	139.76	176.78
7.600	+			182.88		282.77	304.56	182.88
						292.52	288.80	182.88
						294.35	280.22	182.88
						294.94	258.13	182.88
						301.29	238.28	182.88
						314.92	203.61	182.88
						331.19	177.94	182.88
						334.45	174.16	182.88
						333.92	168.28	182.88
						339.91	162.93	182.88
						348.31	160.09	182.88
						363.01	161.24	182.88
						370.05	162.51	182.88
						382.85	162.71	182.88
						385.26	170.26	182.88
						394.97	169.63	182.88
						397.02	164.30	182.88
						400.89	163.84	182.88
8.620	+			188.98		304.26	304.63	188.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						312.24	294.23	188.98
						312.24	286.77	188.98
						313.82	280.15	188.98
						315.29	255.89	188.98
						316.65	247.81	188.98
						323.67	229.75	188.98
						333.06	216.91	188.98
						337.65	207.49	188.98
						344.66	200.21	188.98
						348.83	198.76	188.98
						360.93	190.75	188.98
						366.95	188.44	188.98
						379.13	186.05	188.98
						383.43	183.28	188.98
						400.37	181.95	188.98
9.640	+			195.07		330.96	304.52	195.07
						338.63	261.77	195.07
						342.93	246.12	195.07
						351.23	234.26	195.07
						361.94	223.96	195.07
						372.74	216.38	195.07
						383.91	211.79	195.07
						401.41	210.79	195.07
10.660	+			201.17		348.70	304.57	201.17
						355.84	294.06	201.17
						364.35	273.69	201.17
						368.34	264.55	201.17
						380.11	245.33	201.17
						383.15	243.86	201.17
						402.79	243.75	201.17
11.680	+			207.26		383.04	304.44	207.26
						384.72	296.09	207.26
						386.61	284.91	207.26
						396.59	284.33	207.26
						401.89	276.08	207.26
calib	-			0.00		719.69	111.07	0.00
						719.69	20.05	0.00
						841.40	19.52	0.00
						841.40	111.07	0.00
						719.69	111.07	0.00

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA
Dump Truck	S11	Lw (c)		108.0	108.0	107.0	103.0	102.0	100.0	95.0	85.0	107.1	113.5	DEFRA

Eilar Associates, Inc.

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Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			61.2	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			49.0	-80.2	0.0	0.0				1.52	r	395.83	270.78	207.39

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Excavator	+		98.9	98.9	98.9	Lw	S2		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
c1	+			162.00		28.58	375.65	162.00
						19.05	364.54	162.00
c2	+			240.00		563.68	371.42	240.00
						574.26	358.72	240.00
c3	+			204.00		552.04	36.92	204.00
						560.50	52.79	204.00
c4	+			129.00		66.16	60.73	129.00
						66.69	42.74	129.00
c5	+			140.00		265.70	32.68	140.00
						324.98	32.68	140.00
c6	+			195.00		281.05	372.48	195.00
						295.87	373.54	195.00
1.480	+			146.30		168.55	260.29	146.30
						178.40	252.28	146.30
						191.30	240.04	146.30
						187.27	229.92	146.30
						183.60	173.58	146.30
						178.98	160.67	146.30
						178.77	147.12	146.30
						168.90	130.00	146.30
2.500	+			152.40		168.52	294.15	152.40
						185.45	270.40	152.40
						194.78	261.93	152.40
						209.20	255.91	152.40
						210.92	248.37	152.40
						207.68	243.01	152.40
						204.90	230.04	152.40
						204.40	203.62	152.40
						209.13	169.71	152.40
						209.02	152.69	152.40
						202.62	130.54	152.40
						184.20	107.28	152.40
						178.03	91.86	152.40
						177.63	71.03	152.40
						176.71	62.76	152.40
3.520	+			158.50		184.31	304.19	158.50
						184.78	295.21	158.50
						191.66	286.81	158.50
						190.34	278.25	158.50
						214.71	270.32	158.50
						220.01	271.37	158.50
						220.84	265.45	158.50
						224.84	253.29	158.50
						226.26	251.37	158.50

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.18	245.62	158.50
						224.84	232.12	158.50
						224.58	204.73	158.50
						232.25	181.57	158.50
						231.86	138.97	158.50
						228.02	120.32	158.50
						223.79	110.66	158.50
						215.98	97.29	158.50
						206.85	87.90	158.50
						204.93	76.73	158.50
						199.02	73.56	158.50
4.540	+			164.59		201.89	304.30	164.59
						218.64	284.03	164.59
						228.40	279.83	164.59
						240.59	261.04	164.59
						243.11	228.69	164.59
						246.89	207.69	164.59
						253.24	188.77	164.59
						255.09	168.00	164.59
						252.84	154.24	164.59
						252.31	133.60	164.59
						253.63	117.19	164.59
						253.44	98.47	164.59
						258.99	88.88	164.59
						295.78	81.73	164.59
						328.52	81.86	164.59
						335.07	87.68	164.59
						344.53	91.26	164.59
						353.66	93.90	164.59
						360.02	96.84	164.59
						368.73	98.47	164.59
						375.40	98.79	164.59
						377.45	99.89	164.59
						384.78	97.22	164.59
						400.79	94.72	164.59
5.560	+			170.69		225.56	304.39	170.69
						247.49	290.30	170.69
						251.95	278.97	170.69
						260.61	267.19	170.69
						260.48	255.68	170.69
						265.98	227.01	170.69
						278.82	179.33	170.69
						276.98	154.91	170.69
						274.90	147.15	170.69
						270.65	144.74	170.69
						275.73	134.15	170.69

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.15	125.73	170.69
						286.57	124.57	170.69
						296.32	118.06	170.69
						309.57	111.98	170.69
						325.83	108.39	170.69
						343.75	110.15	170.69
						356.79	111.44	170.69
						372.34	112.73	170.69
						374.03	115.31	170.69
						383.42	119.61	170.69
						395.53	118.05	170.69
						400.59	119.87	170.69
6.580	+			176.78		262.86	304.73	176.78
						263.95	299.15	176.78
						276.70	278.81	176.78
						277.03	268.22	176.78
						294.24	202.99	176.78
						304.03	175.07	176.78
						308.70	162.84	176.78
						320.46	145.66	176.78
						330.80	136.41	176.78
						347.84	134.54	176.78
						370.54	136.85	176.78
						380.83	140.92	176.78
						385.92	145.85	176.78
						394.95	144.90	176.78
						399.47	139.76	176.78
7.600	+			182.88		282.77	304.56	182.88
						292.52	288.80	182.88
						294.35	280.22	182.88
						294.94	258.13	182.88
						301.29	238.28	182.88
						314.92	203.61	182.88
						331.19	177.94	182.88
						334.45	174.16	182.88
						333.92	168.28	182.88
						339.91	162.93	182.88
						348.31	160.09	182.88
						363.01	161.24	182.88
						370.05	162.51	182.88
						382.85	162.71	182.88
						385.26	170.26	182.88
						394.97	169.63	182.88
						397.02	164.30	182.88
						400.89	163.84	182.88
8.620	+			188.98		304.26	304.63	188.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						312.24	294.23	188.98
						312.24	286.77	188.98
						313.82	280.15	188.98
						315.29	255.89	188.98
						316.65	247.81	188.98
						323.67	229.75	188.98
						333.06	216.91	188.98
						337.65	207.49	188.98
						344.66	200.21	188.98
						348.83	198.76	188.98
						360.93	190.75	188.98
						366.95	188.44	188.98
						379.13	186.05	188.98
						383.43	183.28	188.98
						400.37	181.95	188.98
9.640	+			195.07		330.96	304.52	195.07
						338.63	261.77	195.07
						342.93	246.12	195.07
						351.23	234.26	195.07
						361.94	223.96	195.07
						372.74	216.38	195.07
						383.91	211.79	195.07
						401.41	210.79	195.07
10.660	+			201.17		348.70	304.57	201.17
						355.84	294.06	201.17
						364.35	273.69	201.17
						368.34	264.55	201.17
						380.11	245.33	201.17
						383.15	243.86	201.17
						402.79	243.75	201.17
11.680	+			207.26		383.04	304.44	207.26
						384.72	296.09	207.26
						386.61	284.91	207.26
						396.59	284.33	207.26
						401.89	276.08	207.26
calib	-			0.00		719.69	111.07	0.00
						719.69	20.05	0.00
						841.40	19.52	0.00
						841.40	111.07	0.00
						719.69	111.07	0.00

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA
Dump Truck	S11	Lw (c)		108.0	108.0	107.0	103.0	102.0	100.0	95.0	85.0	107.1	113.5	DEFRA

Eilar Associates, Inc.

210 South Juniper Street, Suite 100

Escondido, California 92025-4230

Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			63.8	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			51.6	-80.2	0.0	0.0				1.52	r	395.83	270.78	207.39

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)				dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Backhoe	+		97.9	97.9	97.9	Lw	S3		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35
Excavator w/ Auger	+		98.9	98.9	98.9	Lw	S4		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
c1	+			162.00		28.58	375.65	162.00
						19.05	364.54	162.00
c2	+			240.00		563.68	371.42	240.00
						574.26	358.72	240.00
c3	+			204.00		552.04	36.92	204.00
						560.50	52.79	204.00
c4	+			129.00		66.16	60.73	129.00
						66.69	42.74	129.00
c5	+			140.00		265.70	32.68	140.00
						324.98	32.68	140.00
c6	+			195.00		281.05	372.48	195.00
						295.87	373.54	195.00
1.480	+			146.30		168.55	260.29	146.30
						178.40	252.28	146.30
						191.30	240.04	146.30
						187.27	229.92	146.30
						183.60	173.58	146.30
						178.98	160.67	146.30
						178.77	147.12	146.30
						168.90	130.00	146.30
2.500	+			152.40		168.52	294.15	152.40
						185.45	270.40	152.40
						194.78	261.93	152.40
						209.20	255.91	152.40
						210.92	248.37	152.40
						207.68	243.01	152.40
						204.90	230.04	152.40
						204.40	203.62	152.40
						209.13	169.71	152.40
						209.02	152.69	152.40
						202.62	130.54	152.40
						184.20	107.28	152.40
						178.03	91.86	152.40
						177.63	71.03	152.40
						176.71	62.76	152.40
3.520	+			158.50		184.31	304.19	158.50
						184.78	295.21	158.50
						191.66	286.81	158.50
						190.34	278.25	158.50
						214.71	270.32	158.50
						220.01	271.37	158.50
						220.84	265.45	158.50
						224.84	253.29	158.50
						226.26	251.37	158.50

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.18	245.62	158.50
						224.84	232.12	158.50
						224.58	204.73	158.50
						232.25	181.57	158.50
						231.86	138.97	158.50
						228.02	120.32	158.50
						223.79	110.66	158.50
						215.98	97.29	158.50
						206.85	87.90	158.50
						204.93	76.73	158.50
						199.02	73.56	158.50
4.540	+			164.59		201.89	304.30	164.59
						218.64	284.03	164.59
						228.40	279.83	164.59
						240.59	261.04	164.59
						243.11	228.69	164.59
						246.89	207.69	164.59
						253.24	188.77	164.59
						255.09	168.00	164.59
						252.84	154.24	164.59
						252.31	133.60	164.59
						253.63	117.19	164.59
						253.44	98.47	164.59
						258.99	88.88	164.59
						295.78	81.73	164.59
						328.52	81.86	164.59
						335.07	87.68	164.59
						344.53	91.26	164.59
						353.66	93.90	164.59
						360.02	96.84	164.59
						368.73	98.47	164.59
						375.40	98.79	164.59
						377.45	99.89	164.59
						384.78	97.22	164.59
						400.79	94.72	164.59
5.560	+			170.69		225.56	304.39	170.69
						247.49	290.30	170.69
						251.95	278.97	170.69
						260.61	267.19	170.69
						260.48	255.68	170.69
						265.98	227.01	170.69
						278.82	179.33	170.69
						276.98	154.91	170.69
						274.90	147.15	170.69
						270.65	144.74	170.69
						275.73	134.15	170.69

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.15	125.73	170.69
						286.57	124.57	170.69
						296.32	118.06	170.69
						309.57	111.98	170.69
						325.83	108.39	170.69
						343.75	110.15	170.69
						356.79	111.44	170.69
						372.34	112.73	170.69
						374.03	115.31	170.69
						383.42	119.61	170.69
						395.53	118.05	170.69
						400.59	119.87	170.69
6.580	+			176.78		262.86	304.73	176.78
						263.95	299.15	176.78
						276.70	278.81	176.78
						277.03	268.22	176.78
						294.24	202.99	176.78
						304.03	175.07	176.78
						308.70	162.84	176.78
						320.46	145.66	176.78
						330.80	136.41	176.78
						347.84	134.54	176.78
						370.54	136.85	176.78
						380.83	140.92	176.78
						385.92	145.85	176.78
						394.95	144.90	176.78
						399.47	139.76	176.78
7.600	+			182.88		282.77	304.56	182.88
						292.52	288.80	182.88
						294.35	280.22	182.88
						294.94	258.13	182.88
						301.29	238.28	182.88
						314.92	203.61	182.88
						331.19	177.94	182.88
						334.45	174.16	182.88
						333.92	168.28	182.88
						339.91	162.93	182.88
						348.31	160.09	182.88
						363.01	161.24	182.88
						370.05	162.51	182.88
						382.85	162.71	182.88
						385.26	170.26	182.88
						394.97	169.63	182.88
						397.02	164.30	182.88
						400.89	163.84	182.88
8.620	+			188.98		304.26	304.63	188.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						312.24	294.23	188.98
						312.24	286.77	188.98
						313.82	280.15	188.98
						315.29	255.89	188.98
						316.65	247.81	188.98
						323.67	229.75	188.98
						333.06	216.91	188.98
						337.65	207.49	188.98
						344.66	200.21	188.98
						348.83	198.76	188.98
						360.93	190.75	188.98
						366.95	188.44	188.98
						379.13	186.05	188.98
						383.43	183.28	188.98
						400.37	181.95	188.98
9.640	+			195.07		330.96	304.52	195.07
						338.63	261.77	195.07
						342.93	246.12	195.07
						351.23	234.26	195.07
						361.94	223.96	195.07
						372.74	216.38	195.07
						383.91	211.79	195.07
						401.41	210.79	195.07
10.660	+			201.17		348.70	304.57	201.17
						355.84	294.06	201.17
						364.35	273.69	201.17
						368.34	264.55	201.17
						380.11	245.33	201.17
						383.15	243.86	201.17
						402.79	243.75	201.17
11.680	+			207.26		383.04	304.44	207.26
						384.72	296.09	207.26
						386.61	284.91	207.26
						396.59	284.33	207.26
						401.89	276.08	207.26
calib	-			0.00		719.69	111.07	0.00
						719.69	20.05	0.00
						841.40	19.52	0.00
						841.40	111.07	0.00
						719.69	111.07	0.00

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA
Dump Truck	S11	Lw (c)		108.0	108.0	107.0	103.0	102.0	100.0	95.0	85.0	107.1	113.5	DEFRA

Eilar Associates, Inc.

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Escondido, California 92025-4230

Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			72.8	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			61.1	-80.2	0.0	0.0				1.52	r	395.83	270.78	207.39

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Conc Mixer	+		108.8	108.8	108.8	Lw	S5		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35
Conc Pump	+		107.7	107.7	107.7	Lw	S6		0.0	0.0	0.0				12.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
c1	+			162.00		28.58	375.65	162.00
						19.05	364.54	162.00
c2	+			240.00		563.68	371.42	240.00
						574.26	358.72	240.00
c3	+			204.00		552.04	36.92	204.00
						560.50	52.79	204.00
c4	+			129.00		66.16	60.73	129.00
						66.69	42.74	129.00
c5	+			140.00		265.70	32.68	140.00
						324.98	32.68	140.00
c6	+			195.00		281.05	372.48	195.00
						295.87	373.54	195.00
1.480	+			146.30		168.55	260.29	146.30
						178.40	252.28	146.30
						191.30	240.04	146.30
						187.27	229.92	146.30
						183.60	173.58	146.30
						178.98	160.67	146.30
						178.77	147.12	146.30
						168.90	130.00	146.30
2.500	+			152.40		168.52	294.15	152.40
						185.45	270.40	152.40
						194.78	261.93	152.40
						209.20	255.91	152.40
						210.92	248.37	152.40
						207.68	243.01	152.40
						204.90	230.04	152.40
						204.40	203.62	152.40
						209.13	169.71	152.40
						209.02	152.69	152.40
						202.62	130.54	152.40
						184.20	107.28	152.40
						178.03	91.86	152.40
						177.63	71.03	152.40
						176.71	62.76	152.40
3.520	+			158.50		184.31	304.19	158.50
						184.78	295.21	158.50
						191.66	286.81	158.50
						190.34	278.25	158.50
						214.71	270.32	158.50
						220.01	271.37	158.50
						220.84	265.45	158.50
						224.84	253.29	158.50
						226.26	251.37	158.50

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.18	245.62	158.50
						224.84	232.12	158.50
						224.58	204.73	158.50
						232.25	181.57	158.50
						231.86	138.97	158.50
						228.02	120.32	158.50
						223.79	110.66	158.50
						215.98	97.29	158.50
						206.85	87.90	158.50
						204.93	76.73	158.50
						199.02	73.56	158.50
4.540	+			164.59		201.89	304.30	164.59
						218.64	284.03	164.59
						228.40	279.83	164.59
						240.59	261.04	164.59
						243.11	228.69	164.59
						246.89	207.69	164.59
						253.24	188.77	164.59
						255.09	168.00	164.59
						252.84	154.24	164.59
						252.31	133.60	164.59
						253.63	117.19	164.59
						253.44	98.47	164.59
						258.99	88.88	164.59
						295.78	81.73	164.59
						328.52	81.86	164.59
						335.07	87.68	164.59
						344.53	91.26	164.59
						353.66	93.90	164.59
						360.02	96.84	164.59
						368.73	98.47	164.59
						375.40	98.79	164.59
						377.45	99.89	164.59
						384.78	97.22	164.59
						400.79	94.72	164.59
5.560	+			170.69		225.56	304.39	170.69
						247.49	290.30	170.69
						251.95	278.97	170.69
						260.61	267.19	170.69
						260.48	255.68	170.69
						265.98	227.01	170.69
						278.82	179.33	170.69
						276.98	154.91	170.69
						274.90	147.15	170.69
						270.65	144.74	170.69
						275.73	134.15	170.69

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.15	125.73	170.69
						286.57	124.57	170.69
						296.32	118.06	170.69
						309.57	111.98	170.69
						325.83	108.39	170.69
						343.75	110.15	170.69
						356.79	111.44	170.69
						372.34	112.73	170.69
						374.03	115.31	170.69
						383.42	119.61	170.69
						395.53	118.05	170.69
						400.59	119.87	170.69
6.580	+			176.78		262.86	304.73	176.78
						263.95	299.15	176.78
						276.70	278.81	176.78
						277.03	268.22	176.78
						294.24	202.99	176.78
						304.03	175.07	176.78
						308.70	162.84	176.78
						320.46	145.66	176.78
						330.80	136.41	176.78
						347.84	134.54	176.78
						370.54	136.85	176.78
						380.83	140.92	176.78
						385.92	145.85	176.78
						394.95	144.90	176.78
						399.47	139.76	176.78
7.600	+			182.88		282.77	304.56	182.88
						292.52	288.80	182.88
						294.35	280.22	182.88
						294.94	258.13	182.88
						301.29	238.28	182.88
						314.92	203.61	182.88
						331.19	177.94	182.88
						334.45	174.16	182.88
						333.92	168.28	182.88
						339.91	162.93	182.88
						348.31	160.09	182.88
						363.01	161.24	182.88
						370.05	162.51	182.88
						382.85	162.71	182.88
						385.26	170.26	182.88
						394.97	169.63	182.88
						397.02	164.30	182.88
						400.89	163.84	182.88
8.620	+			188.98		304.26	304.63	188.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						312.24	294.23	188.98
						312.24	286.77	188.98
						313.82	280.15	188.98
						315.29	255.89	188.98
						316.65	247.81	188.98
						323.67	229.75	188.98
						333.06	216.91	188.98
						337.65	207.49	188.98
						344.66	200.21	188.98
						348.83	198.76	188.98
						360.93	190.75	188.98
						366.95	188.44	188.98
						379.13	186.05	188.98
						383.43	183.28	188.98
						400.37	181.95	188.98
9.640	+			195.07		330.96	304.52	195.07
						338.63	261.77	195.07
						342.93	246.12	195.07
						351.23	234.26	195.07
						361.94	223.96	195.07
						372.74	216.38	195.07
						383.91	211.79	195.07
						401.41	210.79	195.07
10.660	+			201.17		348.70	304.57	201.17
						355.84	294.06	201.17
						364.35	273.69	201.17
						368.34	264.55	201.17
						380.11	245.33	201.17
						383.15	243.86	201.17
						402.79	243.75	201.17
11.680	+			207.26		383.04	304.44	207.26
						384.72	296.09	207.26
						386.61	284.91	207.26
						396.59	284.33	207.26
						401.89	276.08	207.26
calib	-			0.00		719.69	111.07	0.00
						719.69	20.05	0.00
						841.40	19.52	0.00
						841.40	111.07	0.00
						719.69	111.07	0.00

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA
Dump Truck	S11	Lw (c)		108.0	108.0	107.0	103.0	102.0	100.0	95.0	85.0	107.1	113.5	DEFRA

Eilar Associates, Inc.

210 South Juniper Street, Suite 100

Escondido, California 92025-4230

Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			64.2	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			51.3	-80.2	0.0	0.0				1.52	r	395.83	270.78	207.39

Point Sources

Name	M.	ID	Result. PWL			Lw / Li		Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height	Coordinates				
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night					X	Y	Z	
			(dBA)	(dBA)	(dBA)				dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)	(m)	(m)	(m)	
Compressor	+		94.5	94.5	94.5	Lw	S7		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35
Forklift	+		100.7	100.7	100.7	Lw	S8		0.0	0.0	0.0				24.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
c1	+			162.00		28.58	375.65	162.00
						19.05	364.54	162.00
c2	+			240.00		563.68	371.42	240.00
						574.26	358.72	240.00
c3	+			204.00		552.04	36.92	204.00
						560.50	52.79	204.00
c4	+			129.00		66.16	60.73	129.00
						66.69	42.74	129.00
c5	+			140.00		265.70	32.68	140.00
						324.98	32.68	140.00
c6	+			195.00		281.05	372.48	195.00
						295.87	373.54	195.00
1.480	+			146.30		168.55	260.29	146.30
						178.40	252.28	146.30
						191.30	240.04	146.30
						187.27	229.92	146.30
						183.60	173.58	146.30
						178.98	160.67	146.30
						178.77	147.12	146.30
						168.90	130.00	146.30
2.500	+			152.40		168.52	294.15	152.40
						185.45	270.40	152.40
						194.78	261.93	152.40
						209.20	255.91	152.40
						210.92	248.37	152.40
						207.68	243.01	152.40
						204.90	230.04	152.40
						204.40	203.62	152.40
						209.13	169.71	152.40
						209.02	152.69	152.40
						202.62	130.54	152.40
						184.20	107.28	152.40
						178.03	91.86	152.40
						177.63	71.03	152.40
						176.71	62.76	152.40
3.520	+			158.50		184.31	304.19	158.50
						184.78	295.21	158.50
						191.66	286.81	158.50
						190.34	278.25	158.50
						214.71	270.32	158.50
						220.01	271.37	158.50
						220.84	265.45	158.50
						224.84	253.29	158.50
						226.26	251.37	158.50

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.18	245.62	158.50
						224.84	232.12	158.50
						224.58	204.73	158.50
						232.25	181.57	158.50
						231.86	138.97	158.50
						228.02	120.32	158.50
						223.79	110.66	158.50
						215.98	97.29	158.50
						206.85	87.90	158.50
						204.93	76.73	158.50
						199.02	73.56	158.50
4.540	+			164.59		201.89	304.30	164.59
						218.64	284.03	164.59
						228.40	279.83	164.59
						240.59	261.04	164.59
						243.11	228.69	164.59
						246.89	207.69	164.59
						253.24	188.77	164.59
						255.09	168.00	164.59
						252.84	154.24	164.59
						252.31	133.60	164.59
						253.63	117.19	164.59
						253.44	98.47	164.59
						258.99	88.88	164.59
						295.78	81.73	164.59
						328.52	81.86	164.59
						335.07	87.68	164.59
						344.53	91.26	164.59
						353.66	93.90	164.59
						360.02	96.84	164.59
						368.73	98.47	164.59
						375.40	98.79	164.59
						377.45	99.89	164.59
						384.78	97.22	164.59
						400.79	94.72	164.59
5.560	+			170.69		225.56	304.39	170.69
						247.49	290.30	170.69
						251.95	278.97	170.69
						260.61	267.19	170.69
						260.48	255.68	170.69
						265.98	227.01	170.69
						278.82	179.33	170.69
						276.98	154.91	170.69
						274.90	147.15	170.69
						270.65	144.74	170.69
						275.73	134.15	170.69

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.15	125.73	170.69
						286.57	124.57	170.69
						296.32	118.06	170.69
						309.57	111.98	170.69
						325.83	108.39	170.69
						343.75	110.15	170.69
						356.79	111.44	170.69
						372.34	112.73	170.69
						374.03	115.31	170.69
						383.42	119.61	170.69
						395.53	118.05	170.69
						400.59	119.87	170.69
6.580	+			176.78		262.86	304.73	176.78
						263.95	299.15	176.78
						276.70	278.81	176.78
						277.03	268.22	176.78
						294.24	202.99	176.78
						304.03	175.07	176.78
						308.70	162.84	176.78
						320.46	145.66	176.78
						330.80	136.41	176.78
						347.84	134.54	176.78
						370.54	136.85	176.78
						380.83	140.92	176.78
						385.92	145.85	176.78
						394.95	144.90	176.78
						399.47	139.76	176.78
7.600	+			182.88		282.77	304.56	182.88
						292.52	288.80	182.88
						294.35	280.22	182.88
						294.94	258.13	182.88
						301.29	238.28	182.88
						314.92	203.61	182.88
						331.19	177.94	182.88
						334.45	174.16	182.88
						333.92	168.28	182.88
						339.91	162.93	182.88
						348.31	160.09	182.88
						363.01	161.24	182.88
						370.05	162.51	182.88
						382.85	162.71	182.88
						385.26	170.26	182.88
						394.97	169.63	182.88
						397.02	164.30	182.88
						400.89	163.84	182.88
8.620	+			188.98		304.26	304.63	188.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						312.24	294.23	188.98
						312.24	286.77	188.98
						313.82	280.15	188.98
						315.29	255.89	188.98
						316.65	247.81	188.98
						323.67	229.75	188.98
						333.06	216.91	188.98
						337.65	207.49	188.98
						344.66	200.21	188.98
						348.83	198.76	188.98
						360.93	190.75	188.98
						366.95	188.44	188.98
						379.13	186.05	188.98
						383.43	183.28	188.98
						400.37	181.95	188.98
9.640	+			195.07		330.96	304.52	195.07
						338.63	261.77	195.07
						342.93	246.12	195.07
						351.23	234.26	195.07
						361.94	223.96	195.07
						372.74	216.38	195.07
						383.91	211.79	195.07
						401.41	210.79	195.07
10.660	+			201.17		348.70	304.57	201.17
						355.84	294.06	201.17
						364.35	273.69	201.17
						368.34	264.55	201.17
						380.11	245.33	201.17
						383.15	243.86	201.17
						402.79	243.75	201.17
11.680	+			207.26		383.04	304.44	207.26
						384.72	296.09	207.26
						386.61	284.91	207.26
						396.59	284.33	207.26
						401.89	276.08	207.26
calib	-			0.00		719.69	111.07	0.00
						719.69	20.05	0.00
						841.40	19.52	0.00
						841.40	111.07	0.00
						719.69	111.07	0.00

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA
Dump Truck	S11	Lw (c)		108.0	108.0	107.0	103.0	102.0	100.0	95.0	85.0	107.1	113.5	DEFRA

Eilar Associates, Inc.

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Escondido, California 92025-4230

Phone: (760) 738-5570

Date: 14 Jul 2021

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	0
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rcvr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (TNM)	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	

Configuration	
Parameter	Value
Strictly acc. to AzB	

Receivers

Name	M.	ID	Level Lr		Limit. Value		Land Use			Height		Coordinates		
			Day	Night	Day	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			69.2	-80.2	0.0	0.0				1.52	r	353.87	285.91	201.62
R2			57.0	-80.2	0.0	0.0				1.52	r	395.83	270.78	207.39

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Paver	+		104.8	104.8	104.8	Lw	S9		0.0	0.0	0.0				30.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35
Roller	+		103.2	103.2	103.2	Lw	S10		0.0	0.0	0.0				12.00	0.00	0.00	0.0		(none)	1.52	r	353.77	270.81	200.35

Terrain Contours

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
c1	+			162.00		28.58	375.65	162.00
						19.05	364.54	162.00
c2	+			240.00		563.68	371.42	240.00
						574.26	358.72	240.00
c3	+			204.00		552.04	36.92	204.00
						560.50	52.79	204.00
c4	+			129.00		66.16	60.73	129.00
						66.69	42.74	129.00
c5	+			140.00		265.70	32.68	140.00
						324.98	32.68	140.00
c6	+			195.00		281.05	372.48	195.00
						295.87	373.54	195.00
1.480	+			146.30		168.55	260.29	146.30
						178.40	252.28	146.30
						191.30	240.04	146.30
						187.27	229.92	146.30
						183.60	173.58	146.30
						178.98	160.67	146.30
						178.77	147.12	146.30
						168.90	130.00	146.30
2.500	+			152.40		168.52	294.15	152.40
						185.45	270.40	152.40
						194.78	261.93	152.40
						209.20	255.91	152.40
						210.92	248.37	152.40
						207.68	243.01	152.40
						204.90	230.04	152.40
						204.40	203.62	152.40
						209.13	169.71	152.40
						209.02	152.69	152.40
						202.62	130.54	152.40
						184.20	107.28	152.40
						178.03	91.86	152.40
						177.63	71.03	152.40
						176.71	62.76	152.40
3.520	+			158.50		184.31	304.19	158.50
						184.78	295.21	158.50
						191.66	286.81	158.50
						190.34	278.25	158.50
						214.71	270.32	158.50
						220.01	271.37	158.50
						220.84	265.45	158.50
						224.84	253.29	158.50
						226.26	251.37	158.50

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						225.18	245.62	158.50
						224.84	232.12	158.50
						224.58	204.73	158.50
						232.25	181.57	158.50
						231.86	138.97	158.50
						228.02	120.32	158.50
						223.79	110.66	158.50
						215.98	97.29	158.50
						206.85	87.90	158.50
						204.93	76.73	158.50
						199.02	73.56	158.50
4.540	+			164.59		201.89	304.30	164.59
						218.64	284.03	164.59
						228.40	279.83	164.59
						240.59	261.04	164.59
						243.11	228.69	164.59
						246.89	207.69	164.59
						253.24	188.77	164.59
						255.09	168.00	164.59
						252.84	154.24	164.59
						252.31	133.60	164.59
						253.63	117.19	164.59
						253.44	98.47	164.59
						258.99	88.88	164.59
						295.78	81.73	164.59
						328.52	81.86	164.59
						335.07	87.68	164.59
						344.53	91.26	164.59
						353.66	93.90	164.59
						360.02	96.84	164.59
						368.73	98.47	164.59
						375.40	98.79	164.59
						377.45	99.89	164.59
						384.78	97.22	164.59
						400.79	94.72	164.59
5.560	+			170.69		225.56	304.39	170.69
						247.49	290.30	170.69
						251.95	278.97	170.69
						260.61	267.19	170.69
						260.48	255.68	170.69
						265.98	227.01	170.69
						278.82	179.33	170.69
						276.98	154.91	170.69
						274.90	147.15	170.69
						270.65	144.74	170.69
						275.73	134.15	170.69

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						281.15	125.73	170.69
						286.57	124.57	170.69
						296.32	118.06	170.69
						309.57	111.98	170.69
						325.83	108.39	170.69
						343.75	110.15	170.69
						356.79	111.44	170.69
						372.34	112.73	170.69
						374.03	115.31	170.69
						383.42	119.61	170.69
						395.53	118.05	170.69
						400.59	119.87	170.69
6.580	+			176.78		262.86	304.73	176.78
						263.95	299.15	176.78
						276.70	278.81	176.78
						277.03	268.22	176.78
						294.24	202.99	176.78
						304.03	175.07	176.78
						308.70	162.84	176.78
						320.46	145.66	176.78
						330.80	136.41	176.78
						347.84	134.54	176.78
						370.54	136.85	176.78
						380.83	140.92	176.78
						385.92	145.85	176.78
						394.95	144.90	176.78
						399.47	139.76	176.78
7.600	+			182.88		282.77	304.56	182.88
						292.52	288.80	182.88
						294.35	280.22	182.88
						294.94	258.13	182.88
						301.29	238.28	182.88
						314.92	203.61	182.88
						331.19	177.94	182.88
						334.45	174.16	182.88
						333.92	168.28	182.88
						339.91	162.93	182.88
						348.31	160.09	182.88
						363.01	161.24	182.88
						370.05	162.51	182.88
						382.85	162.71	182.88
						385.26	170.26	182.88
						394.97	169.63	182.88
						397.02	164.30	182.88
						400.89	163.84	182.88
8.620	+			188.98		304.26	304.63	188.98

Name	M.	ID	OnlyPts	Height		Coordinates		
				Begin	End	x	y	z
				(m)	(m)	(m)	(m)	(m)
						312.24	294.23	188.98
						312.24	286.77	188.98
						313.82	280.15	188.98
						315.29	255.89	188.98
						316.65	247.81	188.98
						323.67	229.75	188.98
						333.06	216.91	188.98
						337.65	207.49	188.98
						344.66	200.21	188.98
						348.83	198.76	188.98
						360.93	190.75	188.98
						366.95	188.44	188.98
						379.13	186.05	188.98
						383.43	183.28	188.98
						400.37	181.95	188.98
9.640	+			195.07		330.96	304.52	195.07
						338.63	261.77	195.07
						342.93	246.12	195.07
						351.23	234.26	195.07
						361.94	223.96	195.07
						372.74	216.38	195.07
						383.91	211.79	195.07
						401.41	210.79	195.07
10.660	+			201.17		348.70	304.57	201.17
						355.84	294.06	201.17
						364.35	273.69	201.17
						368.34	264.55	201.17
						380.11	245.33	201.17
						383.15	243.86	201.17
						402.79	243.75	201.17
11.680	+			207.26		383.04	304.44	207.26
						384.72	296.09	207.26
						386.61	284.91	207.26
						396.59	284.33	207.26
						401.89	276.08	207.26
calib	-			0.00		719.69	111.07	0.00
						719.69	20.05	0.00
						841.40	19.52	0.00
						841.40	111.07	0.00
						719.69	111.07	0.00

Sound Level Spectra

Name	ID	Type	1/3 Oktave Spectrum (dB)											Source
			Weight.	63	125	250	500	1000	2000	4000	8000	A	lin	
Dozer	S1	Lw		103.4	112.4	107.4	103.4	103.4	99.4	96.4	91.4	107.9	114.9	DEFRA
Tracked Excavator	S2	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Backhoe	S3	Lw		104.0	96.0	94.0	94.0	93.0	90.0	89.0	80.0	97.9	105.8	DEFRA
Excavator with Auger	S4	Lw		107.1	95.1	97.1	97.1	93.1	91.1	87.1	77.1	98.9	108.4	DEFRA
Concrete Mixer Truck	S5	Lw		113.7	103.7	103.7	102.7	102.7	104.7	94.7	88.7	108.8	115.5	DEFRA
Concrete Pump	S6	Lw		113.9	105.9	99.9	100.9	102.9	102.9	95.9	87.9	107.7	115.4	DEFRA
Air Compressor	S7	Lw		113.0	102.0	93.0	88.0	86.0	84.0	87.0	76.0	94.5	113.4	DEFRA
Telescopic Forklift	S8	Lw		115.2	109.2	99.2	97.2	94.2	92.2	86.2	77.2	100.7	116.4	DEFRA
Paver	S9	Lw		107.2	106.2	101.2	101.2	100.2	98.2	91.2	85.2	104.8	111.4	DEFRA
Roller	S10	Lw		109.6	104.6	106.6	101.6	96.6	91.6	83.6	75.6	103.2	112.7	DEFRA
Dump Truck	S11	Lw (c)		108.0	108.0	107.0	103.0	102.0	100.0	95.0	85.0	107.1	113.5	DEFRA