NOISE ASSESSMENT

Sweetwater Place Residential Development
PDS2014-GPA-14-003, PDS2014-REZ14-003, PDS2014-TM5588, PDS2014-STP-14-015 County of San Diego, CA

Lead Agency:

County of San Diego
Planning and Development Services
Contact: Emmet Aquino
5510 Overland Avenue #110
San Diego, CA 92123
858-694-8845

Prepared by:

Jeremy Louden
Ldn Consulting, Inc.
446 Crestcourt Lane
Fallbrook, CA 92028
760-473-1253

Prepared For:

Sam-Sweetwater, LLC
20201 SW Birch St., Suite 100
Newport Beach, CA 92660

July 2015

TABLE OF CONTENTS

TABLE OF CONTENTS ..... **II**

LIST OF FIGURES ..... **III**

LIST OF TABLES ..... **III**

ATTACHMENTS ..... **III**

GLOSSARY OF TERMS ..... **IV**

EXECUTIVE SUMMARY ..... **V**

1.0 INTRODUCTION **1**

1.1 PROJECT DESCRIPTION 1
1.2 ENVIRONMENTAL SETTINGS & EXISTING CONDITIONS 1
1.3 METHODOLOGY AND EQUIPMENT 4

2.0 NOISE SENSITIVE LAND USES (NSLU) **8**

2.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE 8
2.2 POTENTIAL NOISE IMPACTS 10
2.3 OFF-SITE NOISE IMPACTS 18
2.4 CONCLUSIONS 18

3.0 CONSTRUCTION ACTIVITIES **20**

3.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE 20
3.2 POTENTIAL PROPERTY LINE NOISE IMPACTS 21
3.3 CONCLUSIONS 23

4.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS **24**

5.0 CERTIFICATIONS **26**

LIST OF FIGURES

FIGURE 1-A: PROJECT VICINITY MAP 2
FIGURE 1-B: PROPOSED PROJECT SITE LAYOUT 3
FIGURE 1-C: NOISE MEASUREMENT LOCATIONS 5
FIGURE 2-A: FUTURE NOISE CONTOUR LOCATIONS 13
FIGURE 2-B: MODELED MULTI-FAMILY NSLU RECEPTOR LOCATIONS 14
FIGURE 2-C: EXTERIOR NOISE MITIGATION MEASURES 17

LIST OF TABLES

TABLE 1-1: EXISTING NOISE LEVELS 4
TABLE 2-1: EXISTING TRAFFIC PARAMETERS 10
TABLE 2-2: NOISE MODEL CALIBRATION 11
TABLE 2-3: BUILDOUT 2030 TRAFFIC PARAMETERS 11
TABLE 2-4: FUTURE EXTERIOR NOISE LEVELS 15
TABLE 3-1: CONSTRUCTION NOISE LEVELS 22

ATTACHMENTS

MODEL CALIBRATION INPUT AND OUTPUT FILES 27
FUTURE NOISE CONTOUR MODEL INPUT AND OUTPUT FILES 30
DETAILED FUTURE NOISE MODEL INPUT AND OUTPUT FILES 35

GLOSSARY OF TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by 20 log (L/L_{ref}).

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (LDN): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB "Penalty" for night time noise. Typically LDN's are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts associated with the development of the proposed project. The project known as "Sweetwater Place" residential development" proposes the development of a 20 acre lot which was previously used as an agricultural nursery site with 122 condominium style residential and a 2.08-acre (gross) and 1.53-acre (net) park. The project is located in the eastern portion of the unincorporated community of Spring Valley in San Diego County, CA.

- On-Site Noise Analysis

It was determined from the detailed analysis that the multi-family NSLU's adjacent to the roadways will not comply with the County of San Diego 65 dBA CNEL exterior noise standard without mitigation measures. In order to reduce the future exterior noise levels to below the County threshold noise barriers are required in the western and southern portion of the site. The noise affected outdoor areas of the proposed lots located closest to Jamacha Boulevard will require noise barriers in height of six (6) feet to be located on top of slope at the rear yards. It was determined from the detailed analysis that all multi-family NSLU's will comply with the County of San Diego 65 dBA CNEL exterior noise standard with the additional mitigation measures. The park and recreational areas along Sweetwater Road were found to comply with the County's 70 dBA threshold.

The first floor and second floor building facades were found to be above 60 dBA CNEL. Therefore, per the General Plan Noise Element an interior noise study is required to determine the mitigation required to achieve an interior noise level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element.

Additionally, the Project is zoned S-90 with a proposed R-V use and the surrounding properties are zoned industrial (M-52) to the north, west and east and industrial (M-58) across Jamacha Blvd. The M-58 zoned properties to the south are subject to a one-hour average sound level limit of 75 dBA anytime. The abutting land uses zoned M-52 allows for a one-hour average level limit of 70 dBA anytime and the Project site zoning allows for a sound level of 50 decibels (dBA) from 7 a.m. to 10 p.m. and 45 decibels (dBA) from 10 p.m. to 7 a.m. The final one-hour average sound level limit for two zoning districts is the arithmetic mean of the respective zones.

In this case, the most conservative property lines along the western, eastern and northern boundaries would be subject to 60 dBA daytime and 57.5 dBA nighttime under Section 36.404 of the Noise Ordinance. Based on the existing uses surrounding the Project site, generally

commercial and storage facilities, the property thresholds are anticipated to comply at the proposed Project.

- Off-Site Noise Analysis

The project does not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

The grading activities will consist of the preparation of the proposed internal roadways, the finished pads, and the water quality detention basins. The grading equipment will be spread out over the project site from distances near the occupied property to distances of 400-feet or more away. Based upon the proposed site plan the majority of the grading operations will occur more than 135-feet from the property lines. At average distances over 135-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures.

No blasting or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the Project will comply with Section 36.410 of the County Noise Ordinance.

1.0 INTRODUCTION

1.1 Project Description

This noise study was completed to determine the noise impacts associated with the development of the proposed Sweetwater Place Residential Project. The project is located at 32° 43′ 38″ N and 116° 58′ 03″ W, north of Jamacha Boulevard (SR-54) and east of Sweetwater Springs Boulevard approximately one mile south of SR-94 in the eastern portion of the unincorporated area or San Diego County CA. The general location of the project is shown on the Vicinity Map, Figure 1-A.

The proposed project seeks the development of a 20 acre lot which was previously used as an agricultural nursery site with 122 condominium style residential and a 2.08-acre (gross) and 1.53-acre (net) park. Grading is proposed to start sometime in 2016 with full build out in August of 2017. A site development plan is shown in Figure 1-B of this report.

The existing County of San Diego General Plan land use designation is Public/Semi-Public with an underlying land use designation of RL-80 (Rural Lands). A General Plan Amendment (GPA) is required to change the current General Plan designator from RL-80 to a Village Residential (VR-7.3) designator.

1.2 Environmental Settings & Existing Conditions

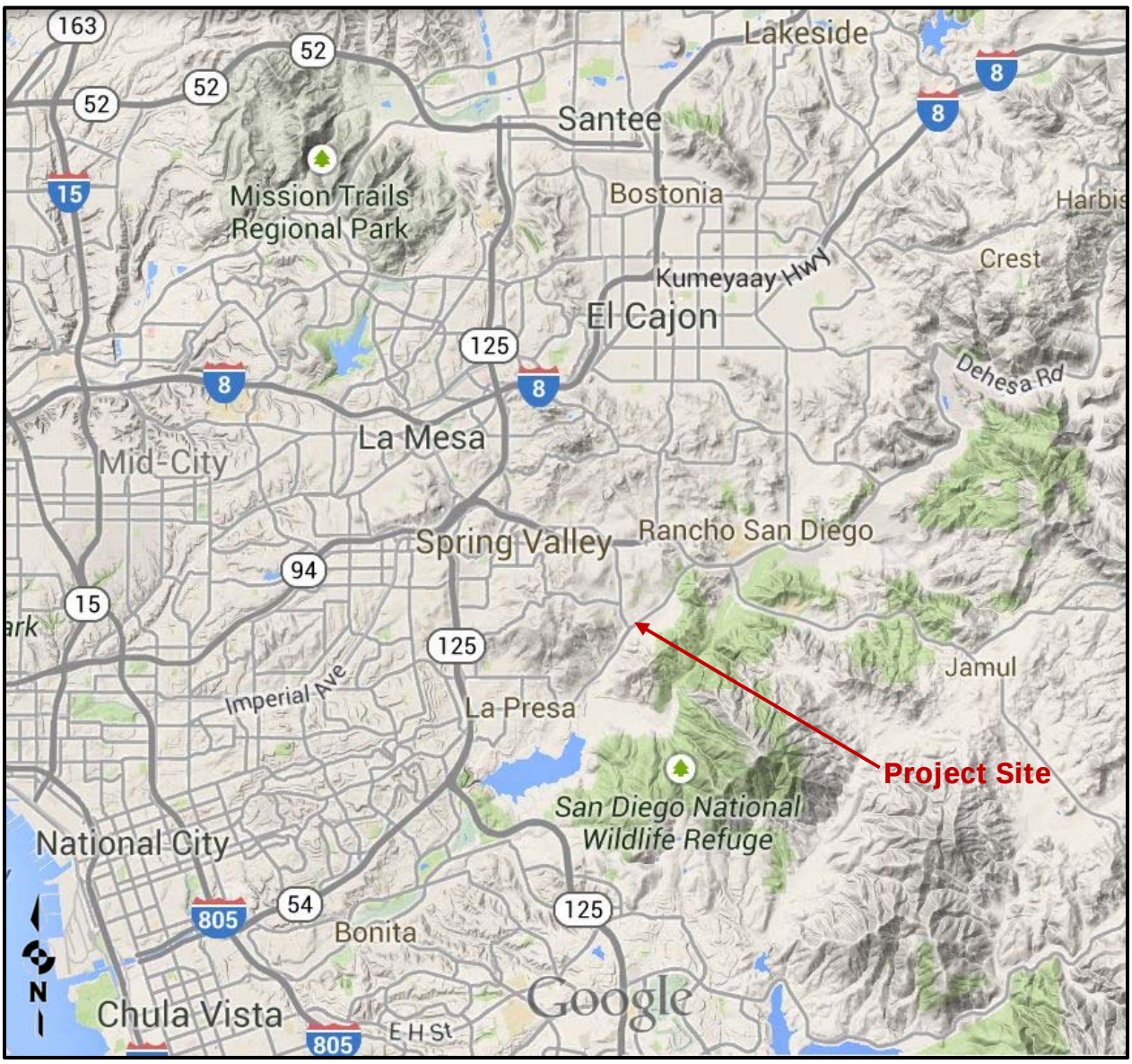
a) Settings & Locations

The project is adjacent to Jamacha Boulevard (SR-54) and Sweetwater Springs Boulevard. Access to the project site is provided by both roadways. Jamacha Boulevard and Sweetwater Springs Boulevard are major arterials that connect the project to other arterials. Existing land uses surrounding the site are commercial, light industrial and residential.

b) Existing Noise Conditions

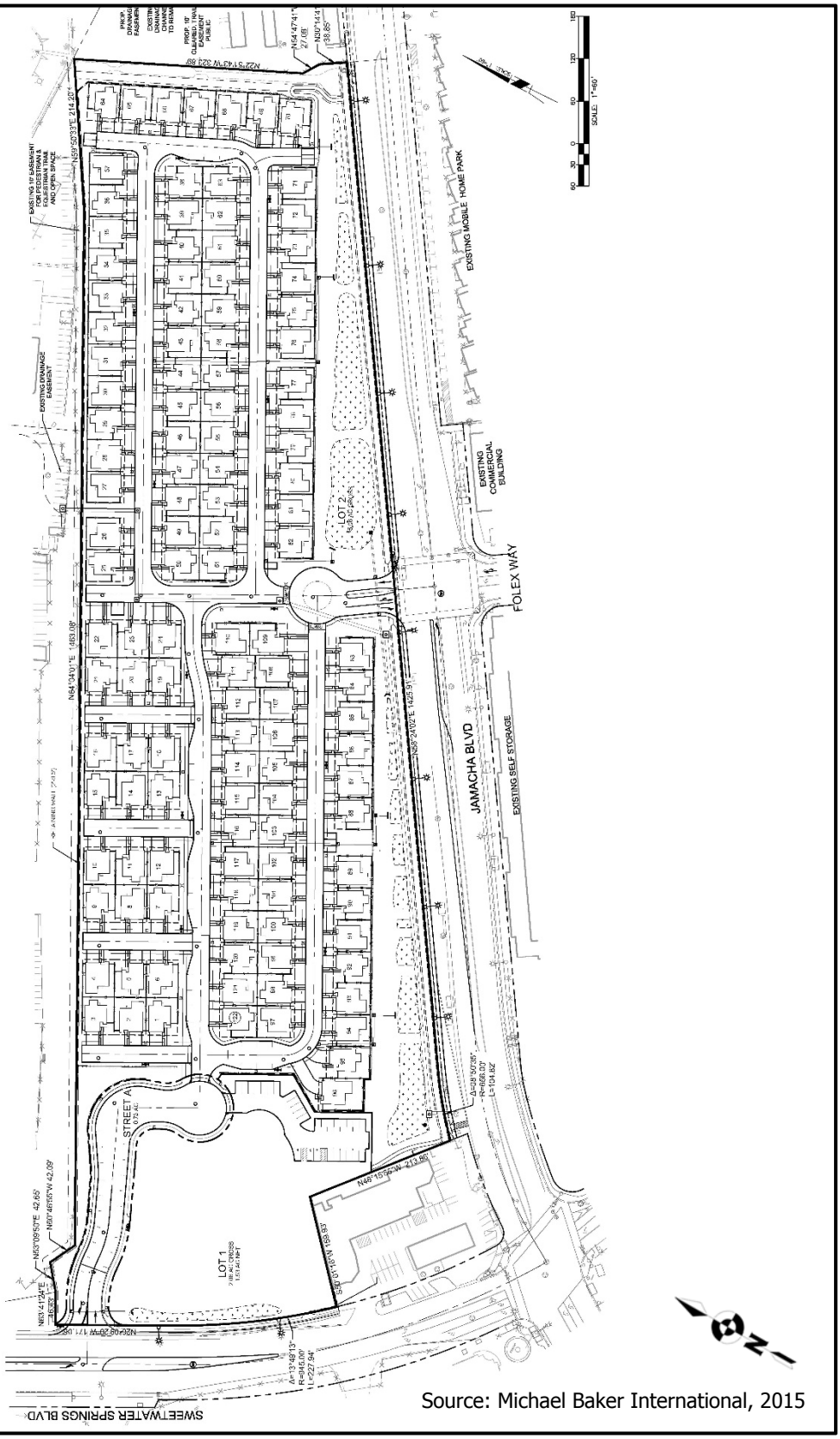
The project is located adjacent to Jamacha Boulevard and Sweetwater Springs Boulevard, both roads have a roadway classification of 4 lane major roadway in the County of San Diego's Circulation Element with a designed speed limit of 55 miles per hour (MPH). Existing noise occurs mainly from traffic traveling along both roadways.

Figure 1-A: Project Vicinity Map



Source: Google Maps, 2014

Figure 1-B: Proposed Project Site Layout



Source: Michael Baker International, 2015

1.3 Methodology and Equipment

a) Noise Measuring Methodology and Procedures

To determine the existing noise environment and to assess potential noise impacts, measurements were taken at two locations on the project having a direct line of site to the adjacent roadways having a relatively flat terrain and no obstruction from trees or rock outcroppings. This was done to determine the worst case conditions at the nearest proposed multi-family NSLU. The noise measurements were recorded on September 3, 2013 by Ldn Consulting between approximately 2:30 p.m. and 3:30 p.m.

Noise measurements were taken using a Larson-Davis Model LxT Type 1 precision sound level meter, programmed, in "slow" mode, to record noise levels in "A" weighted form. The sound level meter and microphone were mounted on a tripod, five feet above the ground and equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring using a Larson-Davis calibrator, Model CAL 200.

The noise measurement locations were determined based on site access and noise impact potential to the proposed sensitive uses. Monitoring location 1 (M1) was located along Jamacha Boulevard near the center of the site and monitoring location 2 (M2) was located along Sweetwater Boulevard near the entrance of the project site. The noise monitoring locations are provided graphically in Figure 1-C on the following page.

The results of the noise level measurements are presented in Table 1-1. The noise measurements were monitored for a time period of 15 minutes at each location. The ambient Leq noise levels measured in the area of the project during the afternoon hour were found to be roughly 70-72 dBA adjacent to the roadways. The existing noise levels in the project area consisted primarily of traffic along the roadways.

Table 1-1: Existing Noise Levels

Location	Time	One Hour Noise Levels (dBA)					
		Leq	Lmin	Lmax	L10	L50	L90
M1	2:35–2:50 p.m.	71.2	49.7	83.3	74.5	66.1	55.9
M2	3:05–3:20 p.m.	70.6	46.9	82.7	74.3	65.4	58.0
Source: Ldn Consulting, Inc. September 3, 2013							

Figure 1-C: Noise Measurement Locations

b) Noise Modeling Software

The expected roadway noise levels from Jamacha Boulevard and Sweetwater Boulevard were projected using Caltrans Sound32 Traffic Noise Prediction Model. Sound32 is a peak hour based traffic noise prediction model. The results of this analysis are based on the California Vehicle Noise Emission Levels (CALVENO). The Sound 32 model was calibrated in accordance with the FHWA Highway Traffic Noise Prediction Manual (Report RD-77-108) and in accordance with Caltrans Technical Noise Supplement (TeNS) section N-5400. The critical model input parameters, which determine the projected vehicular traffic noise levels, include vehicle travel speeds, the percentages of automobiles, medium trucks and heavy trucks in the roadway volume, the site conditions ("hard" or "soft") and the peak hour traffic volume.

The peak hour traffic volumes range between 6-12% of the average daily traffic (ADT) and 10% is generally acceptable for noise modeling purposes. The required coordinate information necessary for the Sound32 traffic noise prediction model input was taken from the preliminary site plans provided by Michael Baker International, 2015. To predict the future noise levels the preliminary site plans were used to identify the pad elevations, the roadway elevations, and the relationship between the noise source(s) and the multi-family NSLU areas. Traffic was consolidated into a single lane located along the centerline of each roadway. Longer roadway segments were subdivided into a series of adjoining segments for analysis. For this analysis, the roadway segments were extended a minimum of 300 feet beyond the observer locations. No grade correction or calibration factor (according to Caltrans Policy TAN-02-01 dated January 17, 2002) was included as part of the Sound32 traffic noise prediction model analysis.

To evaluate the potential noise impacts on the proposed development, outdoor observers were located in multi-family NSLU areas and placed five feet above the pad elevation and near the center of the rear yard a minimum of ten feet from the top/bottom of slope. All second floor observers were located fifteen feet above the proposed pad elevation at the anticipated building facades.

c) Noise Calculations and Factors

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for

evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The Community Noise Equivalent Level (CNEL) is the 24 hour A-weighted average for sound, with corrections for evening and nighttime hours. The corrections require an addition of 5 decibels to sound levels in the evening hours between 7 p.m. and 10 p.m. and an addition of 10 decibels to sound levels at nighttime hours between 10 p.m. and 7 a.m. These additions are made to account for the increased sensitivity during the evening and nighttime hours when sound appears louder.

A vehicle's noise level is from a combination of the noise produced by the engine, exhaust and tires. The cumulative traffic noise levels along a roadway segment are based on three primary factors: the amount of traffic, the travel speed of the traffic, and the vehicle mix ratio or number of medium and heavy trucks. The intensity of traffic noise is increased by higher traffic volumes, greater speeds and increased number of trucks.

Because mobile/traffic noise levels are calculated on a logarithmic scale, a doubling of the traffic noise or acoustical energy results in a noise level increase of 3 dBA. Therefore the doubling of the traffic volume, without changing the vehicle speeds or mix ratio, results in a noise increase of 3 dBA. Mobile noise levels radiate in an almost oblique fashion from the source and drop off at a rate of 3 dBA for each doubling of distance under hard site conditions and at a rate of 4.5 dBA for soft site conditions. Hard site conditions consist of concrete, asphalt and hard pack dirt while soft site conditions exist in areas having slight grade changes, landscaped areas and vegetation. On the other hand, fixed/point sources radiate outward uniformly as sound travels away from the source. Their sound levels attenuate or drop off at a rate of 6 dBA for each doubling of distance.

The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

2.0 NOISE SENSITIVE LAND USES (NSLU)

2.1 Guidelines for the Determination of Significance

The County's General Plan Chapter 8 Noise Element uses the Noise Compatibility Guidelines listed in Table N-1 of the General Plan Noise Element (provided below) to determine the compatibility of land use when evaluating proposed development projects. The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments. For example, a commercial project would be evaluated differently than a residential project in a rural area or a mixed-use project in a more densely developed area of the County.

TABLE N-1: NOISE COMPATIBILITY GUIDELINES (CNEL)

Table N-1 Noise Compatibility Guidelines

Land Use Category		Exterior Noise Level (CNEL)						
			55	60	65	70	75	80
A	Residential—single family residences, mobile homes, senior housing, convalescent homes							
B	Residential—multi-family residences, mixed-use (commercial/residential)							
C	Transient lodging—motels, hotels, resorts							
D*	Schools, churches, hospitals, nursing homes, child care facilities							
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries							
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation							
G*	Office\professional, government, medical\dental, commercial, retail, laboratories							
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair							

	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.
	UNACCEPTABLE—New construction or development shall not be undertaken.

* Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

Note: For projects located within an Airport Influence Area of an adopted Airport Land Use Compatibility Plan (ALUCP), additional Noise Compatibility Criteria restrictions may apply as specified in the ALUCP.

A land use located in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the "conditionally acceptable" noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Standards listed in Table N-2 of the General Plan Noise Element (provided below). For land uses where the exterior noise levels fall within the "unacceptable" range, new construction generally should not be undertaken.

TABLE N-2: NOISE STANDARDS

Table N-2 Noise Standards[Note]
1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L_{eq} (one hour average).
4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: *(i)* for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, *(ii)* for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; *(iii)* for lots over 10 acres in area, the exterior area shall include 1 acre.
5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as "Acceptable" in Table N-1 or an equivalent one-hour noise standard.

Note: Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table N-1, Noise Compatibility Guidelines.

2.2 Potential Noise Impacts

It is expected that the primary source of potential noise impacts to the project site will occur from the combination of traffic noise along Jamacha Boulevard and Sweetwater Boulevard. To determine the future noise environment and impact potentials the Sound32 model first needs to be calibrated using the ambient noise measurements results. The existing conditions were modeled to compare against the noise measurements described in Section 1.3.a of this report. Section N-5440 of the Caltrans Technical Noise Supplement provides detailed procedures for calibrating the Sound32 traffic noise prediction model. The comparison is made to ensure that predicted traffic noise levels accurately reflect the actual measured noise levels. Section N-5460 suggests that model calibration should not be performed when calculated and measured noise levels are within 1 dBA. Differences of 3 to 4 dBA are routinely calibrated to adjust for site conditions the Sound32 model did not account for including topographic features, soft site conditions and existing structures or barriers.

During the aforementioned ambient noise measurements, traffic counts were taken to determine the existing vehicle mix for the model calibration. Table 2-1 presents the roadway parameters used in the analysis including the calculated hourly traffic volumes, vehicle speeds and the traffic flow distribution (vehicle mix) for the existing conditions. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the Sound32 Model.

Table 2-1: Existing Traffic Parameters

Roadway[1]	Observed Traffic Volume	Observed Speeds (MPH)	Vehicle Mix %		
			Auto	Medium Trucks	Heavy Trucks
Jamacha Boulevard	976	55/50[2]	98.3	0.9	0.8
Sweetwater Boulevard	1,188	50	97.9	1.3	0.8

[1] All roadway parameters were observed during the ambient noise measurement periods.
[2] Trucks were observed traveling at a slowing speed during the monitoring.

The ambient measurement location was modeled in Sound32 to compare with the noise monitoring locations presented previously in Table 1-1. The modeled existing noise level comparison is provided in Table 2-2 below. The model is predicting the noise levels within 1 dBA using hard-site conditions. This slight difference is due to variations in the vehicular speeds. Therefore, the roadways were modeled using hard site conditions for the future noise environment and no calibration factor was applied to predict the first/ground floor

areas. Second floor areas were modeled using hard site conditions based upon Caltrans Protocol. The existing model input parameters for calibration and output file are provided as ***Attachment A*** to this report.

Table 2-2: Noise Model Calibration

Receptor	Location	Site Conditions	Calibration Results (dBA)		
			Measured Noise Levels	Modeled Noise Levels	Difference
M1	Along Jamacha Boulevard	Hard	71.2	71.4	+0.2
M2	Along Sweetwater Boulevard	Hard	70.6	70.0	-0.6

[1] Model is within 1 dBA and no calibration is needed.

a) Potential Build Out Noise Conditions

The Buildout scenario includes the future year 2030 traffic volume forecasts provided by the Project's traffic study (Source: Sweetwater Place Traffic Impact Study – Linscott Law and Greenspan, May 2014). The future traffic along Jamacha Boulevard adjacent to the project site is estimated to be 18,919 ADT in the Buildout conditions. The future traffic along Sweetwater Boulevard adjacent to the project site is estimated to be 27,712 ADT in the Buildout conditions. The future roadway parameters and inputs utilized in this analysis are provided in Table 2-3. The adjacent roadways are considered 4 lane major roads based on the County of San Diego Department of Public Works Public Road Standards with a designed traffic speed of 55 MPH. To determine the future noise levels a speed limit of 55 MPH was utilized. To assess the peak hour traffic noise conditions, 10% of the ADT was utilized and a conservative vehicle mix was also utilized to predict the worst case noise levels.

Table 2-3: Buildout 2030 Traffic Parameters

Roadway	Average Daily Traffic (ADT)	Peak Hour Volume[1]	Modeled Speeds (MPH)	Vehicle Mix %[2]		
				Auto	Medium Trucks	Heavy Trucks
Jamacha Boulevard	18,919	1,892	55	95	3	2
Sweetwater Boulevard	27,712	2,771	55	95	3	2

[1] 10% of the ADT.
[2] Conservative vehicle mix.

b) Potential Noise Impact Identification

Noise contours are lines that when drawn from a noise source indicate a continuous or equivalent level of noise exposure. Noise contour lines are generally used as a planning tool to assess potential impacts and the need for additional analysis. The noise contour lines that may affect the project site were developed for the unshielded future Buildout conditions. No barriers or structures were included as part of the noise contour analysis. The Sound32 traffic noise prediction model was used to calculate the noise contours perpendicular. Only the natural topography was incorporated in the contour model to determine the future noise levels at the proposed project site. The proposed pad edges, which are elevated above the travel lanes, were not accounted for in the contour model. Second floor areas were also modeled using hard site conditions based upon Caltrans Protocol. The model input parameters and results for the first and second noise contours are provided in ***Attachment B***. Figure 2-A provides the location of the future first and second floor 75 and 65 dBA CNEL noise contours. The future 60 dBA CNEL contour encompasses the entire site.

The noise contours provided in Figure 2-A show that the 75 dBA CNEL contours are all located within the right-of-way (ROW). The worst-case first floor 65 dBA CNEL contour due to the changes in elevations and top-of-slopes extends approximately 400-feet from Jamacha Boulevard. The first floor unshielded 65 dBA CNEL contour extends roughly 530-feet from Sweetwater Boulevard. The second floor 65 dBA CNEL contour cover almost the entire site. The contours show that noise sensitive land use (NSLU) areas will exceed the County of San Diego 60 dBA CNEL exterior noise standard. Based on these findings, additional detailed exterior noise analysis is provided below to determine the noise impacts and needed mitigation measures.

c) Detailed Analysis and Mitigation Measures

The Buildout analysis was modeled assuming future year traffic parameters as shown previously in Table 2-3. It was determined from the detailed analysis that the multi-family NSLU located along the roadways will not comply with the County of San Diego 65 dBA CNEL multi-family exterior noise standard without mitigation measures. This is due to a combination of the close proximity of proposed lots to the roadways and the traffic volumes and speeds. The multi-family units proposed in the central portion of the site were found to comply with the County's 65 dBA CNEL standard for the ground floor patios (provided private use areas). The proposed park will comply with the 70 dBA threshold of the General Plan Noise Element. Modeled observer locations for a sample of the potentially affected multi-family NSLU's are presented in Figure 2-B.

Figure 2-A: Future Noise Contour Locations

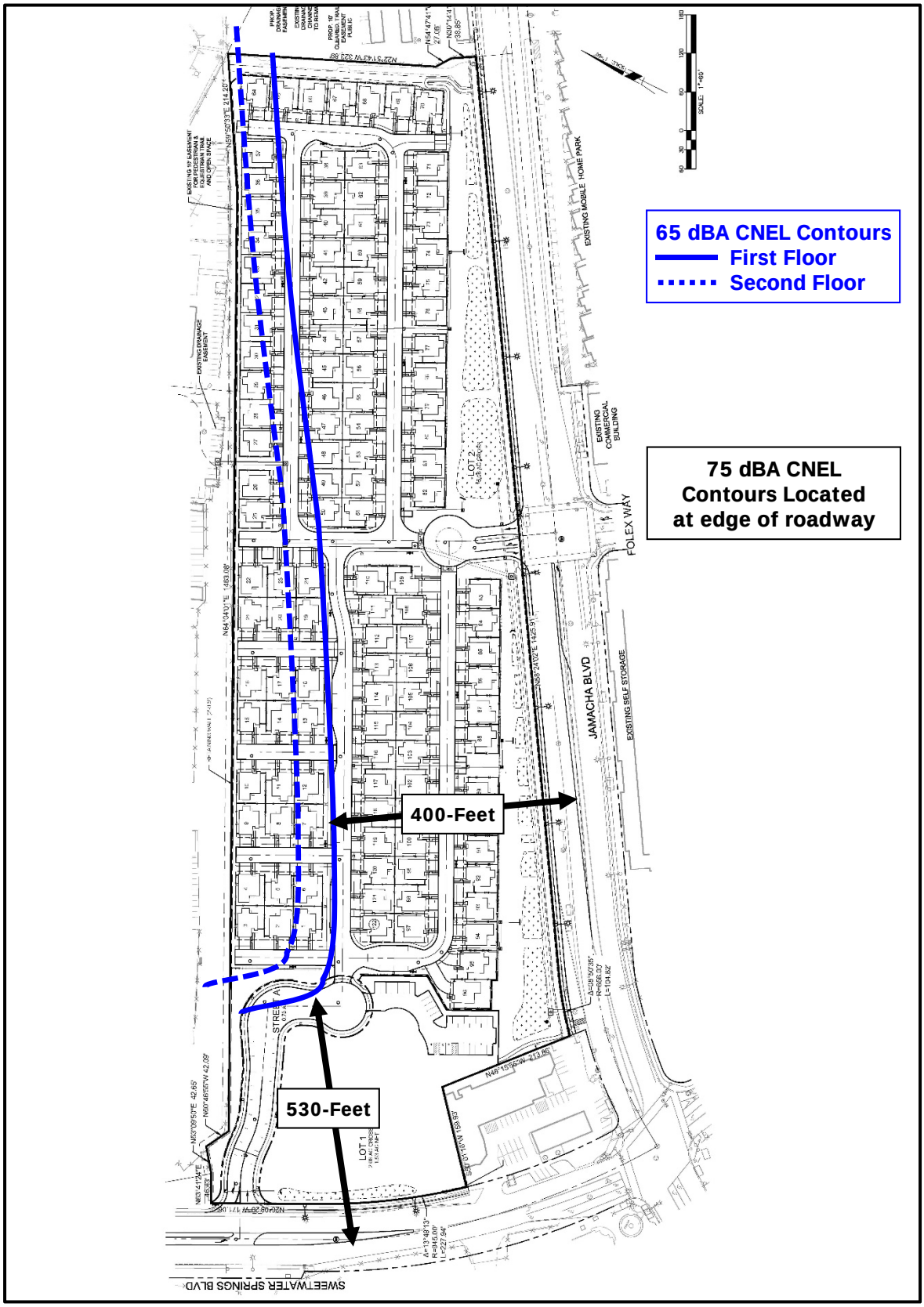
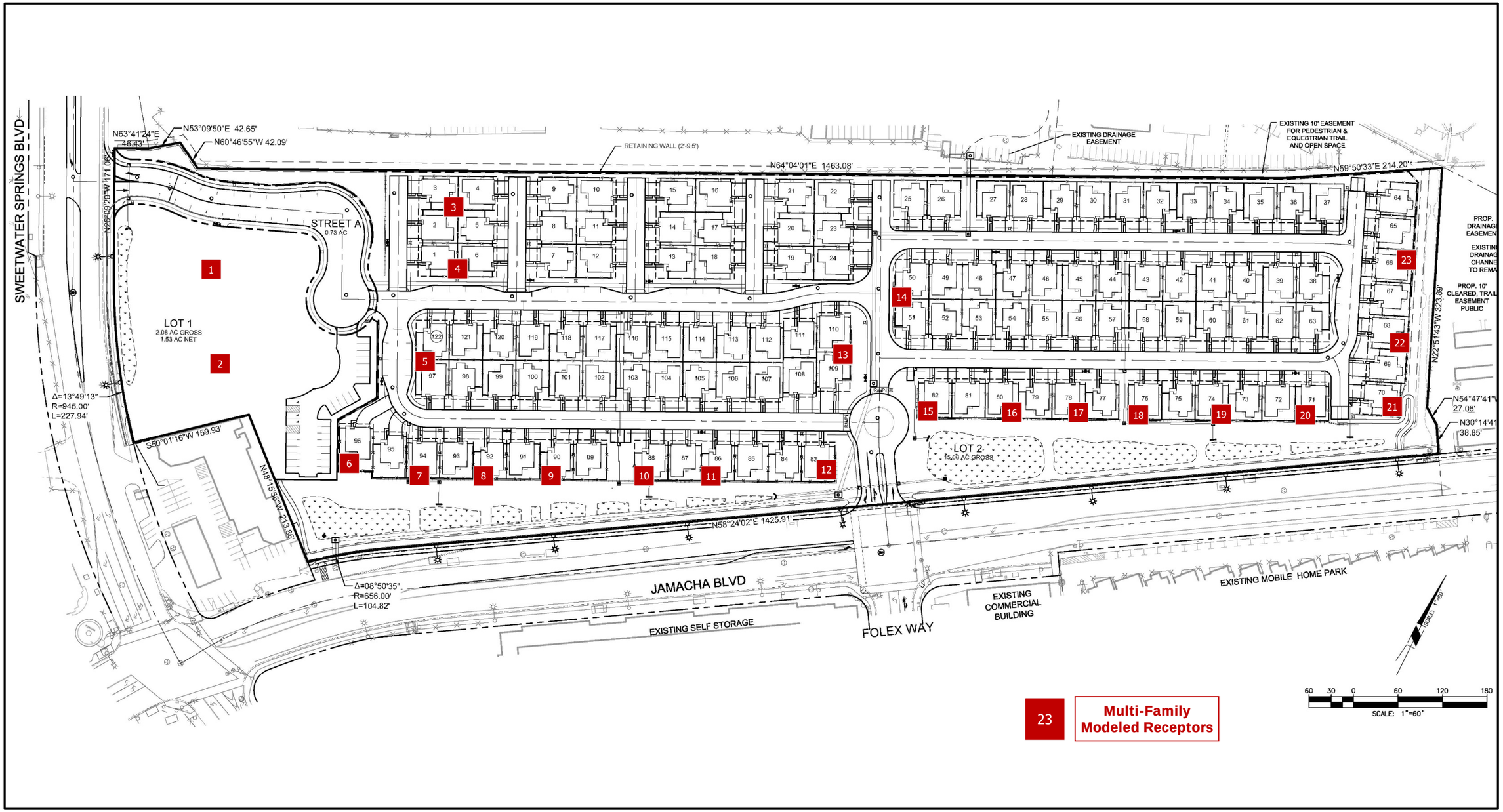


Figure 2-B: Modeled Multi-Family NSLU Receptor Locations



The results of the specific noise modeling for the site are provided in Table 2-4 for both the unmitigated and mitigated scenarios. The noise affected outdoor areas of the proposed lots located closest to Jamacha Boulevard will require noise barriers in height of six (6) feet to be located on top of slope at the rear yards. The park and recreational areas along Sweetwater Road were found to comply with the County's 70 dBA threshold. The S32 models input and output files for the future conditions are provided in ***Attachment C***.

Table 2-4: Future Exterior Noise Levels

Modeled Receptor Number	Receptor Location (Lot #)	Receptor Elevation (Feet)[1]	Unmitigated Outdoor Noise Level (dBA CNEL)[2]	Barrier Height (Feet)	Mitigated Outdoor Noise Levels (dBA CNEL)[3]	Second Floor Façade Noise Levels (dBA CNEL)[3]
1	Park 1	452	68	0	68	--
2	Park 2	452	68	0	68	--
3	3	468	62	0	61	62
4	6	466	62	0	62	62
5	97	465	63	**5**	63	63
6	96	464	67	**5**	62	68
7	94	464	69	**5**	63	69
8	92	465	70	**5**	63	70
9	90	466	70	**5**	64	70
10	88	468	70	**5**	64	70
11	86	469	70	**5**	65	70
12	83	470	71	**5**	65	71
13	10	475	64	**5**	63	64
14	51	475	62	**5**	61	62
15	82	475	68	**5**	62	68
16	80	478	69	**5**	61	69
17	78	480	69	**5**	62	69
18	76	482	69	**5**	63	69
19	74	484	70	**6**	62	70
20	71	485	70	**6**	64	70
21	70	485	70	**6**	63	70
22	68	486	63	0	61	64
23	66	487	61	0	60	60

1 Receptor Elevation is 5-feet above the Pad Elevation for ground level and 15-feet above pad for second floor.
2 Exterior Mitigation required per County Guidelines if **BOLD**
3 Interior Noise Study required per County Guidelines if above 60 CNEL

Exhibit 2-C below shows the mitigation locations and barrier heights required to bring noise levels at the multi-family units adjacent to the roadways to the County of San Diego 65 dBA CNEL exterior noise level standards for the proposed outdoor areas. The barriers must be constructed of a non-gapping material consisting of masonry, ½ inch thick glass, earthen berm or any combination of these materials.

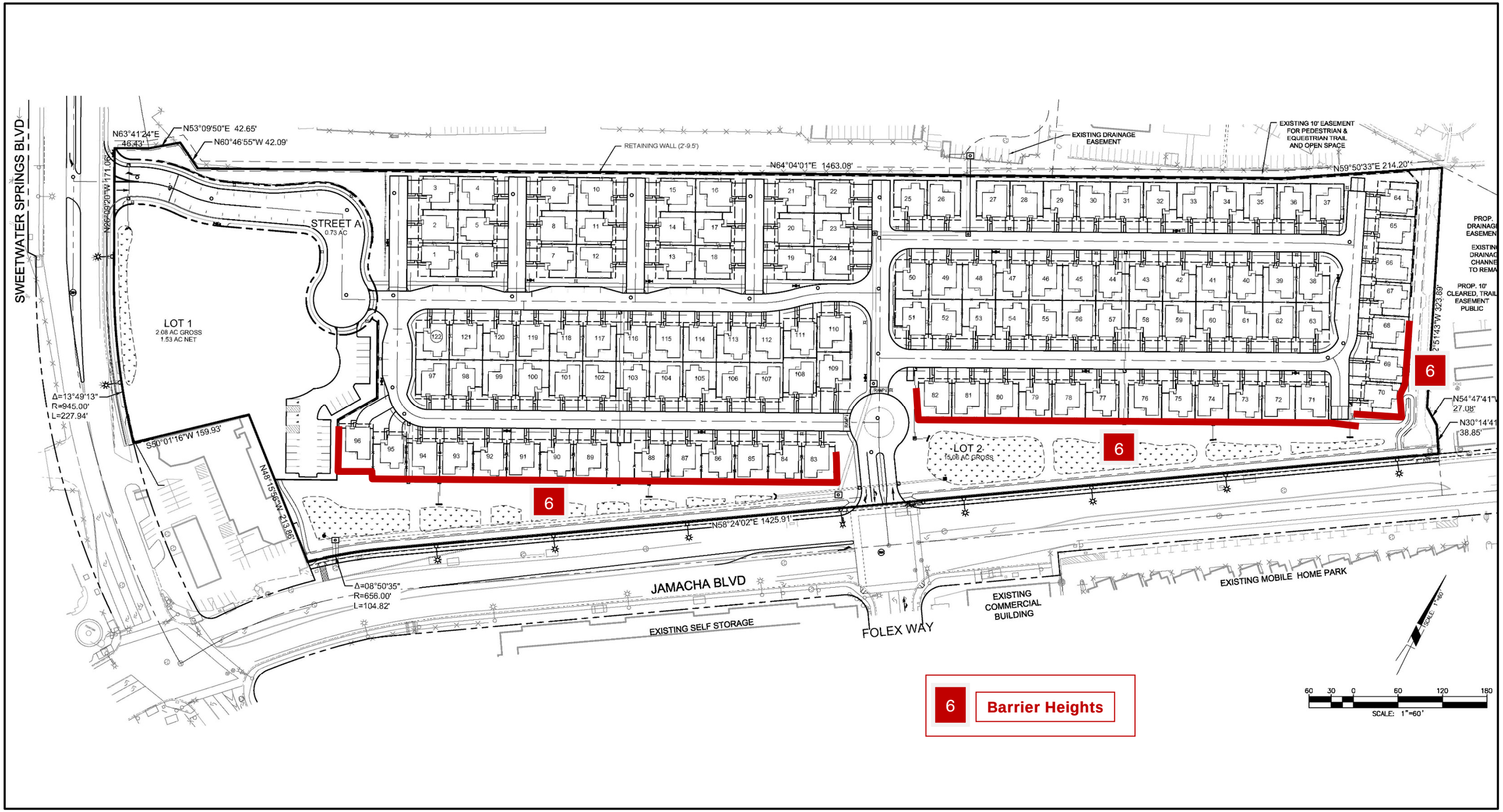
With the incorporation of the mitigation measures, the first floor building facades of the multi-family dwellings will comply with the General Plan Noise Element Standard, of 65 dBA CNEL. The park and recreational areas along Sweetwater Road were found to comply with the County's 70 dBA threshold. Also included in Table 2-4 above are the resultant second floor building façade noise levels. Exterior noise levels at the building facades were found to be above the General Plan Noise Element Standard, of 60 dBA CNEL for both the first and second floor areas. As was shown in Figure 2-A above, all proposed sensitive uses exceed the 60 dBA CNEL threshold at the building façade and may need interior mitigation.

Therefore, an interior noise assessment is required to mitigate the exterior noise levels to an interior level of 45 dBA CNEL. This report should be conducted prior to the issuance of building permits and would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods by providing a window condition requiring a means of mechanical ventilation (e.g. air conditioning) and providing upgraded windows at all affected lots.

Additionally, the Project is zoned S-90 with a proposed R-V use and the surrounding properties are zoned industrial (M-52) to the north, west and east and industrial (M-58) across Jamacha Blvd. The M-58 zoned properties to the south are subject to a one-hour average sound level limit of 75 dBA anytime. The abutting land uses zoned M-52 allows for a one-hour average level limit of 70 dBA anytime and the Project site zoning allows for a sound level of 50 decibels (dBA) from 7 a.m. to 10 p.m. and 45 decibels (dBA) from 10 p.m. to 7 a.m. The final one-hour average sound level limit for two zoning districts is the arithmetic mean of the respective zones.

In this case, the most conservative property lines along the western, eastern and northern boundaries would be subject to 60 dBA daytime and 57.5 dBA nighttime under Section 36.404 of the Noise Ordinance. Based on the existing uses surrounding the Project site, generally commercial and storage facilities, the property thresholds are anticipated to comply at the proposed Project.

Figure 2-C: Exterior Noise Mitigation Measures



2.3 Off-site Noise Impacts

To determine if direct or cumulative off-site noise level increases associated with the development of the proposed project would create noise impacts. The traffic volumes for the existing conditions were compared with the traffic volume increase of existing plus the proposed project. The project is estimated to generate 1,031 daily trips with a peak hour volume of 103 trips. The existing average daily traffic (ADT) volumes on the area roadways are more than 15,000 ADT. Typically it requires a project to double (or add 100%) the traffic volumes to have a direct impact of 3 dBA CNEL or be a major contributor to the cumulative traffic volumes. The project will add less than a 10% increase to the exiting roadway volumes and no direct or cumulative impacts are anticipated.

2.4 Conclusions

It was determined from the detailed analysis that the multi-family NSLU's adjacent to the roadways will not comply with the County of San Diego 65 dBA CNEL exterior noise standard without mitigation measures. In order to reduce the future exterior noise levels to below the County threshold noise barriers are required in the western and southern portion of the site. The noise affected outdoor areas of the proposed lots located closest to Jamacha Boulevard will require noise barriers in height of six (6) feet to be located on top of slope at the rear yards. It was determined from the detailed analysis that all multi-family NSLU's will comply with the County of San Diego 65 dBA CNEL exterior noise standard with the additional mitigation measures. The park and recreational areas along Sweetwater Road were found to comply with the County's 70 dBA threshold.

The first floor and second floor building facades were found to be above 60 dBA CNEL. Therefore, per the General Plan Noise Element an interior noise study is required to determine the mitigation required to achieve an interior noise level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element. It should be noted; interior noise levels of 45 dBA CNEL can be obtained with conventional building construction methods by providing a window condition requiring a means of mechanical ventilation (e.g. air conditioning) and providing upgraded windows at all affected lots.

Additionally, the Project is zoned S-90 with a proposed R-V use and the surrounding properties are zoned industrial (M-52) to the north, west and east and industrial (M-58) across Jamacha Blvd. The M-58 zoned properties to the south are subject to a one-hour average sound level limit of 75 dBA anytime. The abutting land uses zoned M-52 allows for

a one-hour average level limit of 70 dBA anytime and the Project site zoning allows for a sound level of 50 decibels (dBA) from 7 a.m. to 10 p.m. and 45 decibels (dBA) from 10 p.m. to 7 a.m. The final one-hour average sound level limit for two zoning districts is the arithmetic mean of the respective zones.

In this case, the most conservative property lines along the western, eastern and northern boundaries would be subject to 60 dBA daytime and 57.5 dBA nighttime under Section 36.404 of the Noise Ordinance. Based on the existing uses surrounding the Project site, generally commercial and storage facilities, the property thresholds are anticipated to comply at the proposed Project.

The project does not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

3.0 CONSTRUCTION ACTIVITIES

3.1 Guidelines for the Determination of Significance

Construction Noise: Noise generated by construction activities related to the project will exceed the standards listed in San Diego County Code Sections as follows.

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.

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.

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 (provided below), 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.

3.2 Potential Property Line Noise Impacts

a) Potential Build Out Noise Conditions

Construction noise represents a short-term impact on the ambient noise levels. Noise generated by construction equipment includes haul trucks, water trucks, graders, dozers, loaders and scrapers can reach relatively high levels. Grading activities typically represent one of the highest potential sources for noise impacts. The most effective method of controlling construction noise is through local control of construction hours and by limiting the hours of construction to normal weekday working hours.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor, and reduced to 63 dBA at 200 feet from the source.

b) Potential Noise Impact Identification

Using a point-source noise prediction model, calculations of the expected construction noise impacts were completed. The essential model input data for these performance equations include the source levels of each type of equipment, relative source to receiver horizontal and vertical separations, the amount of time the equipment is operating in a given day, also referred to as the duty-cycle and any transmission loss from topography or barriers.

Based empirical data and the amount of equipment needed, worst case noise impacts from this construction equipment would occur during the grading operations. In order to determine the worst case scenario for the grading activities all the equipment was place in a common location, which is not physically possible. As can be seen in Table 3-1, even if all the equipment were placed together the cumulative grading activities noise levels would be 83.5 dBA and would attenuate 8.6 dBA at a distance of 135-feet from the point source noise and would be at or below the 75 dBA threshold.

Table 3-1: Construction Noise Levels

Construction Equipment	Quantity	Source Level @ 50-Feet (dBA)[1]	Duty Cycle (Hours/Day)	Cumulative Noise Level @ 50-Feet (dBA)
Dozer - D8	2	72	8	75.0
Tractor/Backhoe	2	74	8	77.0
Loader/Grader	1	73	8	73.0
Water Trucks	1	70	8	70.0
Scraper	2	75	8	78.0
Excavator	2	74	8	77.0
			Cumulative Levels @ 50 Feet	83.5
			Distance To Property Line (Feet)	135
			Noise Reduction Due To Distance	-8.6
			NEAREST PROPERTY LINE NOISE LEVEL	**74.9**

[1] Source: U.S. Environmental Protection Agency (U.S. EPA), 1971 and Empirical Data

The grading equipment will be spread out over the project site from distances near the occupied property to distances of over 400-feet away. Based upon the proposed site plan the majority of the grading operations will occur more than 200-feet from the property lines. At average distances over 135-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures. This means that most of the time the average distance from the equipment to the occupied properties is more than 135-feet and in that situation no impacts are anticipated.

No blasting or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the Project is anticipated to comply with Section 36.410 of the County Noise Ordinance and no further analysis is required.

3.3 Conclusions

The grading activities will consist of the preparation of the proposed internal roadways, the finished pads, and the water quality detention basins. The grading equipment will be spread out over the project site from distances near the occupied property to distances of 400-feet or more away. Based upon the proposed site plan the majority of the grading operations will occur more than 135-feet from the property lines. At average distances over 135-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures.

No blasting or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the Project will comply with Section 36.410 of the County Noise Ordinance.

4.0 SUMMARY OF PROJECT IMPACTS, MITIGATION & CONCLUSIONS

- On-Site Noise Analysis

It was determined from the detailed analysis that the multi-family NSLU's adjacent to the roadways will not comply with the County of San Diego 65 dBA CNEL exterior noise standard without mitigation measures. In order to reduce the future exterior noise levels to below the County threshold noise barriers are required in the western and southern portion of the site. The noise affected outdoor areas of the proposed lots located closest to Jamacha Boulevard will require noise barriers in height of six (6) feet to be located on top of slope at the rear yards. It was determined from the detailed analysis that all multi-family NSLU's will comply with the County of San Diego 65 dBA CNEL exterior noise standard with the additional mitigation measures. The park and recreational areas were found to comply with the County's 70 dBA threshold.

The first floor and second floor building facades were found to be above 60 dBA CNEL. Therefore, per the General Plan Noise Element an interior noise study is required to determine the mitigation required to achieve an interior noise level of 45 dBA CNEL. This report would finalize the noise requirements based upon precise grading plans and actual building design specifications. This is to ensure that interior noise levels for the proposed residential structures comply with the interior noise level requirement of 45 dBA pursuant to the County Noise Element.

Additionally, the Project is zoned S-90 with a proposed R-V use and the surrounding properties are zoned industrial (M-52) to the north, west and east and industrial (M-58) across Jamacha Blvd. The M-58 zoned properties to the south are subject to a one-hour average sound level limit of 75 dBA anytime. The abutting land uses zoned M-52 allows for a one-hour average level limit of 70 dBA anytime and the Project site zoning allows for a sound level of 50 decibels (dBA) from 7 a.m. to 10 p.m. and 45 decibels (dBA) from 10 p.m. to 7 a.m. The final one-hour average sound level limit for two zoning districts is the arithmetic mean of the respective zones.

In this case, the most conservative property lines along the western, eastern and northern boundaries would be subject to 60 dBA daytime and 57.5 dBA nighttime under Section 36.404 of the Noise Ordinance. Based on the existing uses surrounding the Project site, generally commercial and storage facilities, the property thresholds are anticipated to comply at the proposed Project.

- Off-Site Noise Analysis

The project does not create a direct impact of more than 3 dBA CNEL on any roadway

segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

- Construction Noise Analysis

The grading activities will consist of the preparation of the proposed internal roadways, the finished pads, and the water quality detention basins. The grading equipment will be spread out over the project site from distances near the occupied property to distances of 400-feet or more away. Based upon the proposed site plan the majority of the grading operations will occur more than 135-feet from the property lines. At average distances over 135-feet the grading activities are anticipated not to exceed the County's 75-dBA standard and would not require any mitigation measures.

No blasting or rock crushing is anticipated during the grading operations. Therefore, no impulsive noise sources are expected and the Project will comply with Section 36.410 of the County Noise Ordinance.

5.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the future acoustical environment and impacts within and surrounding the Sweetwater Place residential development. This report was prepared utilizing the latest guidelines and reduction methodologies. This report was prepared by Jeremy Louden; a County approved CEQA Consultant for Acoustics.

Jeremy Louden, Principal
Ldn Consulting, Inc.
760-473-1253
jlouden@ldnconsulting.net

Date March 25, 2015

ATTACHMENT A

MODEL CALIBRATION INPUT AND OUTPUT FILES

```
Sweetwater Springs - Existing Conditions
T-Peak Hour, 1
 960 , 55 , 8 , 50 , 8 , 50
T-Peak Hour, 2
 1164 , 50 , 16 , 50 , 8 , 50
L-Jamacha Blvd, 1
N,-167.,-81,420,
N,-72.,52,426,
N,31.,180,432,
N,103.,250,435,
N,236.,361,443,
N,439.,486,452,
N,720.,668,462,
N,940.,812,467,
N,1360.,1083,473,
N,1713.,1302,478,
L-Sweetwater Springs, 2
N,129.,63,426,
N,-43.,137,430,
N,-112.,188,434,
N,-248.,325,438,
N,-354.,471,440,
N,-417.,574,441,
N,-561.,853,439,
B-Lots 1-4, 1 , 1 , 0 ,0
-340.,719,453,453,
-375.,702,453,453,
-294.,536,450,450,
-268.,550,450,450,
B-Lots 138-140, 2 , 1 , 0 ,0
-231.,507,444,444,
-260.,482,444,444,
-257.,464,444,444,
-199.,366,444,444,
-159.,400,444,444,
B-Lots 128-112, 3 , 1 , 0 ,0
-73.,473,456,456,
43.,388,456,456,
80.,391,456,456,
173.,446,456,456,
306.,508,457,457,
387.,548,458,458,
540.,643,461,461,
691.,737,463,463,
663.,786,463,463,
B-Lots 73-76, 4 , 1 , 0 ,0
800.,816,472,472,
740.,780,472,472,
689.,867,473,473,
648.,951,474,474,
B-Lots 72-61, 5 , 1 , 0 ,0
813.,886,472,472,
838.,842,472,472,
992.,941,476,476,
1109.,1024,480,480,
1304.,1156,484,484,
1291.,1176,484,484,
R, 1 , 67 ,500
800,767,471.,M1 Hard
R, 2 , 67 ,500
-303,489,447.,M2 Hard
C,C
```

SOUND32 - RELEASE 07/30/91

TITLE: Sweetwater Springs - Existing Conditions

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	M1 Hard	67.	500.	71.4
2	M2 Hard	67.	500.	70.0

ATTACHMENT B

FUTURE NOISE CONTOUR MODEL INPUT AND OUTPUT FILES

Sweetwater Multi Family - Ground Level Contours
T-Peak Hour, 1
1797 , 55 , 57 , 55 , 38 , 55
T-Peak Hour, 2
2870 , 55 , 91 , 55 , 60 , 55
L-Jamacha Blvd, 1
N,-167.,-81,420,
N,-72.,52,426,
N,31.,180,432,
N,103.,250,435,
N,236.,361,443,
N,439.,486,452,
N,722.,661,462,
N,943.,805,467,
N,1366.,1071,473,
N,1721.,1289,478,
L-Sweetwater Springs, 2
N,129.,63,426,
N,-43.,137,430,
N,-112.,188,434,
N,-248.,325,438,
N,-354.,471,440,
N,-417.,574,441,
N,-561.,853,439,
B-Off NW, 1 , 1 , 0 ,0
-478.,894,440,440,
-382.,715,445,445,
-360.,728,448,448,
-340.,743,450,450,
-338.,782,455,455,
-328.,804,465,465,
B-Off East, 2 , 1 , 0 ,0
1383.,1167,475,475,
1397.,1151,475,475,
1436.,1165,476,476,
1695.,1333,481,481,
B-Existing Bldg SW, 3 , 92 , 0 ,0
1,2
-163.,358,442,457,
-180.,378,442,457,
-90.,454,442,457,
40.,338,442,457,
27.,323,442,457,
-21.,314,442,457,
-109.,386,442,457,
-163.,358,442,457,
R, 1 , 67 ,500
-195,657,461.,
R, 2 , 67 ,500
-127,525,455.,
R, 3 , 67 ,500
74,458,452.,
R, 4 , 67 ,500
207,524,454.,
R, 5 , 67 ,500
343,591,457.,
R, 6 , 67 ,500
476,658,463.,
R, 7 , 67 ,500
611,727,466.,
R, 8 , 67 ,500
744,791,469.,
R, 9 , 67 ,500
1213,1191,481.,

R, 10 , 67 ,500
1082,1125,480.,
R, 11 , 67 ,500
946,1058,479.,
R, 12 , 67 ,500
810,994,479.,
R, 13 , 67 ,500
680,926,473.,
R, 14 , 67 ,500
544,860,469.,
R, 15 , 67 ,500
410,792,465.,
R, 16 , 67 ,500
276,725,463.,
R, 17 , 67 ,500
141,658,460.,
R, 18 , 67 ,500
8,587,459.,
R, 19 , 67 ,500
-61,727,467.,
R, 20 , 67 ,500
75,793,468.,
C,C

SOUND32 - RELEASE 07/30/91

TITLE: Sweetwater Multi Family - Ground Level Contours

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	68.1
2	R-2	67.	500.	68.5
3	R-3	67.	500.	68.7
4	R-4	67.	500.	69.5
5	R-5	67.	500.	69.7
6	R-6	67.	500.	70.1
7	R-7	67.	500.	70.5
8	R-8	67.	500.	71.2
9	R-9	67.	500.	67.4
10	R-10	67.	500.	67.4
11	R-11	67.	500.	67.3
12	R-12	67.	500.	67.0
13	R-13	67.	500.	66.8
14	R-14	67.	500.	66.6
15	R-15	67.	500.	66.5
16	R-16	67.	500.	66.5
17	R-17	67.	500.	66.5
18	R-18	67.	500.	66.6
19	R-19	67.	500.	65.5
20	R-20	67.	500.	64.7

Sweetwater Multi Family - Second Level Contours
T-Peak Hour, 1
 1797 , 55 , 57 , 55 , 38 , 55
T-Peak Hour, 2
 2870 , 55 , 91 , 55 , 60 , 55
L-Jamacha Blvd, 1
N,-167.,-81,420,
N,-72.,52,426,
N,31.,180,432,
N,103.,250,435,
N,236.,361,443,
N,439.,486,452,
N,722.,661,462,
N,943.,805,467,
N,1366.,1071,473,
N,1721.,1289,478,
L-Sweetwater Springs, 2
N,129.,63,426,
N,-43.,137,430,
N,-112.,188,434,
N,-248.,325,438,
N,-354.,471,440,
N,-417.,574,441,
N,-561.,853,439,
B-Off NW, 1 , 1 , 0 ,0
-478.,894,440,440,
-382.,715,445,445,
-360.,728,448,448,
-340.,743,450,450,
-338.,782,455,455,
-328.,804,465,465,
B-Off East, 2 , 1 , 0 ,0
1383.,1167,475,475,
1397.,1151,475,475,
1436.,1165,476,476,
1695.,1333,481,481,
B-Existing Bldg SW, 3 , 92 , 0 ,0
1,2
-163.,358,442,457,
-180.,378,442,457,
-90.,454,442,457,
40.,338,442,457,
27.,323,442,457,
-21.,314,442,457,
-109.,386,442,457,
-163.,358,442,457,
R, 1 , 67 ,500
-195,657,471.,
R, 2 , 67 ,500
-127,525,465.,
R, 3 , 67 ,500
74,458,462.,
R, 4 , 67 ,500
207,524,464.,
R, 5 , 67 ,500
343,591,467.,
R, 6 , 67 ,500
476,658,473.,
R, 7 , 67 ,500
611,727,476.,
R, 8 , 67 ,500
744,791,479.,
R, 9 , 67 ,500
1213,1191,491.,
R, 10 , 67 ,500
1082,1125,490.,
R, 11 , 67 ,500
946,1058,489.,
R, 12 , 67 ,500
810,994,489.,
R, 13 , 67 ,500
680,926,483.,
R, 14 , 67 ,500
544,860,479.,
R, 15 , 67 ,500
410,792,475.,

R, 16 , 67 ,500
276,725,473.,
R, 17 , 67 ,500
141,658,470.,
R, 18 , 67 ,500
8,587,469.,
R, 19 , 67 ,500
-61,727,477.,
R, 20 , 67 ,500
75,793,478.,
C,C

SOUND32 - RELEASE 07/30/91

TITLE: Sweetwater Multi Family - Second Level Contours

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	R-1	67.	500.	68.4
2	R-2	67.	500.	68.6
3	R-3	67.	500.	68.8
4	R-4	67.	500.	69.4
5	R-5	67.	500.	69.7
6	R-6	67.	500.	70.0
7	R-7	67.	500.	70.4
8	R-8	67.	500.	71.1
9	R-9	67.	500.	67.4
10	R-10	67.	500.	67.4
11	R-11	67.	500.	67.3
12	R-12	67.	500.	67.0
13	R-13	67.	500.	66.8
14	R-14	67.	500.	66.6
15	R-15	67.	500.	66.5
16	R-16	67.	500.	66.5
17	R-17	67.	500.	66.5
18	R-18	67.	500.	66.7
19	R-19	67.	500.	65.6
20	R-20	67.	500.	64.7

ATTACHMENT C

DETAILED FUTURE NOISE MODEL INPUT AND OUTPUT FILES

Sweetwater Multi Family - Ground Level Unmitigated
T-Peak Hour, 1
1797 , 55 , 57 , 55 , 38 , 55
T-Peak Hour, 2
2870 , 55 , 91 , 55 , 60 , 55
L-Jamacha Blvd, 1
N,-167.,-81,420,
N,-72.,52,426,
N,31.,180,432,
N,103.,250,435,
N,236.,361,443,
N,439.,486,452,
N,722.,661,462,
N,943.,805,467,
N,1366.,1071,473,
N,1721.,1289,478,
L-Sweetwater Springs, 2
N,129.,63,426,
N,-43.,137,430,
N,-112.,188,434,
N,-248.,325,438,
N,-354.,471,440,
N,-417.,574,441,
N,-561.,853,439,
B-Lots 83-96, 1 , 2 , 0 ,0
31.,509,459,459,
61.,449,459,459,
101.,468,459,459,
105.,461,459,459,
228.,520,460,460,
348.,578,461,461,
423.,616,463,463,
585.,698,464,464,
668.,735,465,465,
650.,771,465,465,
B-Lots 71-82, 2 , 2 , 0 ,0
709.,897,470,470,
727.,860,470,470,
810.,900,473,473,
898.,944,475,475,
983.,984,477,477,
1064.,1023,479,479,
1145.,1064,480,480,
1261.,1120,480,480,
B-Lots 68-70, 3 , 2 , 0 ,0
1248.,1126,480,480,
1309.,1151,480,480,
1295.,1195,480,480,
1276.,1237,481,481,
1260.,1279,481,481,
B-Off NW, 4 , 1 , 0 ,0
-478.,894,440,440,
-382.,715,445,445,
-360.,728,448,448,
-340.,743,450,450,
-338.,782,455,455,
-328.,804,465,465,
B-Off East, 5 , 1 , 0 ,0
1383.,1167,475,475,
1397.,1151,475,475,
1436.,1165,476,476,
1695.,1333,481,481,
B-Existing Bldg SW, 6 , 92 , 0 ,0
1,2
-163.,358,442,457,
-180.,378,442,457,
-90.,454,442,457,
40.,338,442,457,
27.,323,442,457,
-21.,314,442,457,
-109.,386,442,457,
-163.,358,442,457,
R, 1 , 67 ,500
-194,617,452.,P1
R, 2 , 67 ,500
-125,521,452.,P2

R, 3 , 67 ,500
49,837,468.,3
R, 4 , 67 ,500
83,767,466.,6
R, 5 , 67 ,500
96,636,465.,97
R, 6 , 67 ,500
65,472,464.,96
R, 7 , 67 ,500
154,494,464.,94
R, 8 , 67 ,500
236,532,465.,92
R, 9 , 67 ,500
317,572,466.,90
R, 10 , 67 ,500
430,628,468.,88
R, 11 , 67 ,500
513,667,469.,86
R, 12 , 67 ,500
653,737,470.,83
R, 13 , 67 ,500
598,897,475.,109
R, 14 , 67 ,500
638,996,475.,51
R, 15 , 67 ,500
735,874,475.,82
R, 16 , 67 ,500
836,923,478.,80
R, 17 , 67 ,500
917,963,480.,78
R, 18 , 67 ,500
990,997,482.,76
R, 19 , 67 ,500
1090,1043,484.,74
R, 20 , 67 ,500
1192,1096,485.,71
R, 21 , 67 ,500
1298,1159,485.,70
R, 22 , 67 ,500
1266,1245,486.,68
R, 23 , 67 ,500
1222,1348,487.,66
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Sweetwater Multi Family - Ground Level Unmitigated

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	P1	67.	500.	68.4
2	P2	67.	500.	68.0
3	3	67.	500.	61.7
4	6	67.	500.	62.1
5	97	67.	500.	63.4
6	96	67.	500.	67.2
7	94	67.	500.	69.2
8	92	67.	500.	69.5
9	90	67.	500.	69.7
10	88	67.	500.	70.0
11	86	67.	500.	70.4
12	83	67.	500.	71.0
13	109	67.	500.	64.1
14	51	67.	500.	62.0
15	82	67.	500.	68.0
16	80	67.	500.	68.5
17	78	67.	500.	68.9
18	76	67.	500.	69.3
19	74	67.	500.	69.8
20	71	67.	500.	70.1
21	70	67.	500.	69.7
22	68	67.	500.	63.4
23	66	67.	500.	60.6

Sweetwater Multi Family - Ground Level Mitigated
T-Peak Hour, 1
 1797 , 55 , 57 , 55 , 38 , 55
T-Peak Hour, 2
 2870 , 55 , 91 , 55 , 60 , 55
L-Jamacha Blvd, 1
N,-167.,-81,420,
N,-72.,52,426,
N,31.,180,432,
N,103.,250,435,
N,236.,361,443,
N,439.,486,452,
N,722.,661,462,
N,943.,805,467,
N,1366.,1071,473,
N,1721.,1289,478,
L-Sweetwater Springs, 2
N,129.,63,426,
N,-43.,137,430,
N,-112.,188,434,
N,-248.,325,438,
N,-354.,471,440,
N,-417.,574,441,
N,-561.,853,439,
B-Lots 83-96, 1 , 2 , 0 ,0
31.,509,459,465,
61.,449,459,465,
101.,468,459,465,
105.,461,459,465,
228.,520,460,466,
348.,578,461,467,
423.,616,463,469,
585.,698,464,470,
668.,735,465,471,
650.,771,465,471,
B-Lots 71-82, 2 , 2 , 0 ,0
709.,897,470,476,
727.,860,470,476,
810.,900,473,479,
898.,944,475,481,
983.,984,477,483,
1064.,1023,479,485,
1145.,1064,480,486,
1261.,1120,480,486,
B-Lots 68-70, 3 , 2 , 0 ,0
1248.,1126,480,486,
1309.,1151,480,486,
1295.,1195,480,486,
1276.,1237,481,487,
1260.,1279,481,487,
B-Off NW, 4 , 1 , 0 ,0
-478.,894,440,440,
-382.,715,445,445,
-360.,728,448,448,
-340.,743,450,450,
-338.,782,455,455,
-328.,804,465,465,
B-Off East, 5 , 1 , 0 ,0
1383.,1167,475,475,
1397.,1151,475,475,
1436.,1165,476,476,
1695.,1333,481,481,
B-Existing Bldg SW, 6 , 92 , 0 ,0
1,2
-163.,358,442,457,
-180.,378,442,457,
-90.,454,442,457,
40.,338,442,457,
27.,323,442,457,
-21.,314,442,457,
-109.,386,442,457,
-163.,358,442,457,
R, 1 , 67 ,500
-194,617,452.,P1
R, 2 , 67 ,500
-125,521,452.,P2

R, 3 , 67 ,500
49,837,468.,3
R, 4 , 67 ,500
83,767,466.,6
R, 5 , 67 ,500
96,636,465.,97
R, 6 , 67 ,500
65,472,464.,96
R, 7 , 67 ,500
154,494,464.,94
R, 8 , 67 ,500
236,532,465.,92
R, 9 , 67 ,500
317,572,466.,90
R, 10 , 67 ,500
430,628,468.,88
R, 11 , 67 ,500
513,667,469.,86
R, 12 , 67 ,500
653,737,470.,83
R, 13 , 67 ,500
598,897,475.,109
R, 14 , 67 ,500
638,996,475.,51
R, 15 , 67 ,500
735,874,475.,82
R, 16 , 67 ,500
836,923,478.,80
R, 17 , 67 ,500
917,963,480.,78
R, 18 , 67 ,500
990,997,482.,76
R, 19 , 67 ,500
1090,1043,484.,74
R, 20 , 67 ,500
1192,1096,485.,71
R, 21 , 67 ,500
1298,1159,485.,70
R, 22 , 67 ,500
1266,1245,486.,68
R, 23 , 67 ,500
1222,1348,487.,66
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Sweetwater Multi Family - Ground Level Mitigated

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	P1	67.	500.	68.3
2	P2	67.	500.	68.0
3	3	67.	500.	61.3
4	6	67.	500.	61.6
5	97	67.	500.	62.6
6	96	67.	500.	62.1
7	94	67.	500.	62.6
8	92	67.	500.	63.3
9	90	67.	500.	63.9
10	88	67.	500.	63.6
11	86	67.	500.	64.7
12	83	67.	500.	65.0
13	109	67.	500.	63.3
14	51	67.	500.	60.8
15	82	67.	500.	61.5
16	80	67.	500.	61.3
17	78	67.	500.	61.8
18	76	67.	500.	62.5
19	74	67.	500.	62.4
20	71	67.	500.	63.5
21	70	67.	500.	63.3
22	68	67.	500.	61.0
23	66	67.	500.	59.6

Sweetwater Multi Family - Second Level Facades
T-Peak Hour, 1
1797 , 55 , 57 , 55 , 38 , 55
T-Peak Hour, 2
2870 , 55 , 91 , 55 , 60 , 55
L-Jamacha Blvd, 1
N,-167.,-81,420,
N,-72.,52,426,
N,31.,180,432,
N,103.,250,435,
N,236.,361,443,
N,439.,486,452,
N,722.,661,462,
N,943.,805,467,
N,1366.,1071,473,
N,1721.,1289,478,
L-Sweetwater Springs, 2
N,129.,63,426,
N,-43.,137,430,
N,-112.,188,434,
N,-248.,325,438,
N,-354.,471,440,
N,-417.,574,441,
N,-561.,853,439,
B-Lots 83-96, 1 , 2 , 0 ,0
31.,509,459,465,
61.,449,459,465,
101.,468,459,465,
105.,461,459,465,
228.,520,460,466,
348.,578,461,467,
423.,616,463,469,
585.,698,464,470,
668.,735,465,471,
650.,771,465,471,
B-Lots 71-82, 2 , 2 , 0 ,0
709.,897,470,476,
727.,860,470,476,
810.,900,473,479,
898.,944,475,481,
983.,984,477,483,
1064.,1023,479,485,
1145.,1064,480,486,
1261.,1120,480,486,
B-Lots 68-70, 3 , 2 , 0 ,0
1248.,1126,480,486,
1309.,1151,480,486,
1295.,1195,480,486,
1276.,1237,481,487,
1260.,1279,481,487,
B-Off NW, 4 , 1 , 0 ,0
-478.,894,440,440,
-382.,715,445,445,
-360.,728,448,448,
-340.,743,450,450,
-338.,782,455,455,
-328.,804,465,465,
B-Off East, 5 , 1 , 0 ,0
1383.,1167,475,475,
1397.,1151,475,475,
1436.,1165,476,476,
1695.,1333,481,481,
B-Existing Bldg SW, 6 , 92 , 0 ,0
1,2
-163.,358,442,457,
-180.,378,442,457,
-90.,454,442,457,
40.,338,442,457,
27.,323,442,457,
-21.,314,442,457,
-109.,386,442,457,
-163.,358,442,457,
R, 1 , 67 ,500
-194,617,452.,P1 N/A
R, 2 , 67 ,500
-125,521,452.,P2 N/A

R, 3 , 67 ,500
49,837,478.,3
R, 4 , 67 ,500
83,767,476.,6
R, 5 , 67 ,500
96,636,475.,97
R, 6 , 67 ,500
65,472,474.,96
R, 7 , 67 ,500
154,494,474.,94
R, 8 , 67 ,500
236,532,475.,92
R, 9 , 67 ,500
317,572,476.,90
R, 10 , 67 ,500
430,628,478.,88
R, 11 , 67 ,500
513,667,479.,86
R, 12 , 67 ,500
653,737,480.,83
R, 13 , 67 ,500
598,897,485.,109
R, 14 , 67 ,500
638,996,485.,51
R, 15 , 67 ,500
735,874,485.,82
R, 16 , 67 ,500
836,923,488.,80
R, 17 , 67 ,500
917,963,490.,78
R, 18 , 67 ,500
990,997,492.,76
R, 19 , 67 ,500
1090,1043,494.,74
R, 20 , 67 ,500
1192,1096,495.,71
R, 21 , 67 ,500
1298,1159,495.,70
R, 22 , 67 ,500
1266,1245,496.,68
R, 23 , 67 ,500
1222,1348,497.,66
C,C

SOUND32 - RELEASE 07/30/91

TITLE:
Sweetwater Multi Family - Second Level Facades

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	P1 N/A	67.	500.	68.3
2	P2 N/A	67.	500.	68.0
3	3	67.	500.	61.6
4	6	67.	500.	61.9
5	97	67.	500.	63.3
6	96	67.	500.	68.4
7	94	67.	500.	69.2
8	92	67.	500.	69.5
9	90	67.	500.	69.7
10	88	67.	500.	70.0
11	86	67.	500.	70.4
12	83	67.	500.	71.0
13	109	67.	500.	63.9
14	51	67.	500.	61.7
15	82	67.	500.	68.0
16	80	67.	500.	68.6
17	78	67.	500.	68.9
18	76	67.	500.	69.3
19	74	67.	500.	69.8
20	71	67.	500.	70.1
21	70	67.	500.	70.1
22	68	67.	500.	64.0
23	66	67.	500.	60.4