ACOUSTICAL ANALYSIS REPORT

T&R Mini Storage
San Diego County Case Number: P05-052

Lead Agency:

County of San Diego
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Project Proponent:

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Job #B10306N2

September 27, 2012

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EXECUTIVE SUMMARY

The proposed project, T&R Mini Storage, consists of the construction of a new storage facility. The project site is located at 25338 North Centre City Parkway in an unincorporated area of the County of San Diego, California.

The primary noise sources in the vicinity of the project site include traffic noise from Interstate 15 (I-15) and North Centre City Parkway.

The County of San Diego requires an analysis to determine whether the proposed project will have an adverse noise impact on surrounding properties. Project-generated noise impacts to surrounding properties are expected to be insignificant. Noise levels from roof mounted air conditioning equipment will not exceed the applicable noise limits set by the County at any surrounding property lines. Project-generated traffic noise will have an insignificant impact on surrounding properties. Temporary noise impacts from construction on site are expected to be controllable by standard construction noise control methods including adhering to permissible hours of operation, maintaining equipment in proper operating condition, and placing staging areas at farthest locations from noise sensitive receivers. More details are provided in Section 3.3.

1.0 INTRODUCTION

This acoustical analysis report is submitted to satisfy the acoustical requirements of the County of San Diego for Major Use Permit (MUP #P05-052) approval. Its purpose is to assess potential noise impacts caused by the project at surrounding noise sensitive receivers, and, if needed, recommend mitigation to reduce impacts to less than significant.

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. The Community Noise Equivalent Level (CNEL) is a calculated 24-hour weighted average, where sound levels during evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, L_{DN}, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and for enforcement of noise ordinances. Further explanation can be provided upon request.

1.1 Project Description

The proposed project, T&R Mini Storage, consists of the construction of a new storage facility. The project also involves the adjustment on the boundaries between Parcel A (APN 187-170-48) and Parcel B (APN 187-170-49). Parcel A will have a net lot area of 5.00 acres and Parcel B will have a net lot area of 26.81 acres. The proposed storage facility will be located on Parcel A. For additional information please refer to the project plans provided in Appendix A.

1.2 Environmental Settings and Existing Conditions

1.2.1 Project Location

The project site is located at 25338 North Centre City Parkway in an unincorporated area of the County of San Diego, California. The Assessor's Parcel Numbers (APN) for the properties are 187-170-48 and 187-170-49.

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 Measured Noise Level

An on-site inspection and traffic noise measurement were made on the afternoon of Thursday, March 24, 2011. The weather conditions were as follows: partly cloudy skies, moderate humidity, temperatures in the mid 50's with winds at 3-5 mph. A "one-hour" equivalent measurement was made at twenty feet from the Ivy Dell Lane centerline, across North Centre City Parkway, to the east of the proposed project site. The microphone position was placed approximately five feet above the existing project site grade. After a continuous 10-minute sound level measurement, there was no change in the L_{EQ} and results were then recorded. The measured noise level and related weather conditions are found in Table 1.

Table 1. On-Site Noise Measurement Conditions and Results	
Date	Thursday, March 24, 2011
Time	7:15 a.m. – 7:25 a.m.
Conditions	Partly Cloudy Skies, Winds at 3-5 mph, Temperature Mid 50's with Moderate Humidity
Measured Noise Level	64.9 dBA L_{EQ}

1.3 Methodology and Equipment

1.3.1 Distance Attenuation

Attenuation due to distance is calculated by the equation:

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

where SPL_1 = Calculated sound pressure level at distance,
SPL_2 = Known sound pressure level at known distance,
D_1 = Distance from source to known sound pressure level, and
D_2 = 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.

1.3.2 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:

$$L_C = 10\log(10^{L1/10} + 10^{L2/10} + \ldots 10^{LN/10})$$

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

1.3.3 Construction Noise Modeling

The Roadway Construction Noise Model software, RCNM Version 1.0, was released in February 2006 by the U.S. Department of Transportation. This software was used for all construction equipment noise modeling in the preparation of this report. RCNM calculates the noise impact level from operating construction equipment at a receptor location from manual input of equipment data or the software's library of equipment noise levels. The user selects the equipment to be in operation and the distance from the equipment to receptor in order to calculate an hourly average noise level at the specified location. Further information can be provided upon request.

1.3.4 Measurement Equipment

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

- Larson Davis Model 720 Integrating Sound Level Meter, Serial # 0462
- Larson Davis Model CA150 Calibrator, Serial # 2056
- Hand-bearing magnetic compass, microphone with windscreen, tripods
- Distance measurement wheel, digital camera

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 S1.4-1983 (R2001). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturers' standards.

2.0 NOISE SENSITIVE LAND USES AFFECTED BY AIRBORNE NOISE

2.1 Potential Noise Impacts

This section is designated for projects with noise-sensitive land uses. The proposed project is a commercial storage facility that does not include any residential facility, nor does it include any other noise-sensitive space (i.e. school, library, place of worship, etc.). For this reason, exterior noise impacts to the site resulting from traffic noise or other environmental noise sources have not been evaluated.

2.2 Project-Generated Vehicle Traffic Noise

A traffic impact analysis was prepared by Darnell & Associates for the proposed site addressing existing traffic conditions as well as project-generated traffic. No cumulative traffic information was provided. For this reason, only the direct noise impact of project-generated traffic has been calculated.

The intersection of North Centre City Parkway and Ivy Del Lane was evaluated. Existing AM/PM peak hour traffic volumes were compared to the existing AM/PM peak hour traffic volumes with the influence of project traffic to determine the increase in the noise environment.

After analyzing the intersection, it has been determined that the maximum increase in the noise environment will be 0.1 dB. This increase is considered to be insignificant, as an increase of 3 dB is widely accepted as a "barely perceptible" increase. Project-generated traffic noise will have an insignificant impact on surrounding properties. Pertinent sections of the traffic study are provided in Appendix B, and project-generated traffic noise calculations are provided in Appendix C.

3.0 PROJECT-GENERATED AIRBORNE NOISE

3.1 Guidelines for Determination of Significance

The County of San Diego Municipal Code states that noise levels from stationary sources shall not exceed 55 dBA between the hours of 7 a.m. and 10 p.m. and 45 dBA between the hours of 10 p.m. and 7 a.m. at residential properties. Noise from HVAC units to be installed at the project should meet these guidelines. As proposed HVAC units are likely to be operational during nighttime hours, 45 dBA will be considered the noise limit at surrounding residential property lines.

Temporary construction noise limits for noise sensitive receivers are designated within the County of San Diego Municipal Code and state that noise from temporary construction activity should not exceed an average sound level of 75 dBA for an 8-hour period between 7 a.m. to 7 p.m. at the property lines of noise sensitive receivers. Noise sensitive receivers are defined as "any property which is developed and used either in part or in whole for residential purposes." The property line to the east is zoned R-R, and includes residences, and will therefore be considered noise sensitive receivers. Pertinent sections of the County of San Diego Noise Ordinance are provided in Appendix D.

3.2 Potential Operational Noise Impacts

The future noise environment in the vicinity of the project site will be primarily a result of traffic on North Centre City Parkway, Ivy Del Lane, and I-15, as well as the noise generated by the proposed air conditioning equipment.

The proposed building will be serviced by six roof-mounted air conditioning units. No specific information was available, however, according to Jerry Gaughan, the developer, the units will likely have a cooling capacity of 1.5 tons. A typical Carrier model was chosen as octave band sound power levels were available in the manufacturer data sheet. Sound power levels are shown in Table 2, and the Carrier data sheet can be found in Appendix E.

Table 2. Sound Power Level of Anticipated Air Conditioning Equipment								
Source	Sound Power Level at Octave Band Frequency (dBA)							Total (dBA)
	125	250	500	1K	2K	4K	8K	
Carrier 38QR018C	51	57	62	63	62	57	48	67

As proposed HVAC units are likely to be operational during nighttime hours, 45 dBA will be considered the noise limit at surrounding residential property lines. Noise created by HVAC units was evaluated at the neighboring residential property to the east to determine if a significant impact would occur. All HVAC units are currently proposed to be roof-mounted and are assumed to be Carrier 38QR018 (1.5 ton) units or equivalent. For a worst-case analysis, no project structures were included in the calculation, and all HVAC units were assumed to be at the location of the worst-case unit. Manufacturer data sheets for Carrier units are provided in Appendix E. Noise levels at receiver locations are shown in Table 3 below. A graphic showing receiver locations is also provided as Figure 5.

Table 3. Worst-Case HVAC Noise Levels at Surrounding Property Lines			
Receiver	Description	Approximate Distance (ft)	Noise Level (dBA)
R1	East Property Line	200	28.6

As shown above, no additional mitigation is deemed necessary to attenuate noise levels from roof-mounted HVAC units at surrounding properties, as noise levels do not exceed limits set by the County of San Diego. Data sheets are provided in Appendix F: Mechanical Noise Analysis Data and Results.

3.3 Potential General Construction Noise Impacts

Temporary construction noise limits for noise sensitive receivers are designated within the County of San Diego Municipal Code and state that noise from temporary construction activity should not exceed an average sound level of 75 dBA for an 8-hour period between 7 a.m. to 7 p.m. at the property lines of noise sensitive receivers. Noise sensitive receivers are defined as "any property which is developed and used either in part or in whole for residential purposes." The property line to the east is zoned R-R, and includes residences, and will therefore be considered noise sensitive receivers. As no specific construction phasing schedule was available, equipment information used in this analysis was based on typical activities for this type of development. Typical noise levels of construction equipment planned to be used on site is listed in Table 4.

Table 4. Typical Construction Equipment Noise Levels[1]		
Equipment Description	Duty Cycle (%)	Nominal Noise Level dBA, at 50 feet
Excavator	40	80.7
Grader	40	85.0
Backhoe	40	77.6
Trencher	40	82.0[2]

Table 4. Typical Construction Equipment Noise Levels[1]		
Equipment Description	**Duty Cycle (%)**	**Nominal Noise Level dBA, at 50 feet**
Paver	50	77.2
Roller	20	80.0
Concrete Mixer Truck	40	78.8
Concrete Pump	20	81.4
Crane	16	80.6
Generator	50	80.6
Compressor (Air)	40	77.7
Fork Lift	40	80.0[2]

[1] Source: Federal Highway Administration, Construction Equipment Noise Levels and Ranges.
[2] Source: Wieland Associates, 1999.

Temporary construction noise generated from the proposed construction on the project site is expected to be controllable by standard construction noise management methods. The first stage of construction will include site grading. Equipment that will be used on site will consist of an excavator, a grader, and a backhoe. This equipment may be in operation simultaneously during this stage of construction. The next stage of construction includes the utility underground installation. At this time, equipment operating on site will likely include a backhoe and trencher. The third stage of construction will be paving, and equipment to be used includes a paver and roller. Concrete pad pouring will follow, and a concrete mixer truck and concrete pump will be used on site. Framing will follow, and equipment to be used on site will include a crane, generator, compressor, and fork lift.

A receiver at the nearest residential property to the east was chosen for analysis of construction noise. The noise source was calculated from the approximate eastern edge of the construction area to evaluate worst-case impacts to the evaluated receiver. Noise levels for each stage of construction are shown in Table 7. Detailed calculations can be found in Appendix G: Roadway Construction Noise Model (RCNM) Data and Results.

Table 7. Temporary Construction Noise Levels at Neighboring Residential Properties				
Stage	**Equip. Used**	**Receiver Location**	**Distance From Source (feet)**	**Average Noise Level of Equipment (dBA)**
GRADING	Excavator, Grader, Backhoe	Residential Property to the East	150	73.4
UNDERGROUND UTILITY INSTALLATION	Backhoe, Trencher	Residential Property to the East	150	69.8
PAVING	Paver, Roller	Residential Property to the East	150	68.9
CONCRETE PAD POURING	Concrete Mixer Truck, Concrete Pump	Residential Property to the East	150	68.1
FRAMING	Crane, Generator, Compressor, Fork Lift	Residential Property to the East	150	75.0

It is determined that construction noise levels will not create a significant impact at any surrounding residential property line. No mitigation is deemed necessary.

Equipment used in construction shall be maintained in proper operating condition, and engines shall be equipped with appropriate mufflers. With the above recommendations in place, controlled access to the site, and operating hours limited to those permitted by the County of San Diego, temporary construction noise is not expected to have a significant impact on surrounding properties.

4.0 CONCLUSION

The County of San Diego requires an analysis to determine whether the proposed project will have an adverse noise impact on surrounding properties. Project-generated noise impacts to surrounding properties are expected to be insignificant. Project-generated traffic noise will have an insignificant impact on surrounding properties. Noise levels from roof mounted air conditioning equipment will not exceed the applicable noise limits set by the County at any surrounding property lines. Temporary noise impacts from construction on site are expected to be controllable by standard construction noise control methods including adhering to permissible hours of operation, maintaining equipment in proper operating condition, and placing staging areas at farthest locations from noise sensitive receivers. No mitigation measures are deemed necessary for this project.

5.0 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 T&R Mini Storage project in an unincorporated area of the County of San Diego, California. This report was prepared by Jeff Russert and Douglas K. Eilar.

Douglas K. Eilar
Principal/Senior Acoustical Consultant

Jeff Russert, Acoustical Consultant

6.0 REFERENCES

1. 2007 California Building Code, Based on the 2006 International Building Code, Chapter 12, Section 1207 - *Sound Transmission Control*.

2. Federal Highway Administration, Traffic Noise Model Version 2.5.

3. County of San Diego Noise Element to the General Plan.

4. County of San Diego Noise Ordinance.

5. Harris, Cyril M., Handbook of Acoustical Measurements and Noise Control, 3rd Edition, Acoustical Society of America, 1998.

6. Heeden, Robert A., Compendium of Materials for Noise Control, U.S. Department of Health, Education and Welfare, National Institute for Occupational Safety and Health, November 1978.

7. Irvine, Leland K., Richards, Roy L., Acoustics and Noise Control Handbook for Architects and Builders, Kreiger Publishing Company, 1998.

8. NBS Building Sciences Series 77, Acoustical and Thermal Performance on Exterior Residential Walls, U.S. Department of Commerce/National Bureau of Standards, November 1976.

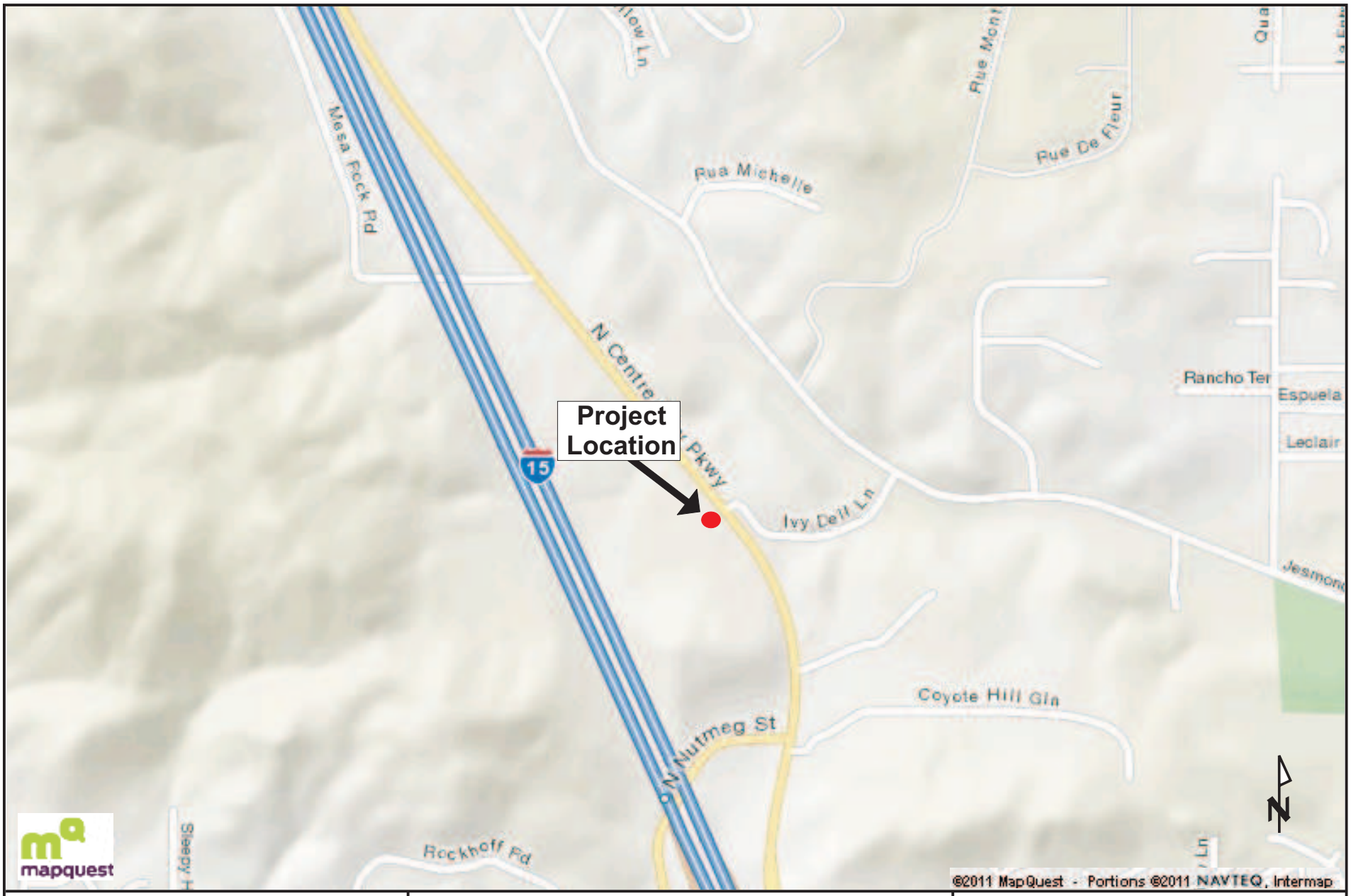
9. Western Electro-Acoustic Laboratory, Inc., 1711 Sixteenth Street, Santa Monica, California 90404, 213-80-9268, Sound Transmission Loss Vs. Glazing Type, Window Size and Air Filtration, January 1985. The research described in this report was prepared for the California Association of Window Manufacturers, 823 North Harbor Boulevard, Suite E, Fullerton, California 92632, 714-525-7088.

10. United States Department of Transportation Federal Highway Administration, Highway Construction Noise Handbook, Section 9.0 “Construction Equipment Noise Levels and Ranges,” August 2006.

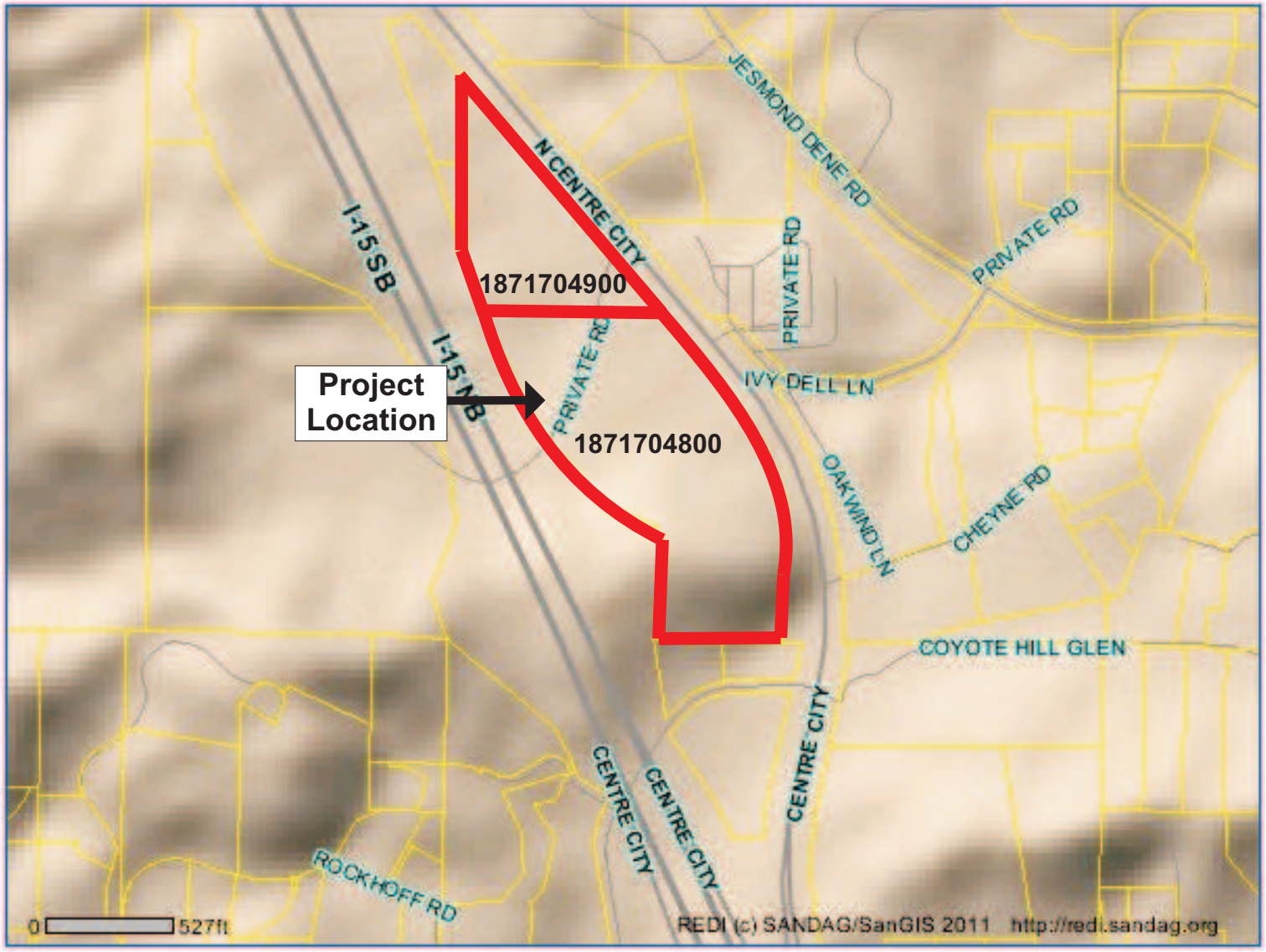
11. Wyle Laboratories, Development of Ground Transportation Systems Noise Contours for the San Diego Region, December, 1973

12. Darnell & Associates, Focused Traffic Impact Study for Escondido T&R Self-Serve Mini Storage Facility, September 24, 2012

FIGURES



Eilar Associates, Inc. **321 Willowspring Drive North** **Encinitas, California 92024** **760-738-5570**	**Vicinity Map** **Job #B10306N1**	**Figure 1**



SANDAG

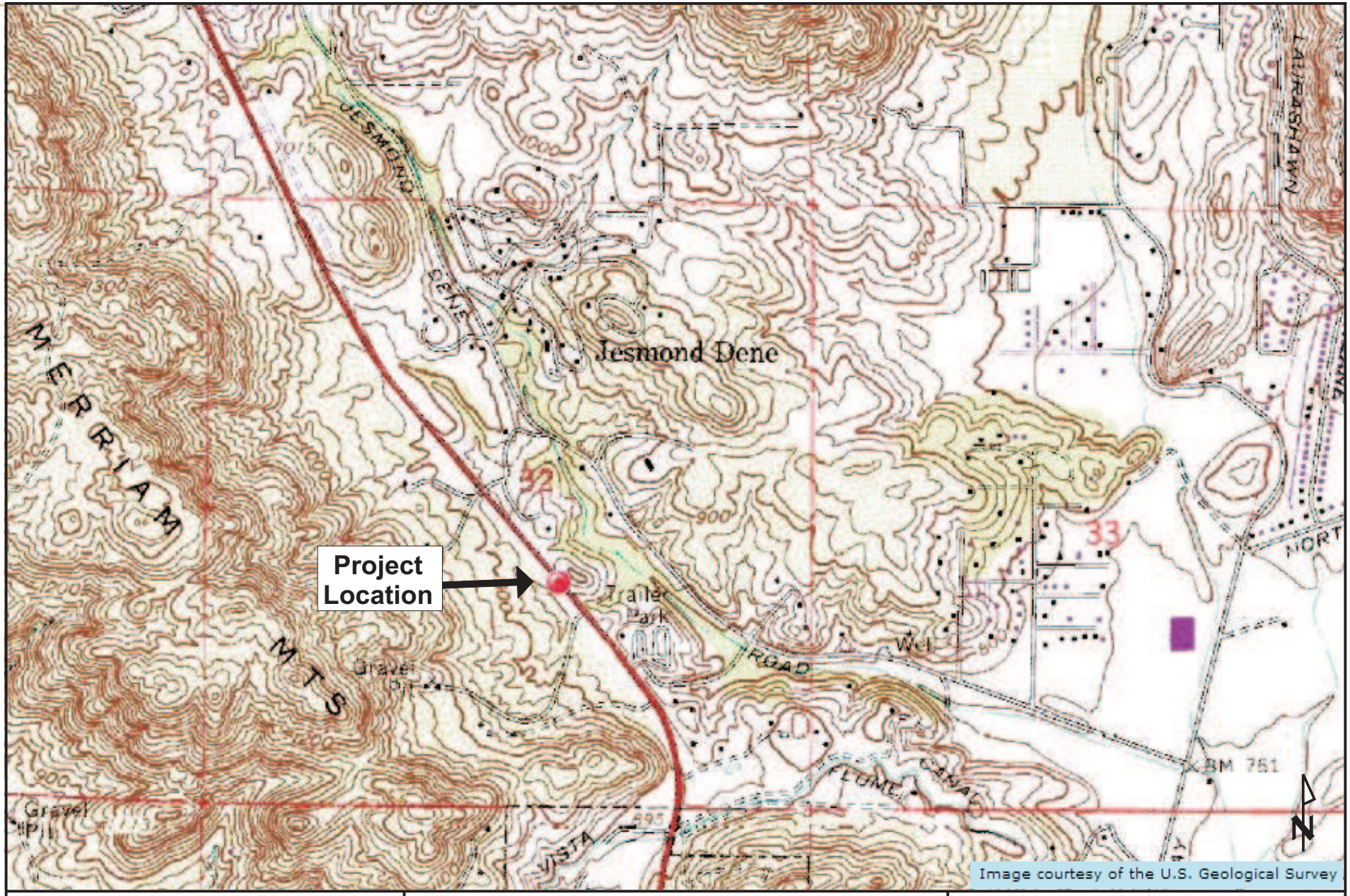
SanGIS

San Diego County Assessor's Parcel Numbers:
187-170-48
187-170-49

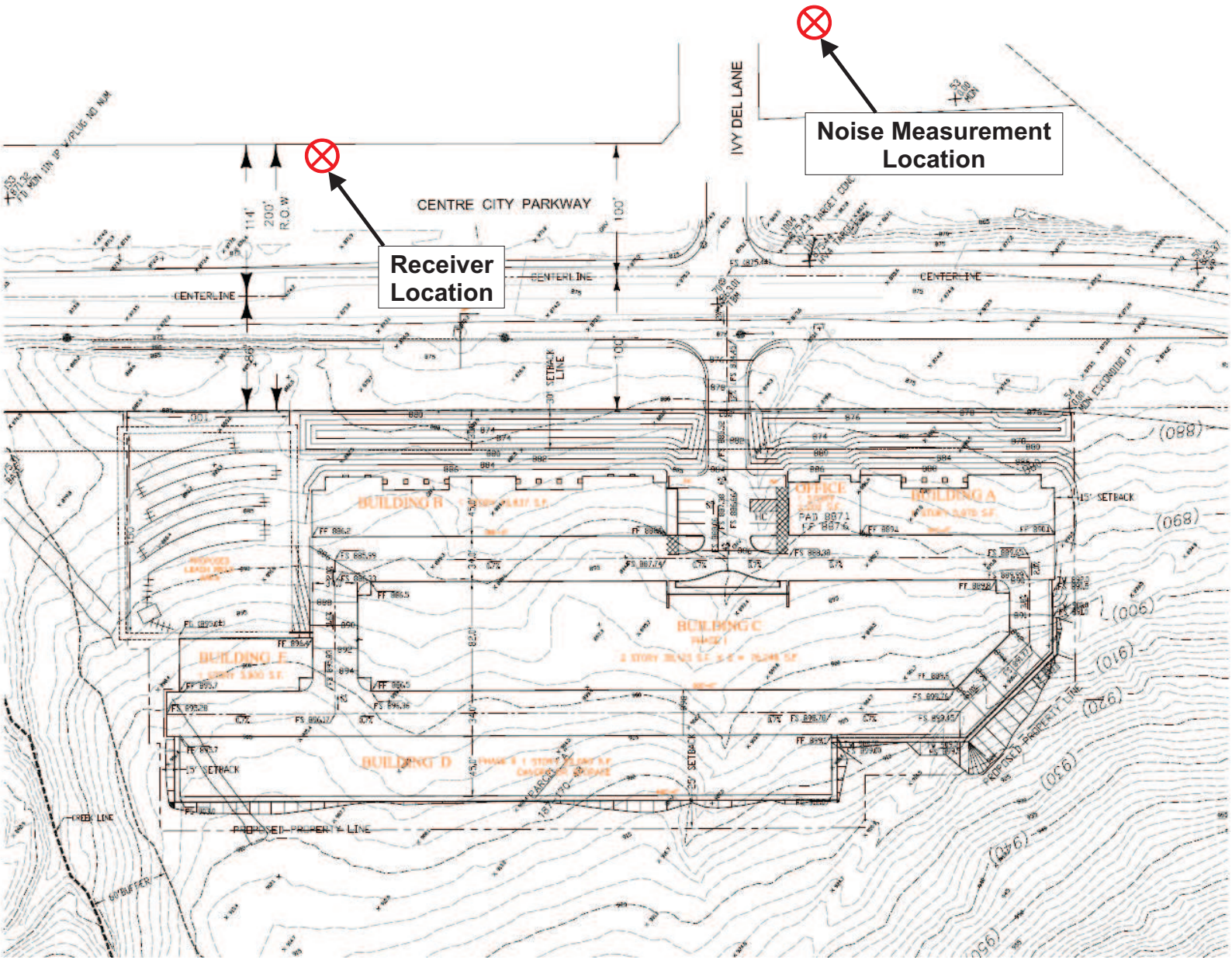
N

Eilar Associates, Inc. **321 Willowspring Drive North** **Encinitas, California 92024** **760-738-5570**	**Assessor's Parcel Map** **Job # B10306N1**	**Figure 2**

Eilar Associates, Inc. **321 Willowspring Drive North** **Encinitas, California 92024** **760-738-5570**	**Satellite Aerial Photograph** **Job # B10306N1**	**Figure 3**



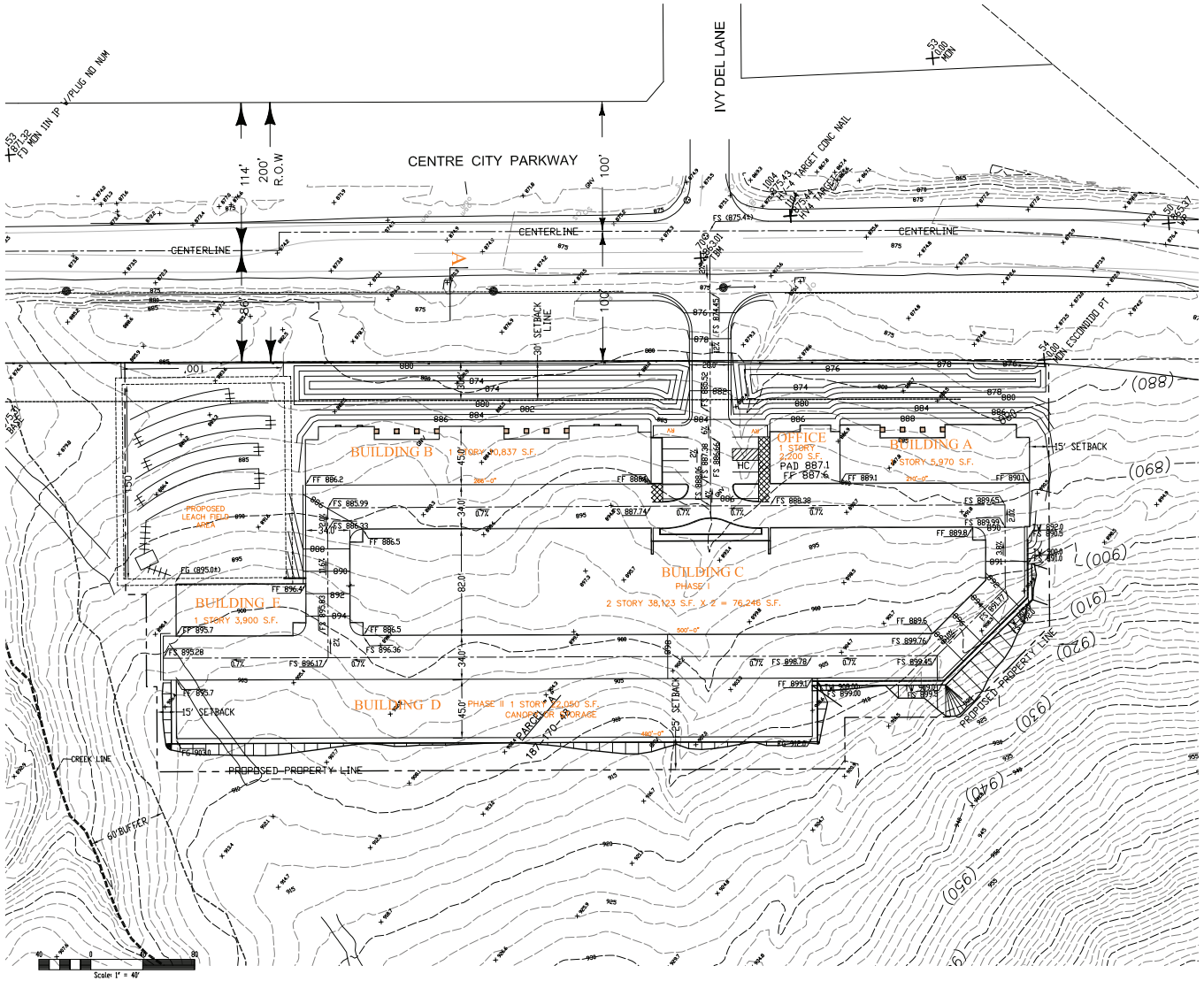
Eilar Associates, Inc. **321 Willowspring Drive North** **Encinitas, California 92024** **760-738-5570**	**Topographic Map** **Job # B10306N1**	**Figure 4**



Eilar Associates, Inc. **321 Willowspring Drive North** **Encinitas, California 92024** **760-738-5570**	**Site Plan Showing Receivers and Noise Measurement Location** **Job # B10306N2**	**Figure 5**

APPENDIX A

Project Plans



Prismoidal Volume Results Aug 08, 2012

Original Surface Model:	Topo-ex
Final Surface Model:	topo-new
Cut Compaction Factor:	0.00 %
Fill Compaction Factor:	0.00 %
Raw Cut Volume:	31526.51 cu yd
Compacted Cut Volume:	0.00 cu yd
Total Cut Volume:	31526.51 cu yd
Raw Fill Volume:	2451.36 cu yd
Compacted Fill Volume:	0.00 cu yd
Total Fill Volume:	2451.36 cu yd
Total Export	29075 cu yd

CIVIL ENGINEERING • LAND PLANNING
Aqua-terra Engineering Inc.
1843 Campesino Place
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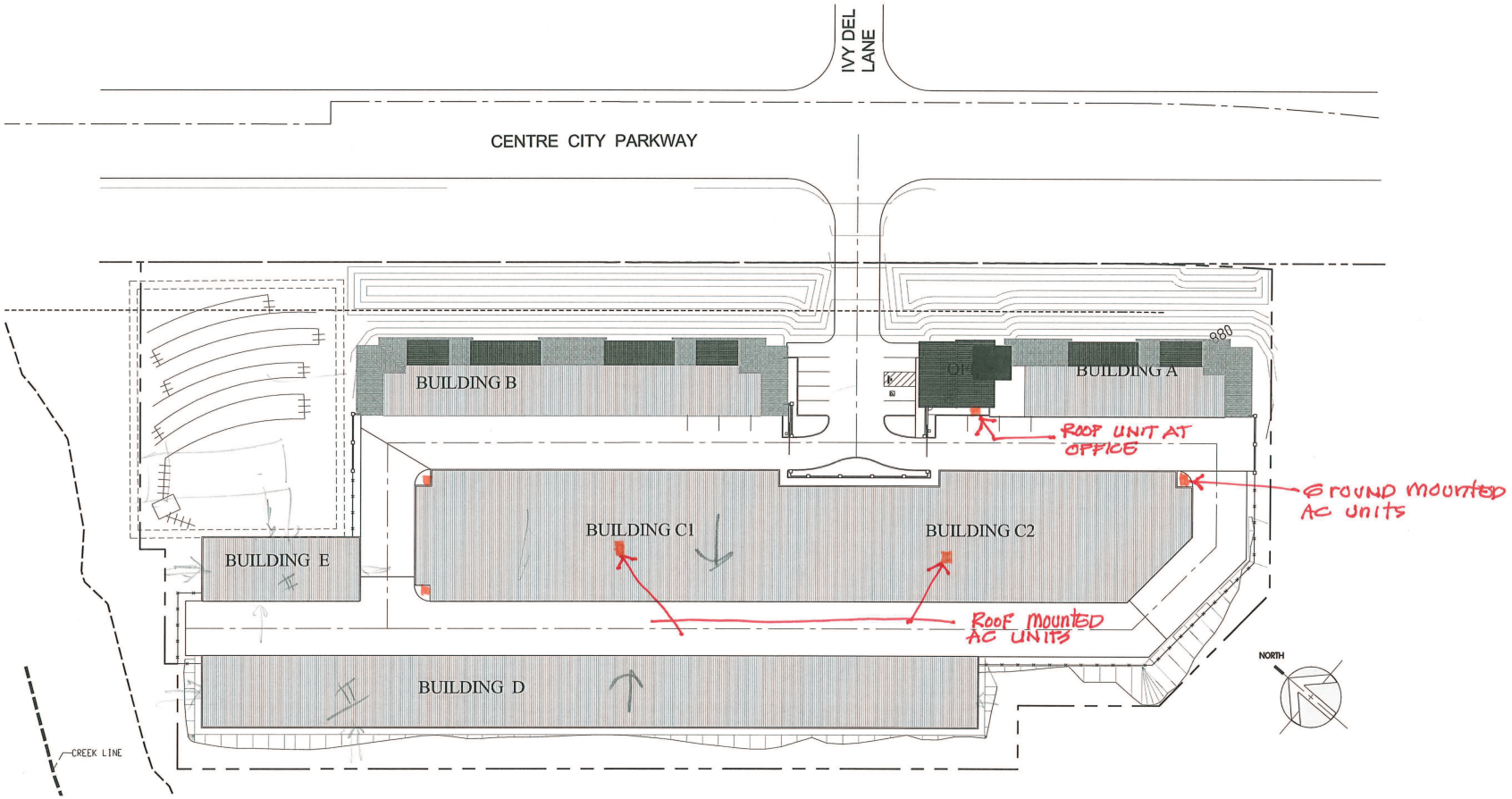
DRAWN BY: LIPSKA	APPROVED BY:	REVISIONS	PROJECT	SHT. NAME	SHT. NO.
DATE: 8/07/2012	PROJ. NO.				
DWG. NO.:	DWG.				

PLOT DATE: 8/07/2012



T & R SELF STORAGE
ESCONDIDO, CA

PRELIMINARY ROOF PLAN

JOB NUMBER: 12-560
SCALE: 1"=30'-0"
DATE: 09/14/12

jordan
ARCHITECTS, INC.
131 CALLE IGLESIA, SUITE 100
SAN CLEMENTE,
CA 92672-7541
Telephone 949 388 8090
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APPENDIX B

Project-Generated Traffic Noise Calculations

EILAR ASSOCIATES, INC.
Acoustical and Environmental Consulting

Project-Generated Traffic Noise Impact Calculations

Project Name: T&R Storage
Project #: B10306N2
Date: 9/27/2012

Intersection: N Centre City and Ivy Del Lane

AM Peak Hour Traffic

Approach	Existing		Existing + Project	
	Volume	*Total*	*Volume*	*Total*
North Right	0	409	3	414
North Straight	261		261	
North Left	34		34	
East Right	9	211	9	213
East Straight	0		1	
East Left	111		111	
South Right	57	534	57	542
South Straight	105		105	
South Left	0		4	
West Right	0	0	4	15
West Straight	0		1	
West Left	0		2	

Existing v. Existing + Project	
North	0.1
East	0.0
South	0.1
West	N/A

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EILAR ASSOCIATES, INC.
Acoustical and Environmental Consulting

Project Name: T&R Storage
Project #: B10306N2
Date: 9/27/2012

Intersection: N Centre City and Ivy Del Lane

PM Peak Hour Traffic

Approach	Existing		Existing + Project	
	Volume	*Total*	*Volume*	*Total*
North Right	0	440	4	448
North Straight	165		165	
North Left	14		14	
East Right	5	129	5	133
East Straight	0		2	
East Left	30		30	
South Right	80	531	80	542
South Straight	256		256	
South Left	0		6	
West Right	0	0	5	23
West Straight	0		2	
West Left	0		4	

Existing v. Existing + Project	
North	0.1
East	0.1
South	0.1
West	N/A

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APPENDIX C

Pertinent Sections of the Darnell & Associates Traffic Study

FOCUSED TRAFFIC IMPACT STUDY

For

ESCONDIDO T&R SELF – SERVE MINI STORAGE FACILITY

IN THE COUNTY OF SAN DIEGO

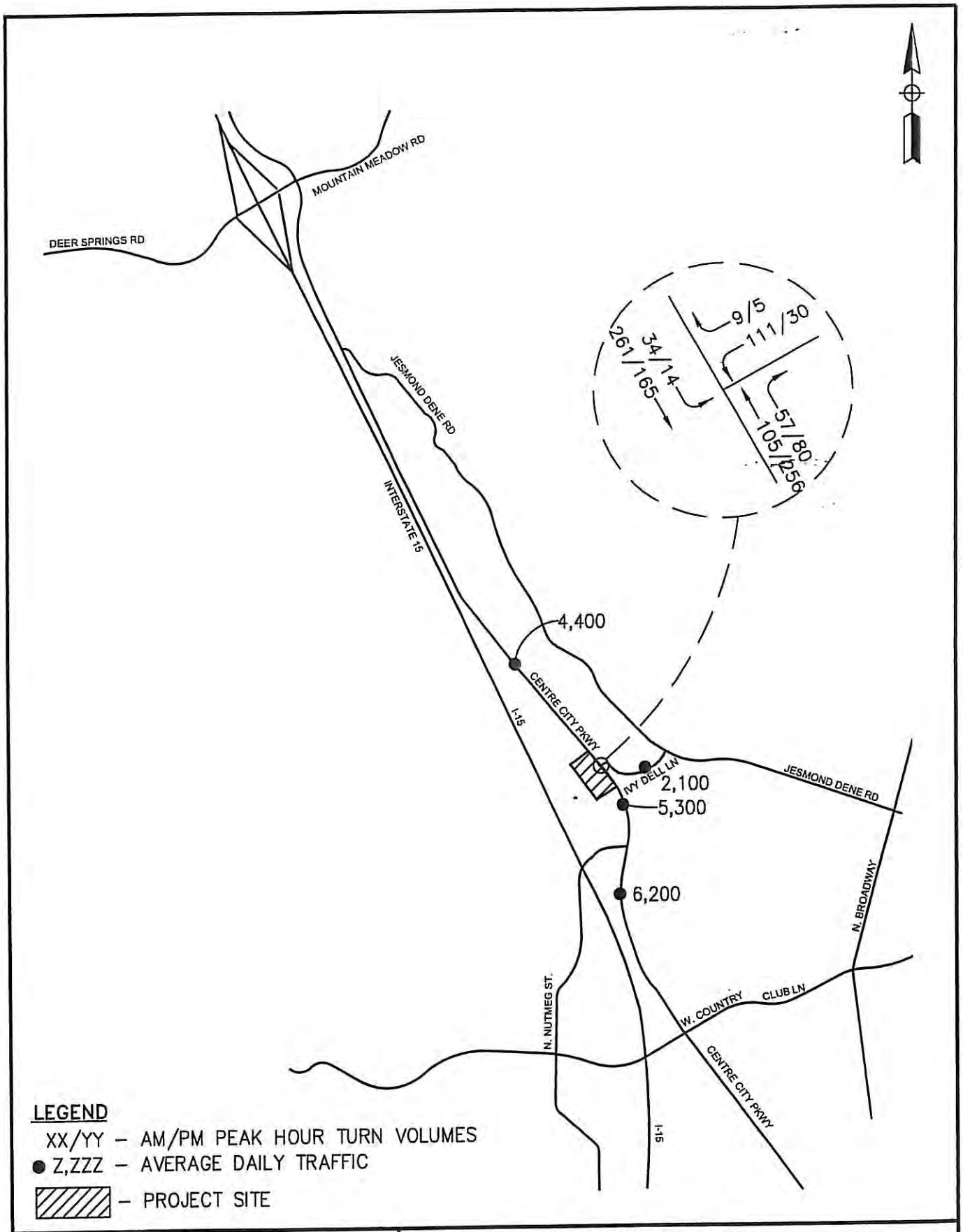
Submitted To:

J. G. Consulting
3940 Hortensia Street
San Diego, CA 92110

Prepared by:

Darnell & Associates, Inc.
2870 Fourth Avenue, Suite A
San Diego, California 92103
619-233-9373

September 24, 2012



Darnell & ASSOCIATES, INC.

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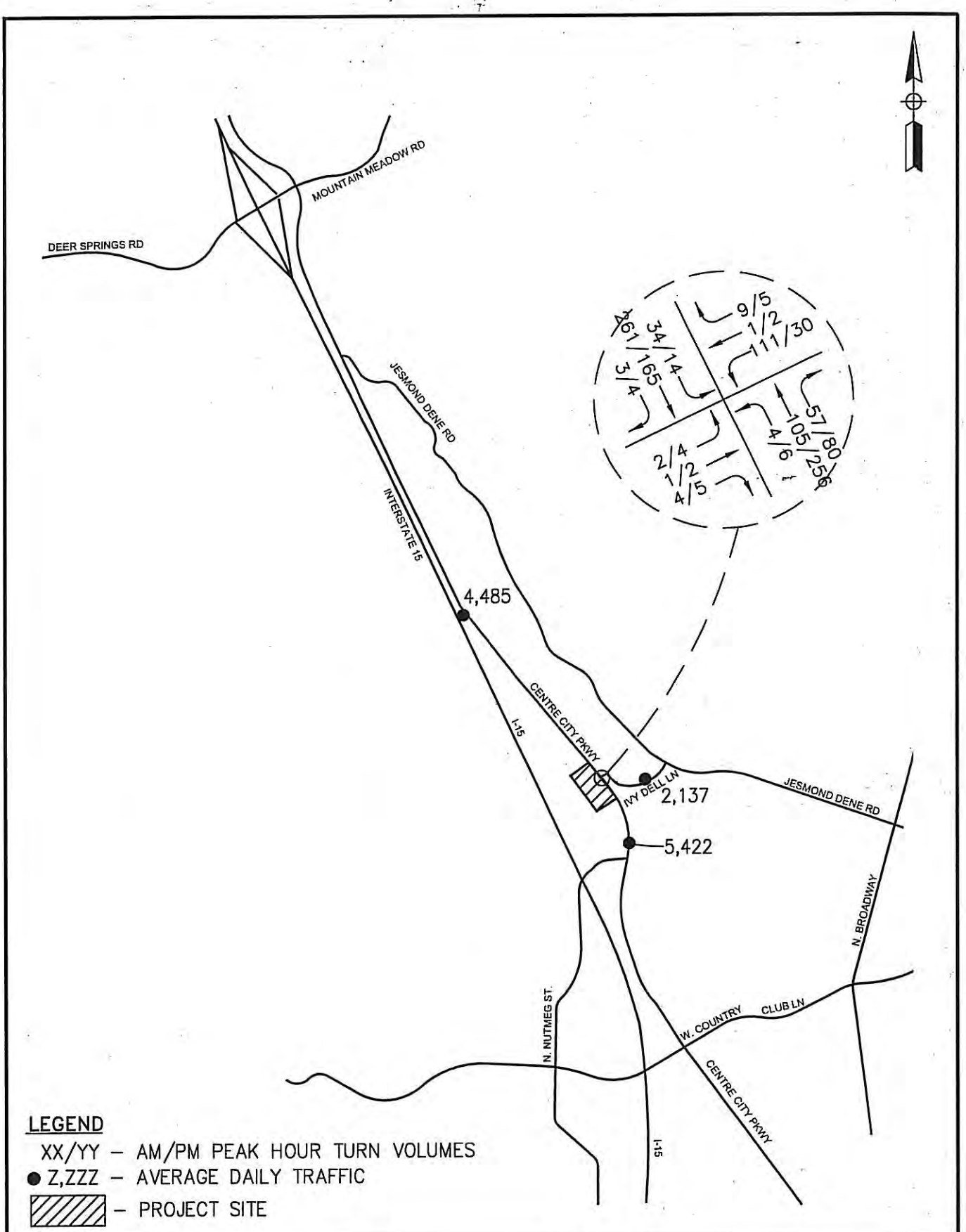
FIGURE 4
EXISTING TRAFFIC VOLUMES



Darnell & ASSOCIATES, INC.	FIGURE 6
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APPENDIX D

Pertinent Sections of the County of San Diego Noise Ordinance

SEC. 36.403. SOUND LEVEL MEASUREMENT.

(a) A sound level measurement made pursuant to this chapter shall be measured with a sound level meter using A-weighting and a "slow" response time, as these terms are used in ANSI S1.1-1994 or its latest revision.

(b) Each measurement shall be conducted at the boundary line of the property on which the noise source is located or any place on the affected property, but no closer than five feet from the noise source.

(c) The sound level meter shall be calibrated and adjusted by means of an acoustical calibrator of the coupler-type to assure meter accuracy within the tolerances in the ANSI specifications for sound level meters, ANSI S1.4-1983 or its latest revision. The sound level meter shall be used as provided in the manufacturer's instructions.

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

SEC. 36.404. GENERAL SOUND LEVEL LIMITS.

(a) Except as provided in section 36.409 of this chapter, it shall be unlawful for any person to cause or allow the creation of any noise, which exceeds the one-hour average sound level limits in Table 36.404 when the one-hour average sound level is measured at the property line of the property on which the noise is produced or at any location on a property that is receiving the noise.

TABLE 36.404
SOUND LEVEL LIMITS IN DECIBELS (dBA)

ZONE	TIME	ONE-HOUR AVERAGE SOUND LEVEL LIMITS (dBA)
(1) RS, RD, RR, RMH, A70, A72, S80, S81, S87, S90, S92, RV, and RU with a density of less than 11 dwelling units per acre.	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
(2) RRO, RC, RM, S86, V5, RV and RU with a density of 11 or more dwelling units per acre.	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
(3) S94, V4, and all commercial zones.	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
(4) V1, V2	7 a.m. to 7 p.m.	60
V1, V2	7 p.m. to 10 p.m.	55
V1	10 p.m. to 7 a.m.	55
V2	10 p.m. to 7 a.m.	50
V3	7 a.m. to 10 p.m.	70
	10 p.m. to 7 a.m.	65
(5) M50, M52, and M54	Anytime	70
(6) S82, M56, and M58.	Anytime	75
(7) S88 (see subsection (c) below)		

(b) Where a noise study has been conducted and the noise mitigation measures recommended by that study have been made conditions of approval of a Major Use Permit, which authorizes the noise-generating use or activity and the decision making body approving the Major Use Permit determined that those mitigation measures reduce potential noise impacts to a level below significance, implementation and compliance with those noise mitigation measures shall constitute compliance with subsection (a) above.

(c) S88 zones are Specific Planning Areas which allow different uses. The sound level limits in Table 36.404 above that apply in an S88 zone depend on the use being made of the property. The limits in Table 36.404, subsection (1) apply to property with a residential, agricultural or civic use. The limits in subsection (3) apply to property with a commercial use. The limits in subsection (5) apply to property with an industrial use that would only be allowed in an M50, M52 or M54 zone. The limits in subsection (6) apply to all property with an extractive use or a use that would only be allowed in an M56 or M58 zone.

(d) If the measured ambient noise level exceeds the applicable limit in Table 36.404, the allowable one-hour average sound level shall be the one-hour average ambient noise level, plus three decibels. The ambient noise level shall be measured when the alleged noise violation source is not operating.

(e) The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones. The one-hour average sound level limit applicable to extractive industries, however, including but not limited to borrow pits and mines, shall be 75 decibels at the property line regardless of the zone in which the extractive industry is located.

(f) A fixed-location public utility distribution or transmission facility located on or adjacent to a property line shall be subject to the sound level limits of this section measured at or beyond six feet from the boundary of the easement upon which the facility is located.

(Amended by Ord. No. 7094 (N.S.), effective 3-25-86; amended by Ord. No. 9478 (N.S.), effective 7-19-02; amended by Ord. No. 9621 (N.S.), effective 1-9-04; amended by Ord. No. 9962 (N.S.), effective 1-9-09)

SEC. 36.405. REPAIRING, REBUILDING OR TESTING MOTOR VEHICLES.

It shall be unlawful for any person to repair, rebuild or test any motor vehicle in such a manner as to cause 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. 36.406. POWERED MODEL VEHICLES.

It shall be unlawful for any person to operate a powered model vehicle between 9 p.m. and 7 a.m. A powered model vehicle operated in a County park shall meet the daytime sound level standards for an RS zone measured at a point 100 feet from the park property line or 100 feet from where the model vehicle is being operated, whichever is less.

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

SEC. 36.407. REFUSE VEHICLES & PARKING LOT SWEEPERS.

No person shall operate or allow to be operated, a refuse compacting, processing, or collection vehicle or a parking lot sweeper between the hours of 10 p.m. to 6 a.m., in or within 100 feet of a residential zone.

(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.

APPENDIX E

Manufacturer Data Sheets

ARI* capacity ratings

PISTONS AND CHARGE

UNDER CEILING

NOMINAL CAPACITY (Tons)	INDOOR UNIT	OUTDOOR UNIT	ARI CAPACITIES		ARI CFM	SEER	EER	HSPF	INDOOR PISTON	OUTDOOR PISTON	CHARGE (lb)
			C/O (Btuh)	H/P (Btuh)							
2.0	40QAE024-331	38QR018C-3	19,000	17,000	500	11.0	10.0	7.2	55	49	4.3
		38QR024C-3	24,000	22,600	525	11.0	10.0	7.3	55	49	6.3
3.0	40QAE036-321	38QR030C-3	30,000	28,000	870	11.0	10.2	7.4	63	55	6.4
		38QR036C-3,5,6	33,400	33,400	870	11.2	10.2	7.2	63	61	8.7
4.0	40QAE048-321	38QR048C-3,5,6	48,000	45,500	1100	10.2	9.6	7.3	84	78	10.0
5.0	40QAE060-311	38QR060C-3,5,6	58,000	57,500	1600	11.0	9.9	7.4	96	82	11.9

CASSETTE

NOMINAL CAPACITY (Tons)	INDOOR UNIT	OUTDOOR UNIT	ARI CAPACITIES		ARI CFM	SEER	EER	HSPF	INDOOR PISTON	OUTDOOR PISTON	CHARGE (lb)
			C/O (Btuh)	H/P (Btuh)							
1.5	40QKE024-3	38QR018C-3	18,000	17,600	525	10.0	9.0	6.8	51.0	49.0	5.5
2.0	40QKE036-3	38QR024C-3	25,000	23,800	980	10.7	10.2	7.6	61.0	49.0	5.9
		38QR030C-3	29,000	27,000	980	11.5	11.1	7.6	63.0	55.0	5.9
3.0	40QKE048-3	38QR036C-3, 5, 6	32,000	33,000	1100	10.0	9.5	6.8	67.0	59.0	5.9

LEGEND

EER — Energy Efficiency Ratio
HSPF — Heating Seasonal Performance Factor
SEER — Seasonal Energy Efficiency Rating
C/O — Cooling Only
H/P — Heat Pump

*Air Conditioning and Refrigeration Institute.

NOTE Systems are rated and certified in accordance with ARI Standards 210/240 and 270.

SOUND DATA (A Weighted)

UNIT	SOUND POWER NO. 1 (dBa)	SOUND PRESSURE (dBa)	FAN SPEED	SOUND POWER DATA OCTAVE BAND (dBa)						
				125	250	500	1000	2000	4000	8000
38QR018C	67.2	56.2	Single	51.0	57.0	62.0	62.5	62.0	56.5	47.5
38QR024C	66.3	55.3	Single	54.5	59.0	61.5	62.0	60.5	54.5	49.5
38QR030C	65.9	54.9	Single	55.0	56.5	61.0	63.0	58.5	53.5	43.0
38QR036C	66.2	55.2	Single	57.0	61.0	61.0	62.5	59.0	55.5	51.0
38QR048C	73.0	62.0	Single	60.5	68.5	68.0	68.5	67.0	62.5	54.0
38QR060C	73.6	62.6	Single	62.5	67.5	71.0	68.0	67.0	63.5	54.5

LEGEND

dBa — Decibels on the A Scale

NOTE: Sound pressure data is measured 1 m away from the unit.

APPENDIX F

Mechanical Noise Analysis Data and Results

EILAR ASSOCIATES
ACOUSTICAL CONSULTING

Equipment Noise Level Analysis

Distances			
Source Height:	h_S =	5.0	(ft)
Receiver Height:	h_R =	5.0	(ft)
Source to Receiver Distance:	d_{SR} =	200.0	(ft)

Project Name: T&R Mini Storage
Project Number: B10306N2
Date: 9/26/2012
Source Description: HVAC Equipment
Path Description: East Property Line

Path Calculation			
Source to Receiver Direct Path Distance:	r =	**200.0**	(ft)

Equipment Noise Levels at 5 Feet

Equipment		125	250	500	1000	2000	4000	8000	Leq	(Hz)	Duty Cycle		Quantity
Carrier 38QRC018		51.0	57.0	62.0	62.5	62.0	56.5	57.5	**67.2**	(dB)	100	%	6
N/A										(dB)	0	%	0
N/A										(dB)	0	%	0
N/A										(dB)	0	%	0
N/A										(dB)	0	%	0
Total	**-93.0**	**51.0**	**57.0**	**62.0**	**62.5**	**62.0**	**56.5**	**57.5**					
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)			
A-Weighted Sound Pressure Level	#####	34.9	48.4	58.8	62.5	63.2	57.0	56.4	**67.5**	(dBA)	0.93	(ft)	

Adjusted Noise Levels

Equipment		125	250	500	1000	2000	4000	8000	Leq	(Hz)		
Carrier 38QRC018		58.8	64.8	69.8	70.3	69.8	64.3	65.3	**75.0**			
N/A												
N/A												
N/A												
N/A										(dB)		
Total:	**-4.0**	**58.8**	**64.8**	**69.8**	**70.3**	**69.8**	**64.3**	**65.3**		(dB)	200.0	(ft)
Distance Adjustment:	**-50.6**	**12.1**	**18.1**	**23.1**	**23.6**	**23.1**	**17.6**	**18.6**				
A-Weighting	-26.2	-16.1	-8.6	-3.2	0	1.2	0.5	-1.1		(dB)		
A-Weighted Sound Pressure Level	-76.8	-4.0	9.5	19.9	23.6	24.3	18.1	17.5	**28.6**	(dBA)	200.0	(ft)

Combined Sound Pressure Level at Receiver		
Total Sound Pressure Level:	**29.3**	(dB)
Total A-Weighted Sound Pressure Level:	**28.6**	

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APPENDIX G

Roadway Construction Noise Model (RCNM) Data and Results

Roadway Construction Noise Model (RCNM),Version 1.0

Report date 9/26/2012
Case Desc Grading

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East PL	Residential	75	75	75

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		150	0
Excavator	No	40		80.7	150	0
Backhoe	No	40		77.6	150	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Grader		75.5	71.5	75	75	75	75	75
Excavator		71.2	67.2	75	75	75	75	75
Backhoe		68	64	75	75	75	75	75
	Total	75.5	73.4	75	75	75	75	75

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.0

Report date 9/26/2012
Case Desc Trenching

		Baselines (dBA)			---- Receptor #1 ----
Description	Land Use	Daytime	Evening	Night	
East PL	Residential	75	75	75	

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	150	0
Trencher	No	40		82	150	0

		Calculated (dBA)		Results Noise Limits (dBA)					
				Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Backhoe		68	64	75	75	75	75	75	
Trencher		72.5	68.5	75	75	75	75	75	
	Total	72.5	69.8	75	75	75	75	75	

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.0

Report date 9/26/2012
Case Desc Paving

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East PL	Residential	75	75	75

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	150	0
Roller	No	20		80	150	0
Backhoe	No	40		77.6	150	0

				Results				
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Paver		67.7	64.7	75	75	75	75	75
Roller		70.5	63.5	75	75	75	75	75
Backhoe		68	64	75	75	75	75	75
	Total	70.5	68.9	75	75	75	75	75

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.0

Report date 9/27/2012
Case Desc Concrete Pad Pouring

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East PL	Residential	75	75	75

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	150	0
Concrete Pump Truck	No	20		81.4	150	0

	Calculated (dBA)		Results	Noise Limits (dBA)				
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Concrete Mixer Truck	69.3	65.3	75	75	75	75	75	
Concrete Pump Truck	71.9	64.9	75	75	75	75	75	
Total	71.9	68.1	75	75	75	75	75	

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.0

Report dat 9/26/2012
Case Desc Building Construction

				---- Receptor #1 ----
		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East PL	Residential	75	75	75

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	150	0
Gradall	No	40		83.4	150	0
Gradall	No	40		83.4	150	0
Generator	No	50		80.6	150	0
Backhoe	No	40		77.6	150	0
Welder / Torch	No	40		74	150	0

			Results					
	Calculated (dBA)		Noise Limits (dBA)					
			Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	
Crane	71	63	75	75	75	75	75	
Gradall	73.9	69.9	75	75	75	75	75	
Gradall	73.9	69.9	75	75	75	75	75	
Generator	71.1	68.1	75	75	75	75	75	
Backhoe	68	64	75	75	75	75	75	
Welder / Torch	64.5	60.5	75	75	75	75	75	
Total	73.9	75	75	75	75	75	75	

*Calculated Lmax is the Loudest value.