Appendix G Noise Background and Data

Appendices

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Fundamentals of Noise

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies, David A. and Colin H. Hansen. 2009. *Engineering Noise Control: Theory and Practice*. 4th ed. New York: Spon Press.

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are

commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2009, November. Technical Noise Supplement ("TeNS"). Prepared by ICF International.

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2004, June. Transportation- and Construction-Induced Vibration Guidance Manual. Prepared by ICF International.

State Regulations

California Green Building Standards Code (CALGreen)

The California Green Building Standards Code (CALGreen) has requirements for insulation that affect exterior-interior noise transmission for nonresidential structures. Pursuant to CALGreen Section 5.507.4.1, Exterior Noise Transmission, an architectural acoustics study may be required when a project site is within a 65 dBA CNEL or Ldn noise contour of an airport, freeway or expressway, railroad, industrial source or fixed-guideway source. Where noise contours are not readily available, if buildings are exposed to a noise level of 65 dBA Leq during any hour of operation, specific wall and ceiling assembly and sound-rated windows may be necessary to reduce interior noise to acceptable levels.

California Code of Regulations, Title 24, Part 2

Current law states that every local agency enforcing building regulations, such as cities and counties, must adopt the provisions of the California Building Code (CBC) within 180 days of its publication. The publication date of the CBC is established by the California Building Standards Commission. The most recent building standard adopted by the legislature and used throughout the state is the 2016 version, often with local, more restrictive amendments that are based on local geographic, topographic, or climatic conditions. The State of California's noise insulation standards are codified in the CBC. These noise standards are for new construction in California for the purposes of interior compatibility with exterior

noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential, schools, or hospitals, are near major transportation noises, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

Title 5, the California Department of Education (CDE)

Under Title 5, the California Department of Education (CDE) regulations require public school districts to consider noise in the site selection process. As recommended by CDE guidance, if a school district is considering a potential school site near a freeway or other source of noise, it should hire an acoustical engineer to determine the level of sound that the site is exposed to and to assist in designing the school should that site be chosen.

NOISE ELEMENT

1.0 Introduction

1.1 Overview

1.1.1 Contents of Element

The Noise Element follows the recently revised State guidelines in the State Government code Section 653021(g) and Section 46050.1 of the Health and Safety Code. The element quantifies the community noise environment in terms of noise exposure contours for both near and long-term levels of growth and traffic activity. The information will become a guideline for the development of land use policies to achieve compatible land uses and provide baseline levels and noise source identification for local Noise Ordinance enforcement.

1.1.2 Key Issues

1. Transportation Noise Control – Within the City of Solana Beach are a number of transportation related noise sources including freeways, major arterials and collector roadways. In addition a railroad line runs through the City. These sources are the major contributors of noise in Solana Beach. Cost effective strategies to reduce their influence on the community noise environment are an essential part of the Noise Element.

2. Community Noise Control for Non-transportation Noise Sources – Residential land uses and areas identified as noise-sensitive must be protected from excessive noise from non-transportation sources including commercial and industrial operations. The south side of Solana Beach is impacted by noise from the Del Mar Fairgrounds. These impacts are most effectively controlled through the adoption and application of a City Noise Ordinance.

3. Noise and Land Use Planning Integration – Information relative to the existing and future noise environment within Solana Beach should be integrated into future land use planning decisions. The Element presents the noise environment in order that the City may include noise impact considerations in development programs. Noise and land use compatibility guidelines are presented, as well as noise standards for new developments.

1.2 Purpose

The Noise Element of a General Plan is a comprehensive program for including noise control in the planning process. It is a tool for local planners to use in achieving and maintaining compatible land use with environmental noise levels. The Noise Element identifies noise sensitive land uses and noise sources, and defines areas of noise impact for the purpose of developing programs to ensure that Solana Beach residents will be protected from excessive noise intrusion.

1.3 Authorization

The State of California has mandated that each county and city prepare a Noise Element as part of its General Plan. Section 65302(g) of the California Government Code requires specifically:

> "(g) A Noise Element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:
>
> Highways and freeways.
>
> Primary arterials and major local streets.
>
> Passenger and freight on-line railroad operations and ground rapid transit systems.
>
> Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation. Local industrial plants, including, but not limited to, railroad classification yards.
>
> Other ground stationary noise sources identified by local agencies as contributing to the community noise environment.
>
> Noise contours shall be shown for all of the sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (LDN). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs (1) to (6), inclusive. The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The Noise Element shall include implementation measures and possible solutions that address existing and forseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards."

The State Guidelines for Preparation and Content of Noise Elements of the General Plan indicates that the Noise Element should present the noise environment in terms of noise contours. For those areas identified as containing noise sensitive facilities, the noise environment is determined by monitoring.

2.0 Existing Conditions/Issue Analysis

2.1 Definition of Noise

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

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud; and 20 dBA higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud). Examples of various sound levels in different environments are shown in Exhibit 1.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

HEARING LOSS is not a concern in community noise problems of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud to cause hearing loss.

SPEECH INTERFERENCE is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level. Exhibit 2 shows the impact of noise and speech interference.

Exhibit 1

SOUND LEVELS AND LOUDNESS OF ILLUSTRATIVE NOISES IN INDOOR AND OUTDOOR ENVIRONMENTS

(A-Scale Weighted Sound Levels)

dB(A)	OVERALL LEVEL Sound Pressure Level Approx. 0.0002 Microbar	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
130	UNCOMFORTABLY	Military Jet Aircraft Take-Off With After-burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
120 110	LOUD	Turbo-Fan Aircraft @ Take-Off Power @ 200 Ft. (90)	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100	VERY	Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (106) Bell J-2A Helicopter @ 100 Ft. (100)		100 dB(A) 8 Times as Loud
90	LOUD	Power Mower (96) Boeing 737, DC-9 @ 6080 Ft. Before Landing (97) Motorcycle @ 25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Prop. Airplane Flyover @ 1000 Ft. (88) Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 +or- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud

40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
	JUST AUDIBLE	(dB[A] Scale Interrupted)		
10	THRESHOLD OF HEARING			

SOURCE: Reproduced from Melville C. Branch and R. Dale Beland, Outdoor Noise in the Metropolitan Environment. Published by the City of Los Angeles, 1970, p.2.

SLEEP INTERFERENCE is a major noise concern because sleep is the most noise sensitive human activity. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

ANNOYANCE is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability. It is also influenced by the perceived need for the sound. For example, a carpenter is not annoyed by the sound of his saw, whereas persons nearby who do not benefit from the work may be annoyed.

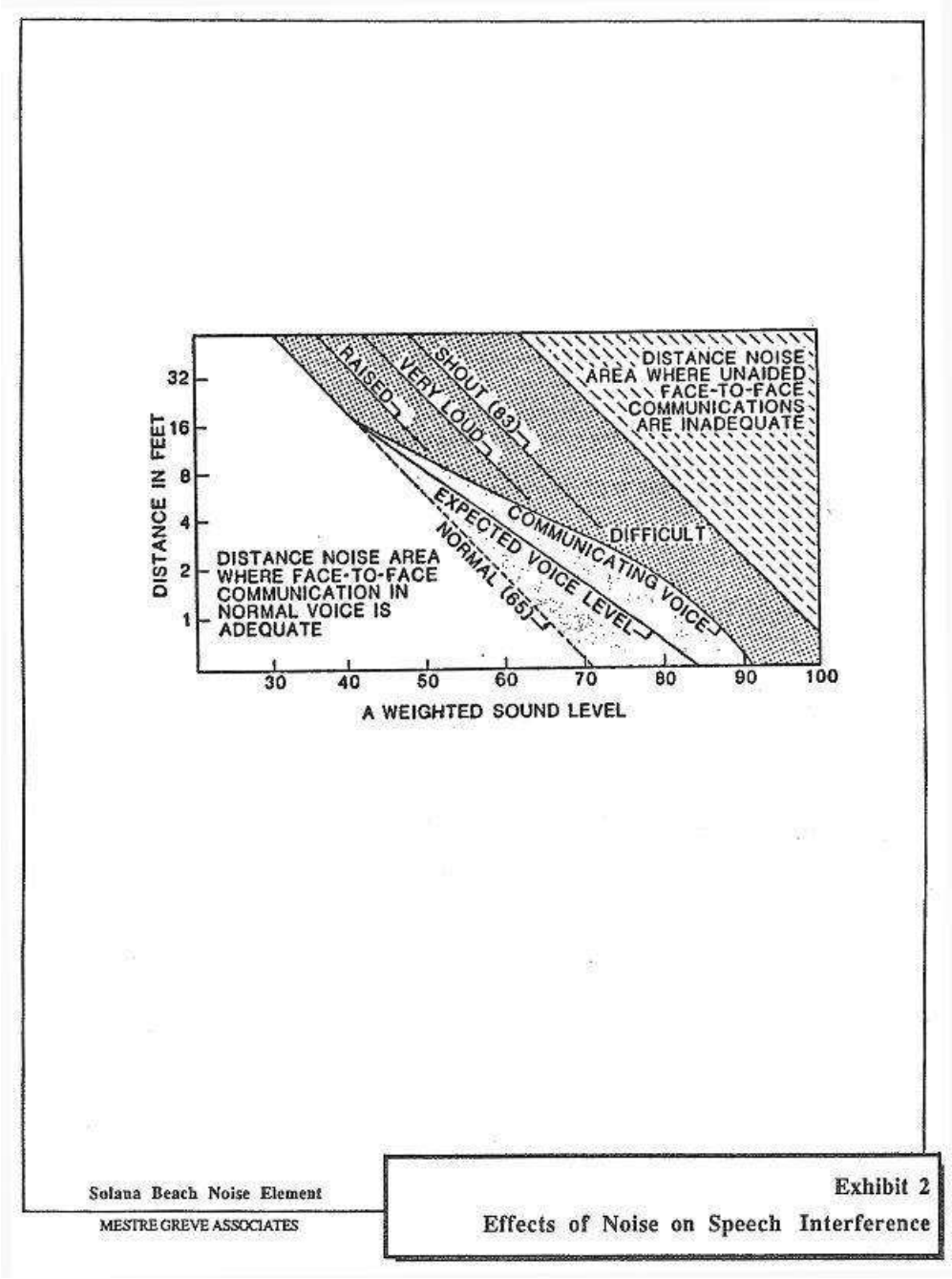
2.2 Standards and Methods of Measurement

2.2.1 Standards

Community noise is generally not a steady state and varies with time. Under conditions of non-steady state noise, some type of statistical metric is necessary in order to quantify noise exposure over a long period of time. Several rating scales have been developed for describing the effects of noise on people. They are designed to account for the above known effects of noise on people.

Based on these effects, the observation has been made that the potential for noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. These scales are the: Equivalent Noise Level (LEQ), the Day Night Noise Level (LDN), and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the “energy” average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24-hours.



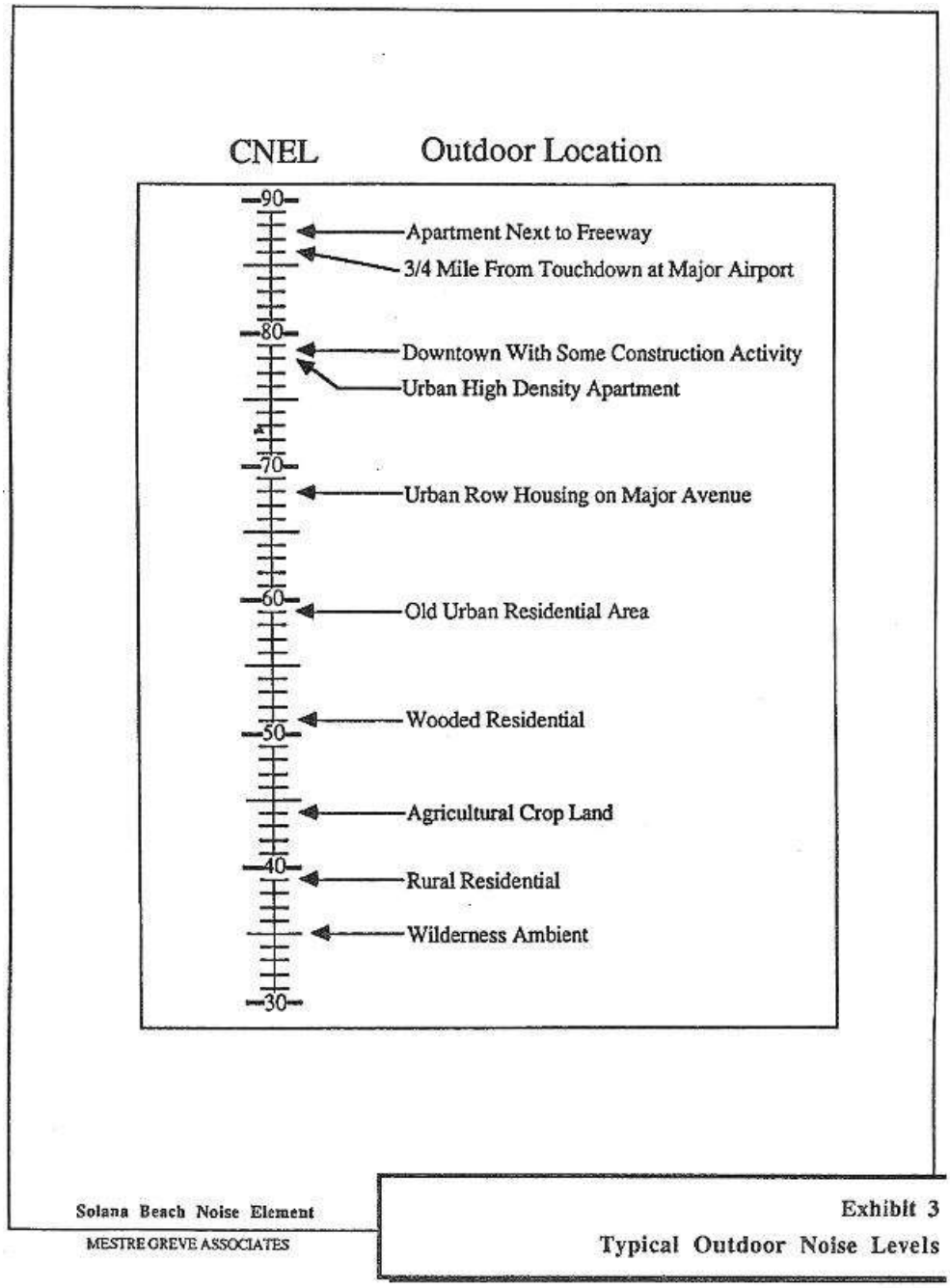
LDN is a 24-hour, time-weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the night (10 pm to 7 am) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where sleep is the most probable activity.

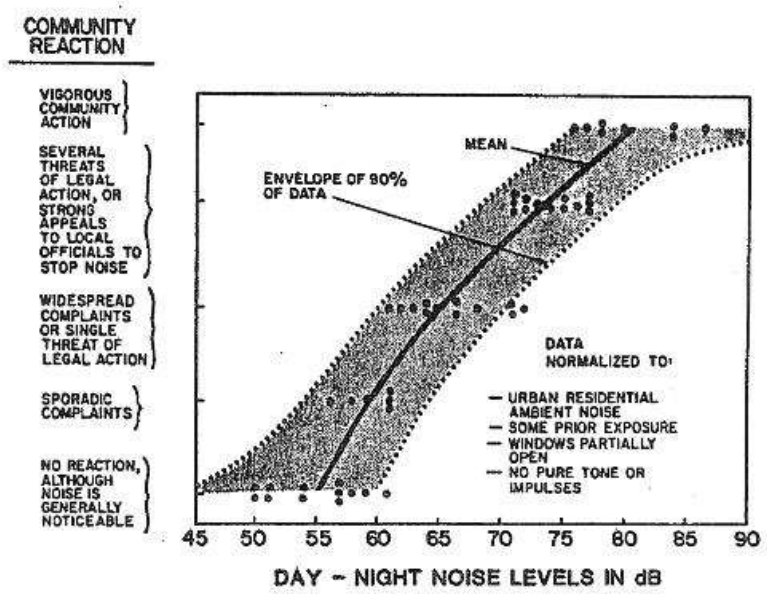
CNEL is similar to the LDN scale except that it includes an additional 5 dBA penalty for events that occur during the evening (7pm to 10pm) time period. Either LDN or CNEL may be used to identify community noise impacts within the Noise Element. Examples of CNEL noise levels are presented in Exhibit 3. Although not shown on the exhibit (prepared by the U.S. EPA) suburban residential areas would be at roughly the 60 CNEL level.

The public reaction to different noise levels varies from community to community. Extensive research has been conducted on human responses to exposure of different levels of noise. Exhibit 4 relates LDN noise levels (approximately equal to CNEL noise levels) to community response from some of these surveys. Community noise standards are derived from tradeoffs between community response surveys, such as this, and economic considerations for achieving these levels.

Intermittent or occasional noise such as those associated with stationary noise sources is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the LDN scale. To account for intermittent noise, another method to characterize noise is the Percent Noise Level (L%). The Percent Noise Level is the level exceeded X% of the time during the measurement period. Examples of various noise environments in terms of the Percent Noise Levels are shown in Exhibit 5.

Noise Ordinances are typically specified in terms of the percent noise levels. Ordinances are designed to protect people from non-transportation related noise sources such as music, machinery and vehicular traffic on private property. Noise Ordinances do not apply to motor vehicle noise on public streets or other transportation related noise sources that are preempted by the State or Federal government.



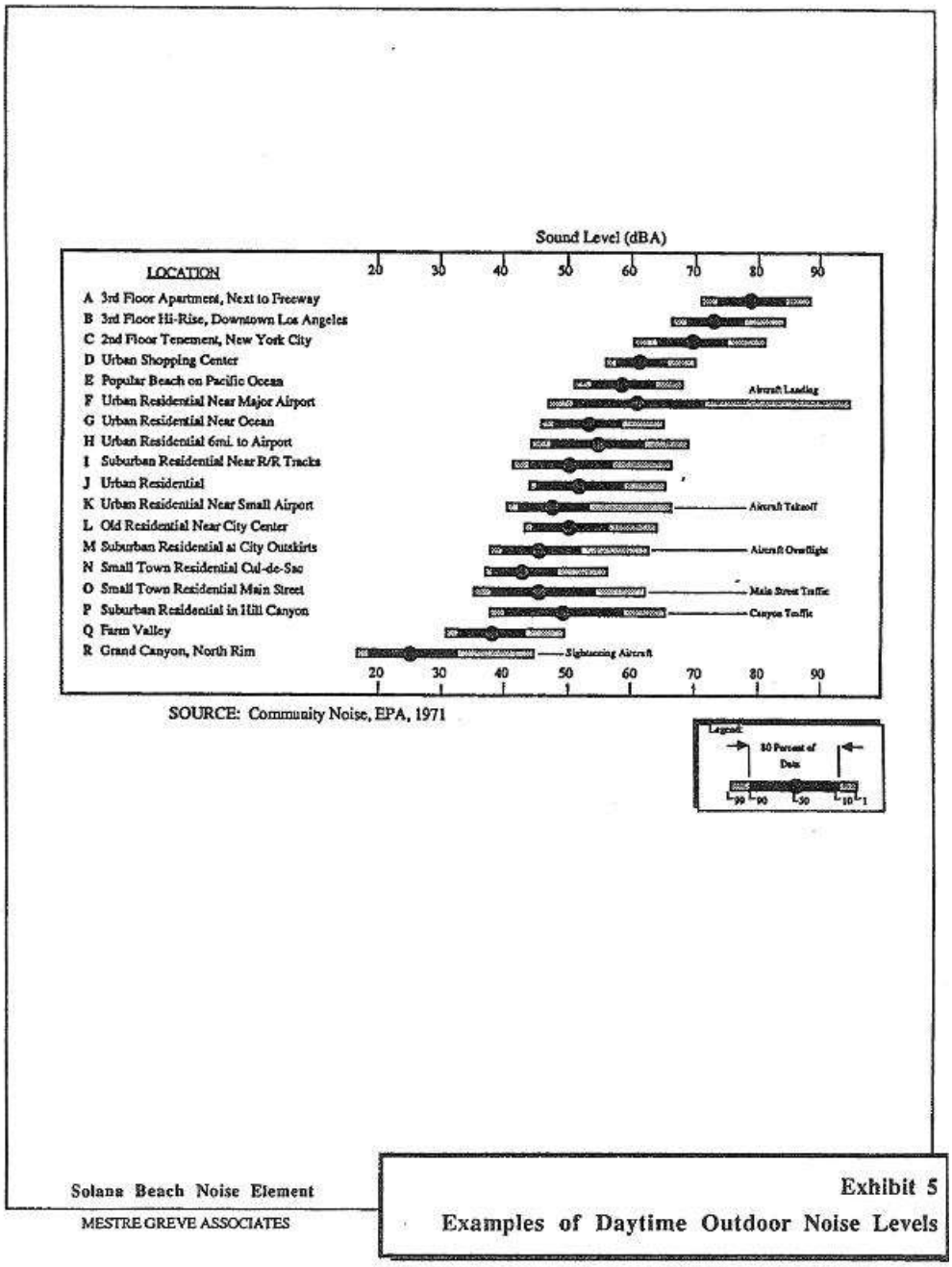


Solana Beach Noise Element

MESTRE GREVE ASSOCIATES

Exhibit 4

Community Reaction Surveys



Noise/Land Use Compatibility Guidelines. The purpose of this section is to present information regarding the compatibility of various land uses with environmental noise. It is from these guidelines and standards, that the City of Solana Beach Noise Criteria and Standards have been developed. Noise/Land use guidelines have been produced by a number of Federal and State agencies including the Federal Highway Administration, the Environmental Protection Agency, the Department of Housing and Urban Development, the American National Standards Institute and the State of California. These guidelines, presented in the following paragraphs, are all based upon cumulative noise criteria such as LEQ, LDN or CNEL.

The ENVIRONMENTAL PROTECTION AGENCY published in March 1974 a very important document entitled “Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety” (EPA 550/9-74-004). Exhibit 6 presents a table of land uses and requisite noise levels. In this table, 55 LDN is described as the requisite level with an adequate margin of safety for areas with outdoor uses, this includes residences, and recreational areas. The EPA “levels document” does not constitute a standard, specification or regulation, but identifies safe levels of environmental noise exposure without consideration for economic cost for achieving these levels.

The FEDERAL HIGHWAY ADMINISTRATION (FHWA) has adopted and published noise abatement criteria for highway construction projects. The noise abatement criteria specified by the FHWA are presented in Exhibit 7 in terms of the maximum one hour Noise Equivalent Level (LEQ). The FHWA noise abatement criteria basically establishes an exterior noise goal for residential land uses of 67 LEQ and an interior goal for residences of 52 LEQ. The noise abatement criteria applies to private yard areas and assumes that

typical wood frame homes with windows open provide 10 dB noise reduction (outdoor to indoor) and 20 dB noise reduction with windows closed.

The STATE OF CALIFORNIA requires each City and County to adopt Noise Elements of their General Plans. Such Noise Elements must contain a Noise/Land Use compatibility matrix. A recommended (but not mandatory) matrix is presented in the "Guidelines for the Preparation and Content of Noise Elements of the General Plan," (Office of Noise Control, California Department of Health, February 1976). Exhibit 8 presents this recommended matrix.

2.2.2 Methods of Measurement

Methodology. The noise environment in Solana Beach was determined through the employment of a comprehensive noise measurement survey of existing noise sources and incorporating these results into computer noise models to model the noise environment (it is, of course, impossible to measure future noise levels so we must rely on computer noise models for future noise estimates). The noise environment is commonly presented graphically in terms of lines of equal noise levels, or noise contours. The following paragraphs detail the methodology used in the measurement survey and computer modeling of these results into noise contours.

Exhibit 6

Environmental Protection Agency Guidelines

		Indoor			Outdoor		
	Measure	Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)	Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)
Residential with Outside Space and Farm Residences	L_{dn} $L_{eq(24)}$	45	70	45	55	70	55
Residential with No Outside Space	L_{dn} $L_{eq(24)}$	45	70	45			
Commercial	$L_{eq(24)}$	(a)	70	70(c)	(a)	70	70(c)
Inside Transportation	$L_{eq(24)}$	(a)	70	(a)			
Industrial	$L_{eq(24)(d)}$	(a)	70	70(c)	(a)	70	70(c)
Hospitals	L_{dn} $L_{eq(24)}$	45	70	45	55	70	55
Educational	$L_{eq(24)}$ $L_{eq(24)(d)}$	45	70	45	55	70	55
Recreational Areas	$L_{eq(24)}$	(a)	70	70(c)	(a)	70	70(c)
Farm Land and General Unpopulated Land	$L_{eq(24)}$				(a)	70	70(c)

Code:

a. Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity.

b. Based on lowest level.

c. Based only on hearing loss.

d. An $L_{eq(8)}$ of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an L_{eq} of 60 dB.

Note: Explanation of identified level for hearing loss: The exposure period which results in hearing loss at the identified level is a period of 40 years.

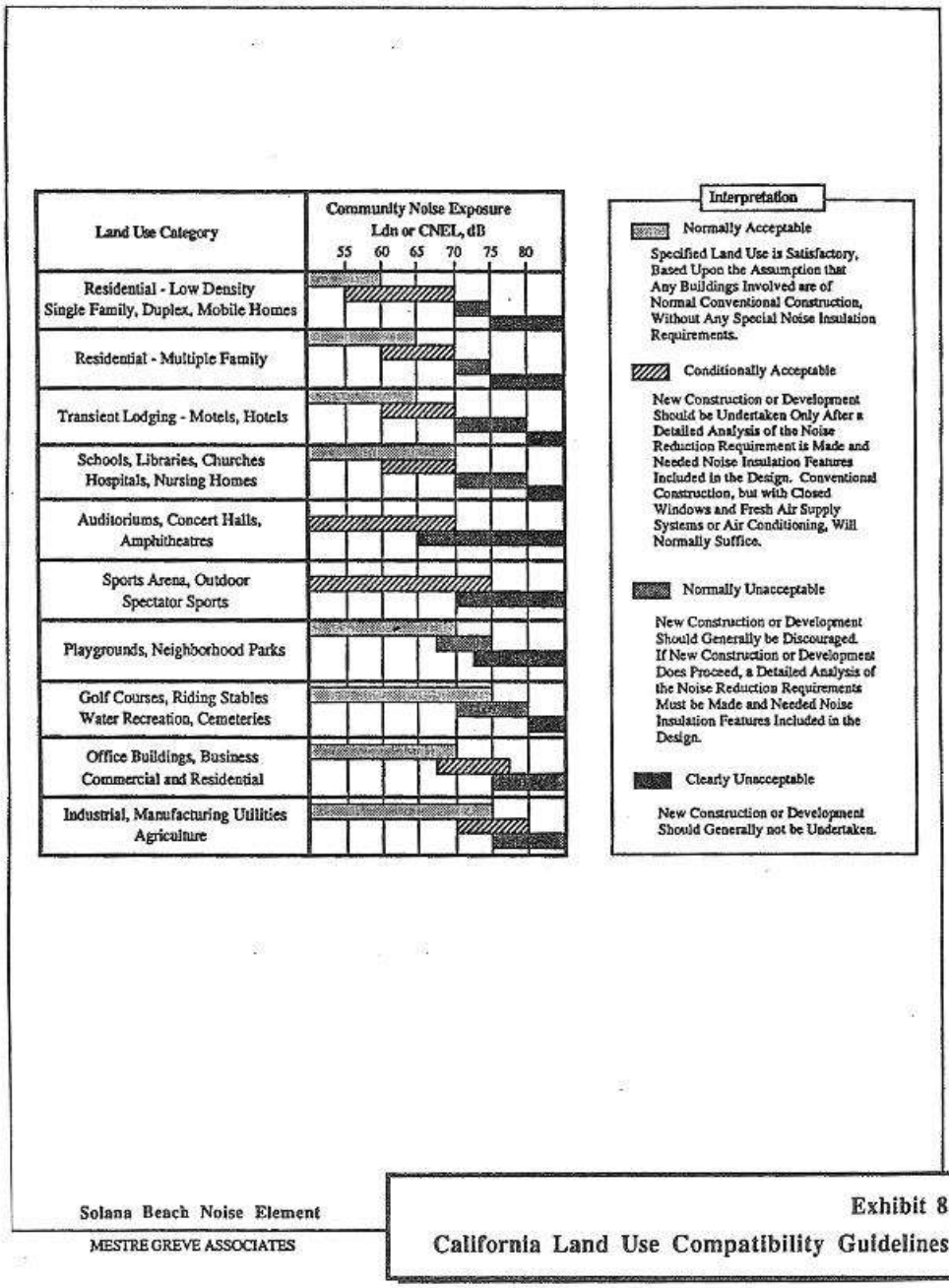
*Refers to energy rather than arithmetic averages.

SOURCE: EPA

Exhibit 7

FHWA Noise Abatement Criteria

ACTIVITY CATEGORY	DESIGN NOISE LEVEL – LEQ	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas and parks which are not included in category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Category A or B above.
D	–	For requirements of undeveloped lands see FHWA PPM 773.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.



Measurement Procedure. Twenty sites were selected for measurement of the noise environment in Solana Beach. Discussions with City staff and identification of major noise sources in the community provided the initial base for development of the community noise survey. The measurement locations were selected on the basis of proximity to major noise sources and noise sensitivity of the land use.

The measurement locations are presented in Exhibit 9. The Solana Beach Noise Element measurement survey utilized the Bruel and Kjaer Model 4427 Portable Noise Monitor. This instrument automatically calculates the Equivalent Noise Level (LEQ), maximum noise levels and various percentile noise levels for any specific time period. The system was calibrated with a Bruel and Kjaer calibrator with calibration traceable to the National Bureau of Standards. Calibration for the calibrator is certified through the duration of the measurements by Bruel & Kjaer. This measurement system satisfies the ANSI (American National Standards Institute) Standards 1.4 for Type 1 precision noise measurement instrumentation.

Measurement Results. The noise measurement program was conducted from September 10, 1987 to September 11, 1987 at 21 locations throughout the City. A measurement period of 15 minutes was used for the survey. The results of the ambient noise measurements at each site are presented as Appendix A. The measurement data also identifies the date and time of the measurement and the primary noise source affecting the noise environment. The quantities measured were the Equivalent Noise Level (LEQ), the maximum noise level and several percentile noise levels ranging from 1 to 99%.

2.3 Existing Acoustic Environment

This section contains a detailed description of the current noise environment within the City. This description of the noise environment is based on an identification of noise sources and noise sensitive land uses, a community noise measurement survey and noise contour maps.

To define the noise exposure, this section of the report first identifies the major sources of noise in the community. The sources of noise in Solana Beach include: Interstate 5, Highway 101, arterial roadways, the Atchinson Topeka and Santa Fe Railroad line, and the Del Mar Fairgrounds located in Del Mar adjacent to the southern boundary of Solana Beach. In addition, noise levels within the City are affected by overflights from military, commercial, and general aviation aircraft. To completely assess the noise environment in the City, noise sensitive receptors must also be identified. As mandated by the State, noise sensitive receptors include, but are not limited to, residential areas, areas containing schools, hospitals, rest homes, long-term medical or mental care facilities, or any other land use areas deemed noise sensitive by the local jurisdiction.

2.3.1 Noise Sources and Levels

The predominant land use in the City is residential, and should also be considered the most noise sensitive. Other noise sensitive land uses include schools and parks. Maintenance of a relatively quiet ambience is important to maintaining the overall atmosphere of the area.

The predominant noise source in Solana Beach originates from motor vehicles. Several major arterial roadways pass through the City. The primary roadways of concern are Interstate 5 and Highway 101. The Atchinson Topeka and Santa Fe Railroad line runs parallel to Highway 101 and is also considered a primary concern. The other major sources of noise are not found within the City but have a significant effect on the City's noise environment.

Del Mar Fairgrounds is located on state property adjacent to the southern boundary of Solana Beach and impacts City residences. Previously, an analysis of the raceway's impact on Solana Beach was undertaken ("Measurement of Grand Prix Raceway Noise in the City of Solana Beach", Mestre Greve Associates, October 30, 1987). The report provided results of noise measurements taken in residential areas of Solana Beach during the Grand Prix races at Del Mar Fairgrounds. The report stated that the raceway alone did not violate the Noise Ordinance but a combination of freeway traffic, aircraft flyovers and raceway noise exceeded the ordinance on several occasions (at the time of the study, results were compared to the Noise Ordinance for San Diego County which is presently used by Solana Beach). Noise originating from the fairgrounds during auto/horse races is intermittant type noise. The primary entrance and exit routes utilize roadways bordering or within Solana Beach; primarily Via De La Valle, Jimmy Durante Boulevard and Highway 101. The fairgrounds is operated by the State on State property. Therefore, noise ordinances adopted by Solana Beach (or the City of Del Mar) will not be able to control the noise generated at the fairgrounds since it is outside the Cities' jurisdiction. However, recent court cases are testing the legality of imposing their noise ordinances on activities on State property. Most notable, is the recent court actions by the City of Costa Mesa against Pacific Amphitheatre and the State of California. The City has been trying to impose it's noise ordinance on the amphitheatre which is operated on State property. The court cases are still in progress, but could set new precedents in this area.

An acoustical report prepared by Mr. Raymond Sacco (Sound Level Monitoring of Grand Prix at Del Mar Auto Race, November 12, 1987, Raymond Sacco, Assistant Noise Control Officer) sums up the situation as follows:

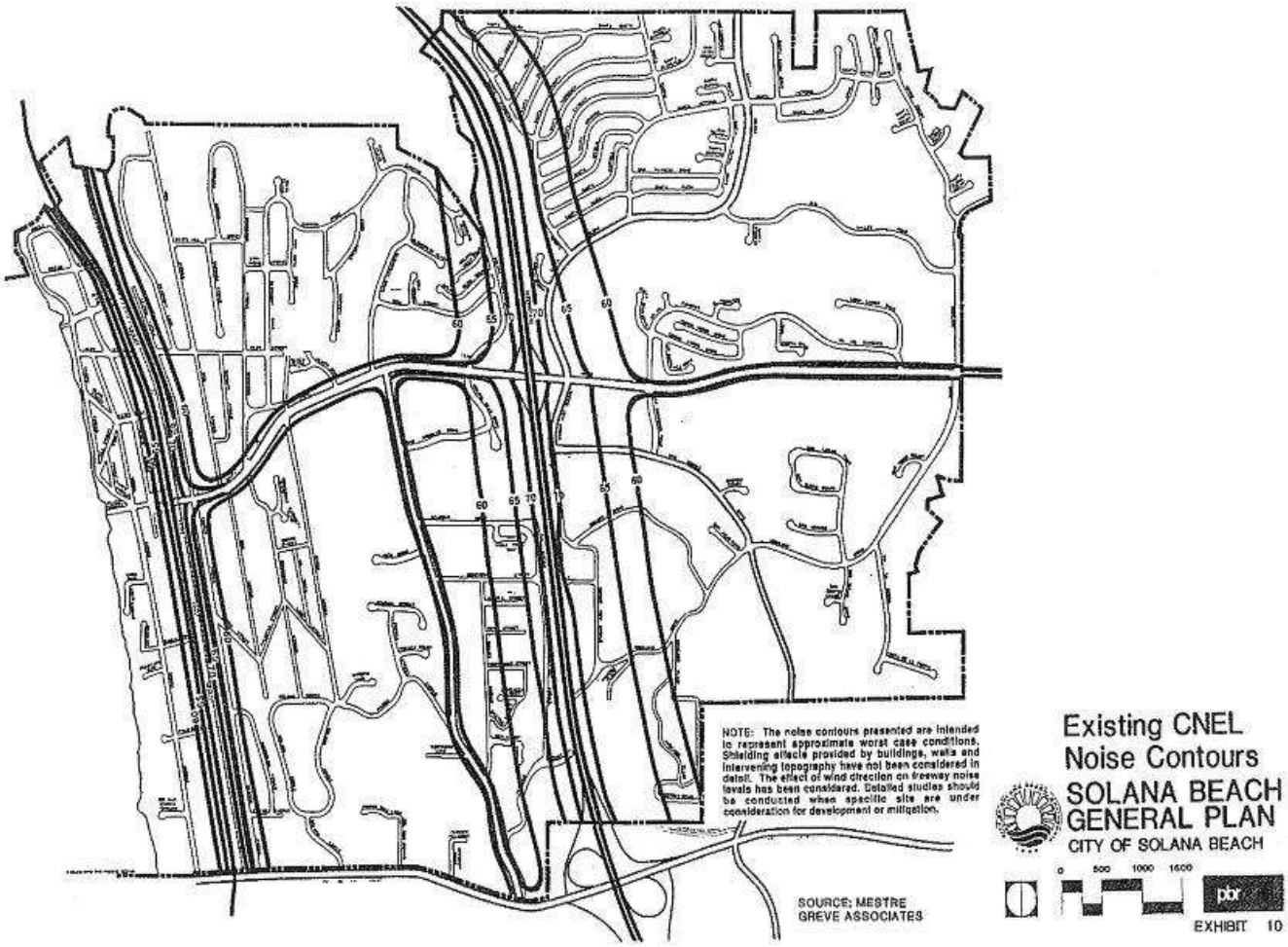
> In summary, noise impact from automobile racing activity was greater than other activities conducted on the fairgrounds and would exceed the noise standards as adopted by the City of Del Mar and the City of Solana Beach, but due to the special status of the fairgrounds, local standards are not applicable. The predicted noise levels in the Environmental Impact Report were used as the standard not to be exceeded and monitoring data shows that the noise produced by the auto racing activities were less than predicted and therefore in conformance to the requirements.

Additional monitoring of fairground activities is needed. It has been observed that when the wind blows from the south or east, that the wind carries the noise towards Solana Beach better and higher noise levels in residential areas result. Winds from the south or east may cause the fairgrounds noise to exceed noise ordinance limits in Solana Beach.

Several studies have been previously prepared addressing the potential noise impacts of the fairground activities. These studies include the "Environmental Noise Study for Southern California Grand Prix," (prepared by Gordon Bricken & Associates, January 7, 1986).

Aircraft flyovers occur over Solana Beach several times throughout the day. The aircraft consist of military, commercial, and general aviation types (both fixed and rotary wing) originating from various airports. Aircraft flights occur over residential and other noise sensitive land uses within the City. The aircraft flyovers do not contribute significantly to the overall noise level, but can be annoying on a short term basis. Future agreements with military, commercial and private airport operators may provide the opportunity for more stringent flight paths over the City. It would be desirable to confine aircraft flight corridors in the area to less sensitive land uses such as at least 1 mile off the coast. Flights out over the ocean would have virtually no impact on the City.

The noise environment for Solana Beach can be described using noise contours developed for the major noise sources within the City. The major noise source impacting the City is traffic noise. Existing and future noise contour maps have been developed for the City as part of this noise element.



The traffic noise contours for existing conditions are presented on Exhibit 10. (This map is available for review at the City at 1" = 1000' scale.) The noise contours in a tabular format are presented in Table 2. The 60, 65 and 70 CNEL contour levels are shown on the map. These traffic noise levels were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the LEQ noise level. A computer code has been written which computes equivalent noise levels for each of the time periods used in CNEL. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. The traffic data used to project these noise levels are derived from the Circulation Element for the City. The traffic mixes and time distributions for the arterials are presented in Table 1. The traffic mix data for the arterials are based on measurements for roadways in Southern California and are considered typical for arterials in this area. The existing and future contour maps include railroad noise contours from the tracks that run parallel to Highway 101.

Table 1

TRAFFIC DISTRIBUTION PER TIME OF DAY IN PERCENT OF ADT

	PERCENT OF ADT		
VEHICLE TYPE	**DAY**	**EVENING**	**NIGHT**
Automobile	75.51	12.57	9.34
Medium Truck	1.56	0.09	0.19
Heavy Truck	0.64	0.02	0.08

Most cities have adopted 65 CNEL for outdoor living areas and 45 CNEL for indoor areas. The noise contour map indicates that currently and in the future 65 CNEL is only exceeded significantly along Highway 101 (in combination with the railroad line) and Interstate 5. The remaining portions of the City experience noise levels generally of 60 CNEL or less.

Table 2

EXISTING (1988) TRAFFIC NOISE CONTOURS

Roadway	ADT (,000)	Speed	Distance to CNEL Contour (feet) 70 CNEL	65 CNEL	60 CNEL
CEDROS AVENUE					
Cliff to Via De La Valle	2.0	35	7	15	33
STEVENS AVENUE					
Lomas Santa Fe to Via De La Valle	10.8	40	27	58	126
LOMAS SANTA FE DRIVE					
Highway 101 to I-5	22.3	45	53	115	247
I-5 to El Camino Real	8.5	45	28	60	130
VIA DE LA VALLE					
Highway 101 to Jimmy Durante	16.6	45	44	94	203
Jimmy Durante to I-5	43.0	45	82	178	383
I-5 to El Camino Real	18.4	45	47	101	217
HIGHWAY 101					
South of Via De La Valle	18.3	45	47	100	217
Via De La Valle to City Line	17.5	45	45	98	210
North of City Line	25.0	45	57	124	267
INTERSTATE 5					
South of Via De La Valle	169.0	55	363	782	1685
Via De La Valle to Santa Fe	156.0	55	344	741	1597
North of Lomas Santa Fe	158.0	55	347	747	1611

ADT – Average Daily Traffic based on 1987 traffic counts.
Speed – Speed is in miles per hour.

An Atchinson, Topeka, and Santa Fe railroad line lies next to Highway 101. To determine train noise levels at various distances the Wyle Model was used ("Assessment of Noise Environments Around Railroad Operations," Wyle Laboratories Report WCR 73-5, July 1973). The noise generated by the train pass-by can be divided into two components; that generated by the engine or locomotive, and that due to the railroad cars. The characteristic frequency of the engine is different than for the cars. The noise generated by the engine is the result of the mechanical movements of the engine parts, the combustion process of the horn if used, and to a lesser extent the exhaust system. The noise generated by the cars is a result of the interaction between the wheels and the railroad track. A zero source height is used for the car noise, and a source height of 10 feet is utilized for the locomotive.

Data on railroad operations were obtained from Mr. Jim Beard of the San Bernardino office of the A.T. and S.F. Railway line. The railroad line is used for both Amtrak and freight train operations. Amtrak operations consist of 16 trains per day passing through the City with an average of 8 cars per train. An average of 3 freight trains per day typically pass through the City with 50 cars per train. A speed of 90 miles per hour is typical for the Amtrak trains and 55 miles per hour for freight trains. The operational data was utilized in conjunction with the Wyle Model to project train noise levels on the project site. The results of the train noise projections are displayed in Table 3 in terms of CNEL noise levels at distances of 100, 200, 500, and 1000 feet from the tracks. Railroad noise sources must be addressed in terms of the CNEL scale as per the State requirements. The projections do not include topography or barriers which may reduce the noise levels.

Table 3

RAILROAD NOISE LEVELS

DISTANCE (FEET)	100	200	500	1,000
CNEL (DB)	70	66	58	53

Railroad noise levels are expected to remain virtually unchanged in future years. However, there are no guarantees that operations will not change. Freight operations may increase, Amtrak may increase passenger service, and private ventures may attempt to provide high speed rail service. Any significant changes in operations should be preceeded by the required environmental documentation addressing

potential impacts and mitigation measures. Railroad levels and traffic levels for Highway 101 were combined to achieve the existing and future contour distances along the tracks. Potential future mitigation of the railroad noise may include lowering the rail bed.

2.3.2 Noise Sensitive Land Uses

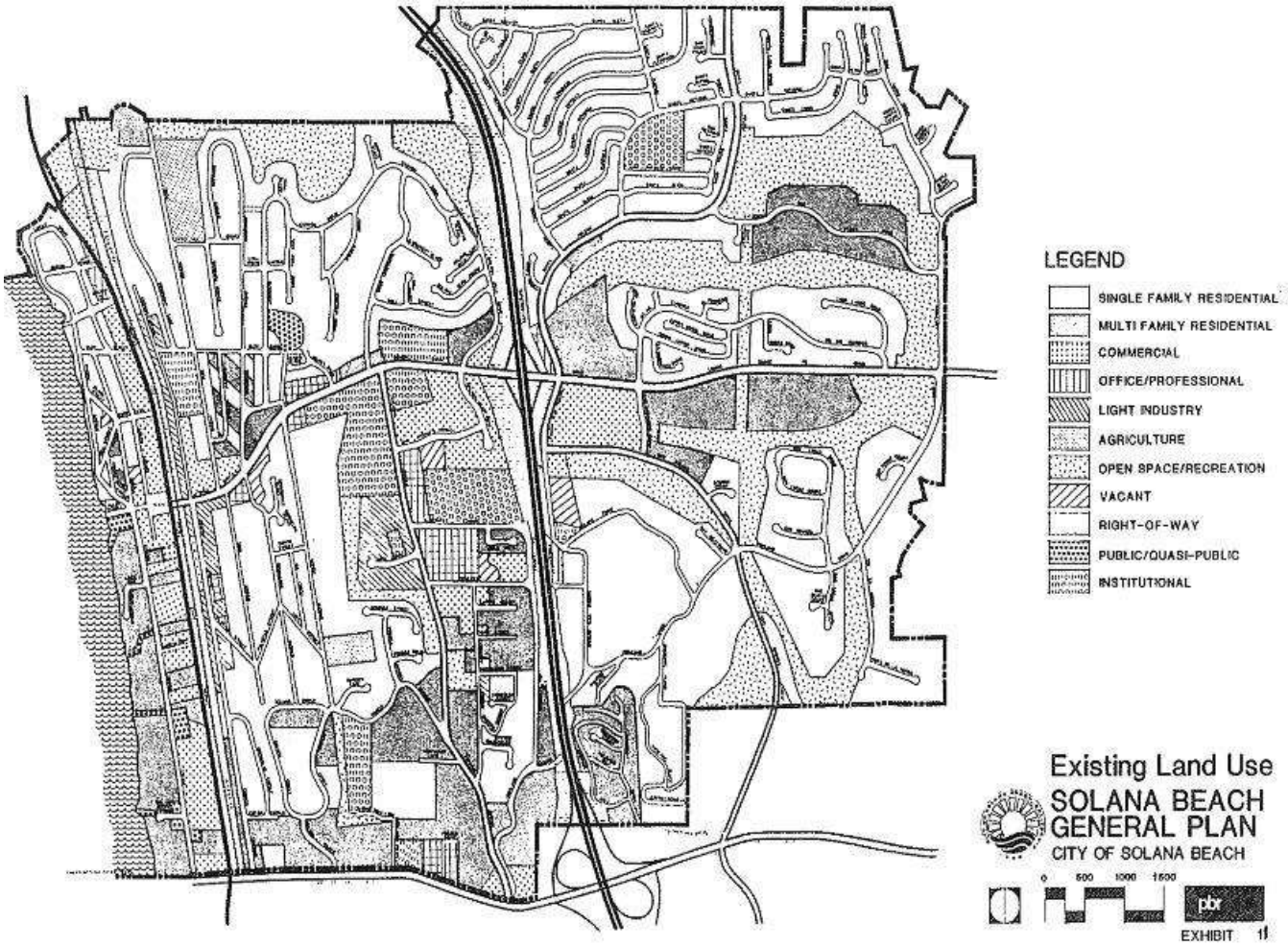
The most noise sensitive land use in Solana Beach is residential development. It is considered especially noise sensitive because (1) considerable time is spent by individuals at home, (2) significant activities occur outdoors, and (3) sleep disturbance is most likely to occur in a residential area. Additionally, the City of Solana Beach has a number of public and private educational facilities, and churches that are considered noise sensitive. The location of residential areas, schools, and parks are shown on the Existing Land Use Map (Exhibit 11). The distribution of these facilities varies from quiet residential areas to major arterial roadways.

Four schools are located within Solana Beach. Two of the schools are located along Lomas Santa Fe Drive at Stevens Avenue. These two schools are located along major roadways and subsequently portions of these school sites experience high noise levels. However, the schools have the buildings located back from the roadways which act to reduce the noise levels somewhat. School Districts have been able to apply to the State for funds to mitigate noise problems for many years. The funds are used to sound insulate classrooms and to provide ventilation or air conditioning so that windows may remain closed. The other two schools are located on East Cliff Street at Rios Avenue and at Santa Victoria near Santa Carina. These schools are located in areas where the noise levels do not appear to be excessive.

The San Elijo Lagoon merits special consideration. Due to its natural condition it should be considered as noise sensitive. However, the wetlands area is located outside the City of Solana Beach. Actions by the City should take into consideration the noise sensitive nature of this area.

Noise contours represent lines of equal noise exposure, just as the contour lines on a topographic map are lines of equal elevation. The contours shown on the maps are the 70, 65, and 60 CNEL noise level for the traffic and railroad noise contours. The noise contours presented should be used as a guide for land use planning. The 60 CNEL contour defines the noise referral zone. This is the noise level for which noise considerations should be included when making land use policy decisions. The 65 CNEL contour describes the areas for which new noise sensitive developments will be permitted only if appropriate mitigation measures are included such that the standards contained in this Element are achieved.

The contours presented in this report are a graphic representation of the noise environment. Topography and intervening buildings or barriers have a very complex effect on the propagation of noise. This topographic effect is not included in these contours.



2.4 Future Acoustic Environment

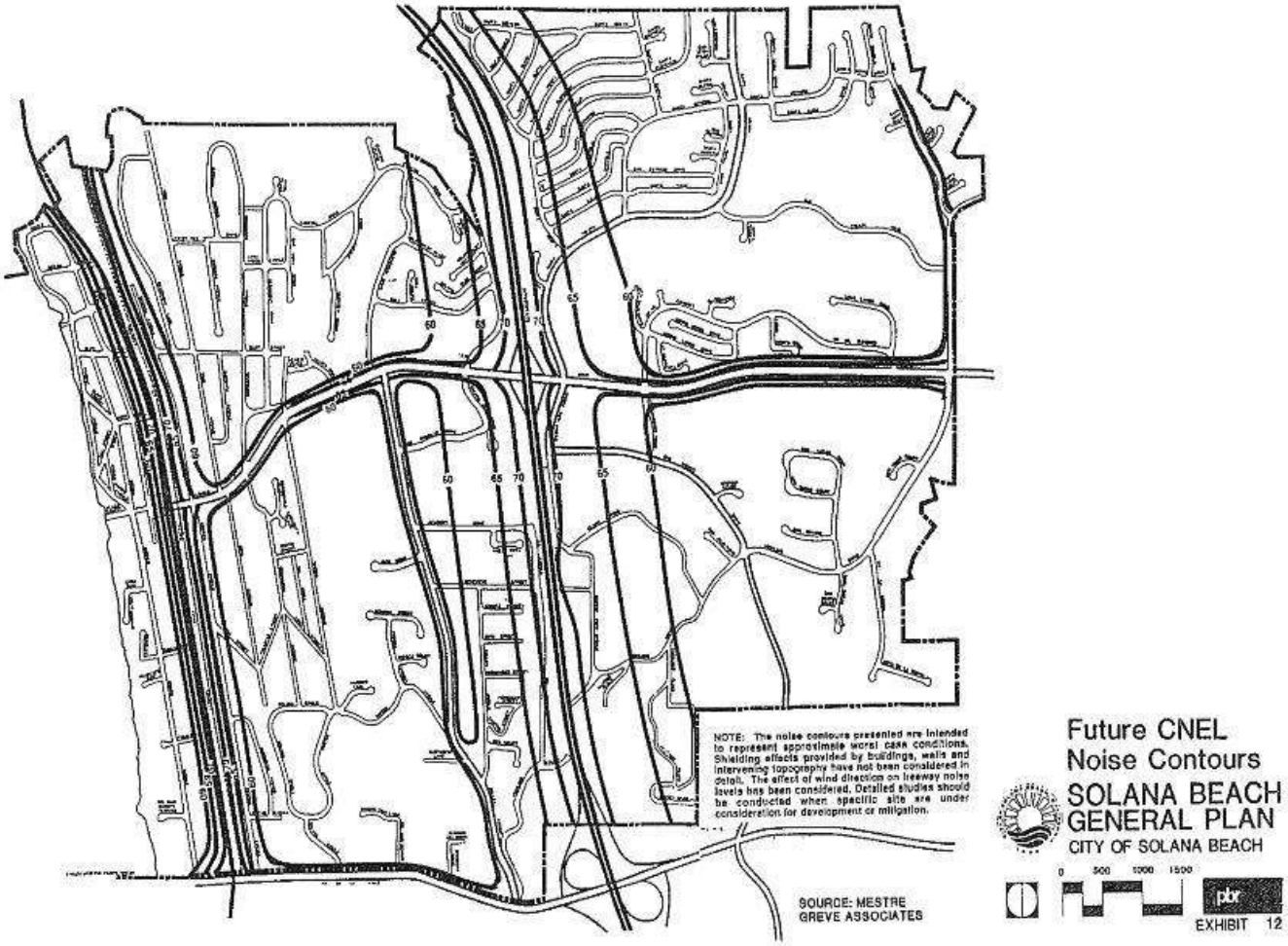
2.4.1 Noise Sources and Levels

Future traffic noise levels have been computed using the FHWA Highway Traffic Noise Prediction Model and projected traffic volumes presented in the circulation element. Table 4 and Exhibit 12 show the traffic noise contours along the city's principal highways that are projected to occur following buildout of the proposed general plan.

Table 4

FUTURE TRAFFIC NOISE CONTOURS (YEAR 2010)

			Distance to CNEL Contour (feet)		
Roadway	ADT (,000)	Speed	70 CNEL	65 CNEL	60 CNEL
CEDROS AVENUE					
Cliff to Via De La Valle	4.0	35	11	24	52
STEVENS AVENUE					
Lomas Santa Fe to Via De La Valle	17.0	40	37	79	170
SAN ANDRES DRIVE					
Marine View to Highland	5.0	40	16	35	75
Highland to Via De La Valle	7.0	40	20	44	94
SANTA HELENA					
North of Lomas Santa Fe	6.0	40	18	39	85
SAN MARLO DRIVE					
North of Lomas Santa Fe	8.0	40	22	48	103
HIGHLAND DRIVE					
San Andres to Lomas Santa Fe	4.0	40	14	30	65
LOMAS SANTA FE DRIVE					
East of Highway 101	16.0	45	43	92	198
West of Stevens	24.0	45	56	120	259
Stevens to I-5	36.0	45	73	158	340
I-5 to Highland	29.0	45	63	137	294
Highland to El Camino Real	12.0	45	35	76	163
VIA DE LA VALLE					
Highway 101 to Jimmy Durante	20.0	45	49	107	230
Jimmy Durante to I-5	45.0	45	85	183	395
I-5 to San Andres	35.0	45	72	155	334
San Andres to El Camino Real	28.0	45	62	133	288
HIGHWAY 101					
South of Via De La Valle	27.0	45	60	130	281
Via De La Valle to City Line	28.0	45	62	133	288
North of City Line	31.0	45	66	143	308
SAN DIEGO FREEWAY					
South of Via De La Valle	274.0	55	501	1079	2325
Via De La Valle to Lomas Santa Fe	266.0	55	491	1058	2279
North of Lomas Santa Fe	265.0	55	490	1055	2274



Based on current and future traffic levels the only areas of the City that experiences noise levels in excess of 65 CNEL is along Interstate 5 and Highway 101. Much of the land uses along Highway 101 are commercial or business uses which are generally considered insensitive to noise. However, there are some multi-family residential uses along this road which are considered noise sensitive. Several single and multi-family residential areas lie in close proximity to Interstate 5. Several of the residential areas are protected from freeway noise by existing noise barriers. However, residences exist on hills overlooking the freeway that are unprotected from freeway noise. Therefore, future planning for the City should be directed at reducing noise levels along Highway 101 and Interstate 5 and limiting the future siting of noise sensitive land uses along these areas.

As previously discussed, the sources of noise in Solana Beach can be divided into two basic categories, transportation sources (primarily traffic) and non-transportation sources. A local government has little direct control of transportation noise at the source. State and Federal agencies have the responsibility to control the noise from the source, such as vehicle noise emission levels. The most effective method the City has to mitigate transportation noise is through reducing the impact of the noise onto the community (i.e. noise barriers and site design review). Mitigation through the design and construction of a noise barrier (wall, berm, or combination wall/berm) is the most common way of alleviating traffic noise impacts (Exhibit 13). The effect of a noise barrier is critically dependent on the geometry between the noise source and the receiver. A noise barrier effect occurs when the “line of sight” between the source and receiver is penetrated by the barrier. The greater the penetration the greater the noise reduction.

2.4.2 Noise/Land Use Compatibility

Noise concerns should be incorporated into land use planning to reduce future noise and land use incompatibilities. This is achieved by establishing standards and criteria that specify acceptable limits of noise for various land uses throughout the City. These criteria are designed to integrate noise considerations into land use planning to prevent noise/land use conflicts. Exhibit 14 presents criteria used to assess the compatibility of proposed land uses with the noise environment. These criteria are the basis for the development of specific Noise Standards. The proposed standards, presented in Exhibit 15, represent City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure integrated planning for compatibility between land uses and outdoor noise.

The most effective method to control community noise impacts from non-transportation noise sources is through application of the Community Noise Ordinance. The City presently uses the Noise Ordinance for San Diego County. The San Diego County ordinance is a good guideline and has served the City for the past several years. In addition, the Orange County Noise Ordinance is also a good guideline, is used by many jurisdictions throughout the State of California, and is considered to be one of the finest noise ordinances in

the nation. The San Diego County ordinance addresses noise in terms of the average (Leq) noise level. The Orange County Ordinance also addresses peak and intermittent sounds in addition to average levels.

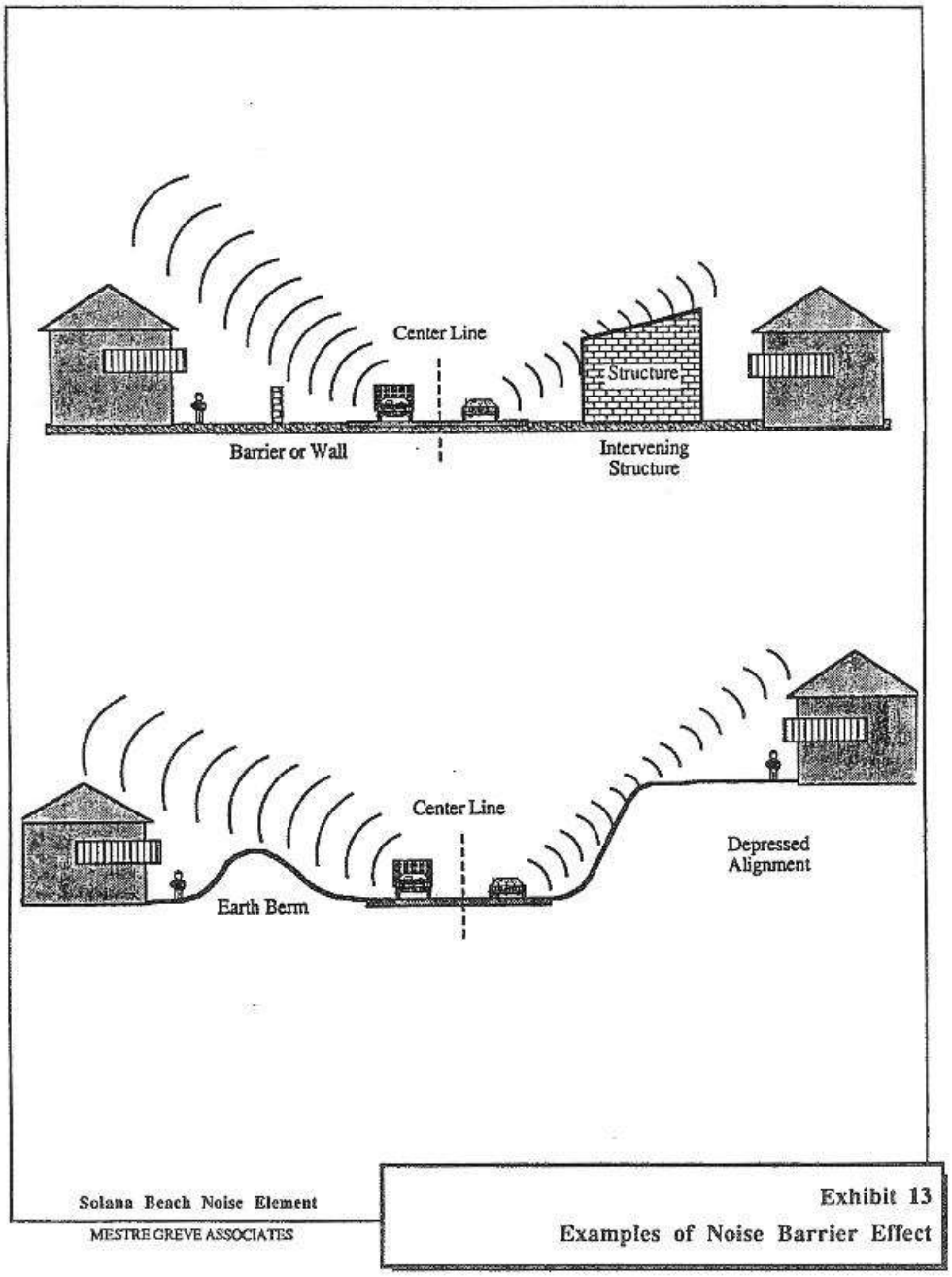


Exhibit 14

Noise/Land Use Compatibility Matrix

LAND USE CATEGORIES		COMMUNITY NOISE EQUIVALENT LEVEL CNEL						
CATEGORIES	USES	<55	60	65	70	75	80>	
RESIDENTIAL	Single Family, Duplex, Multiple Family	A	A	B	B	C	D	D
RESIDENTIAL	Mobile Home	A	A	B	C	C	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank Restaurant, Movie Theatre	A	A	A	A	B	B	C

COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
COMMERCIAL Recreation	Childrens Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
COMMERCIAL General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
INSTITUTIONAL General	Hospital, Church, Library Schools' Classroom	A	A	B	C	C	D	D
OPEN SPACE	Parks	A	A	A	B	C	D	D
OPEN SPACE	Golf Course, Cemetaries, Nature CentersWildife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
AGRICULTURE	Agriculture	A	A	A	A	A	A	A

INTERPRETATION

ZONE A CLEARLY COMPATIBLE	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
ZONE B NORMALLY COMPATIBLE	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
ZONE C NORMALLY INCOMPATIBLE	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.
ZONE D CLEARLY INCOMPATIBLE	New construction or development should generally not be undertaken.

Exhibit 15

Interior and Exterior Noise Standards

LAND USE CATEGORIES		ENERGY AVERAGE CNEL	
CATEGORIES	USES	INTERIOR[1]	EXTERIOR[2]
RESIDENTIAL	Single Family, Duplex, Multiple Family	45[3] 55[4]	65
	Mobile Home	–	65[5]
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Hotel, Motel, Transient Lodging	45	65[6]
	Commercial Retail, Bank Restaurant	55	–
	Office Building, Research and Development, Professional Offices, City Office Building	50	–
	Amphitheatre, Concert Hall Auditorium, Meeting Hall	45	–
	Gymnasium (Multipurpose)	50	–
	Sports Club	55	–
	Manufacturing, Warehousing, Wholesale, Utilities	65	–

	Movie Theatres	45	–
INSTITUTIONAL	Hospital, Schools' Classroom	45	65
	Church, Library	45	–
OPEN SPACE	Parks	–	65

INTERPRETATION

1. Indoor environment excluding: Bathrooms, toilets, closets, corridors.

2. Outdoor environment limited to: Private yard of single family

   Multi-family private patio or balcony which is served by a means of exit from inside.

   Mobile home Park

   Hospital patio

   Park's picnic area

   School's playground

   Hotel and motel recreation area

3. Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.

4. Noise level requirement with open windows, if they are used to meet natural ventilation requirement.

5. Exterior noise level should be such that interior noise level will not exceed 45 CNEL.

6. Except those areas affected by aircraft noise.

3.0 Goals, Objectives, and Policies

GOAL 3.1

TO PROTECT PUBLIC HEALTH AND WELFARE BY ELIMINATING EXISTING NOISE PROBLEMS AND BY PREVENTING SIGNIFICANT DEGRADATION OF THE FUTURE ACOUSTIC ENVIRONMENT.

Objective 1.0

Establish a community noise standard that specifies acceptable limits of noise for various land uses throughout the City.

Policy 1.a The city shall adopt a standards by which identifies interior and exterior noise standards in relation to specific land uses, particularly "noise sensitive" areas such as residential areas, schools, hospitals, open space preserves, and parks. The ordinance shall specify the maximum allowable noise levels for transportation sources, construction activities, and other non-transportation sources such as industrial and commercial land uses.

Policy 1.b The adopted community noise standards shall be consistent with applicable state noise standards which specify that interior noise levels for residential living spaces shall not exceed 45 Ldn/CNEL. This standard shall be applied to all new single- and multi-family dwellings, hotels, and motels.

Policy 1.c The adopted community noise standards shall designate the code enforcement officer as the noise control coordinator and shall establish the respective responsibilities and police powers of all city departments involved in noise abatement.

Policy 1.d The city shall encourage a long-term development pattern which minimizes noise conflicts through planning and zoning.

Objective 2.0

Establish measures by to control noise impacts from transportation related noise sources.

Policy 2.a The city shall require the construction of barriers to mitigate sound emissions where necessary and feasible.

Policy 2.b The city shall require the inclusion of noise mitigation measures in the design of new roadway projects in Solana Beach, including Interstate 5 projects.

Policy 2.c The city shall minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures.

Policy 2.d The city shall actively support state and federal legislation that may be proposed to establish noise control standards to be met by automobile manufacturers.

Policy 2.e The city shall exercise its police powers by establishing an intensive motor vehicle noise regulation program. This shall include, but not be limited to, pursuing ways to lower the rail bed and construct sound walls along the railroad right of way.

Policy 2.f The city shall seek measures to minimize noise impacts associated with railroad operations.

Policy 2.g The city shall explore measures in cooperation with the Federal Aviation Administration to minimize noise resulting from low-flying aircraft (including ultralights) and helicopters, particularly along coastal areas.

Policy 2.h The City shall encourage the California Department of Transportation (Caltrans) to construct sound walls along the San Diego Freeway. Any modifications to the freeway that would increase the capacity of the freeway or increase speeds are considered by the City to have the potential of significantly noise impacting the residents of Solana Beach. Before any such modifications are made necessary mitigation measures such as noise barriers should be constructed.

Objective 3.0

Establish measures to control impacts from non-transportation noise sources.

Policy 3.a The city shall ensure the effective enforcement of city, state and federal noise level standards by all appropriate city divisions. The city shall provide quick response to complaints and rapid abatement of noise nuisances within the scope of the city's police powers.

Policy 3.b The city shall actively advocate federal regulations for the control of equipment noise levels. Currently, Federal regulations only control noise emissions from air compressors. Standards may be developed for additional equipment.

Policy 3.c The city shall establish noise guidelines for city purchasing policy to take advantage of federal regulations and labeling requirements.

Policy 3.d The city shall coordinate with the California Occupational Safety and Health Administration (Cal-OSHA) to provide information on and enforcement of occupational noise requirements within the city.

Policy 3.e The city shall cooperate with the Fair Board, the City of Del Mar and all adjacent entities (including the cities of Encinitas, San Diego and the County of San Diego) to reduce noise impacts from sources outside the city included, but not limited to, concerts.

Policy 3.f The city shall adopt a noise ordinance designed to control non-transportation noise sources within the city. The noise ordinance will be designed to control industrial and commercial sources of noise as well as occasional noise sources such as barking dogs, gas powered dust blowers and excessively loud amplified music.

Objective 4.0

Integrate the adopted community noise ordinance and related considerations into the city's ongoing land use planning process.

Policy 4.a The city shall require that potential noise impacts be addressed for all projects as part of the initial study per CEQA to determine if unacceptable noise levels will be created or experienced. Depending on the level of impact, a noise impact evaluation may be required to be undertaken. Should noise abatement be necessary, the city shall require the implementation of mitigation measures based on a detailed technical study prepared by a qualified acoustical engineer.

Policy 4.b The city shall not approve projects that do not comply with the standards established in the community noise ordinance concerning noise/land use compatibility unless all practical measures have been taken to mitigate potential noise impacts and the City Council adopts a "Statement of Overriding Considerations" which provides the rationale for approving such a project.

Policy 4.c The city shall establish a noise monitoring program to identify progress in achieving noise abatement objectives and to perform necessary updating of the noise element and community noise ordinance.

4.0 The Plan for Control and Management of Noise

In order to achieve the goals and objectives of the Noise Element, an effective implementation program developed within the constraints of the City's financial and staffing capabilities is necessary. The underlying purpose is to reduce the number of people exposed to excessive noise and to minimize the future effect of noise in the City. The following are the actions that the City should consider implementing to control the impacts of noise in Solana Beach.

Issue 1 – Transportation Noise Control – The most efficient and effective means of controlling noise from transportation systems is reducing noise at the source. However, since the City has little direct control over source noise levels because of State and Federal preemption (i.e. State Motor Vehicle Noise Standards), policies should be focused on reducing the impact of the noise on the community. Cooperative efforts with State and Federal offices are essential.

Action 1 Encourage the use of walls and berms in the design of residential or other noise sensitive land uses that are adjacent to major roads, commercial, or industrial areas.

Action 2 Pursue with Caltrans the issue of sound walls along Interstate 5.

Action 3 Provide for continued evaluation of truck movements and routes in the City to provide effective separation from residential or other noise sensitive land uses.

Action 4 Encourage the enforcement of State Motor Vehicle noise standards for cars, trucks, and motorcycles through coordination with the California Highway Patrol and Solana Beach Police Department.

Action 5 Encourage aircraft overflights to occur over the ocean at least 1 mile off the coast to minimize the impact on noise sensitive land uses within the City.

Issue 2 – Noise and Land Use Planning Integration. Community noise considerations are to be incorporated into land use planning. These measures are intended to prevent future noise and land-use incompatibilities.

Action 6 Establish standards that specify acceptable limits of noise for various land uses throughout the City. These criteria are designed to fully integrate noise considerations into land use planning to prevent new noise/land use conflicts. Exhibit 14 shows criteria used to assess the compatibility of proposed land uses with the noise environment. These criteria are the bases for the development of specific Noise Standards. These standards, presented in Exhibit 15, define the City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure noise integrated planning for compatibility between land uses and outdoor noise.

Action 7 Incorporate noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses. The noise referral zones identified in Exhibits 10 and 12 (areas exposed to noise levels greater than 55 CNEL) can be used to identify locations of potential conflict. New developments will be permitted only if appropriate mitigation measures are included such that the standards contained in this Element or an adopted ordinance are met.

Action 8 Enforce the State of California Uniform Building Code that specifies that the indoor noise levels for residential living spaces not exceed 45 dB LDN/CNEL due to the combined effect of all noise sources. The State requires implementation of this standard when the outdoor noise levels exceed 60 dB LDN/CNEL. The Noise Referral Zones (60 CNEL) can be used to determine when this standard needs to be addressed. The Uniform Building Code (specifically, the California Administrative Code, Title 24, Part 6, Division T25, Chapter 1, Subchapter 1, Article 4, Sections T25-28) requires that "Interior community noise levels (CNEL/LDN) with windows closed, attributable to exterior sources shall not exceed an annual CNEL or LDN of 45 dB in any habitable room." The code requires that this standard be applied to all new hotels, motels, apartment houses and dwellings other than detached single-family dwellings.

Issue 3 – Community Noise Control for Non-Transportation Noise Sources. The focus of control of noise from non-transportation sources is the Community Noise Ordinance. The ordinance can be used to protect people from noise generated on adjacent properties.

Action 9 Amend and adopt a new comprehensive community noise ordinance to ensure that City residents are not exposed to excessive noise levels from existing and new stationary noise sources. The purpose of the ordinance is to protect people from non-transportation related noise sources such as music, machinery and pumps, air conditioners and truck traffic on private property. The Noise Ordinance does not apply to motor vehicle noise on public streets, but it does apply to vehicles on private property. The Noise Ordinance is designed to protect quiet residential areas from stationary noise sources. The noise levels encouraged by the ordinance are typical of a quiet residential area.

Action 10 Enforce the new community Noise Ordinance. The most effective method to control community noise impacts from non-transportation noise sources is through application of the community noise ordinance.

Action 11 Monitor upcoming court decisions regarding noise control of operations on State property by the City.

Action 12 Require that new commercial projects, proposed for development near existing residential land use, demonstrate compliance with the City Noise Ordinance prior to approval of the project.

Action 13 All new residential projects to be constructed near existing sources of non-transportation noise (including but not limited to commercial facilities, public parks with sports activities) must demonstrate via an acoustical study conducted by a Registered Engineer that the indoor noise levels will be consistent with the limits contained in the noise ordinance.

Action 14 Require construction activity to comply with limits established in the City Noise Ordinance.

Action 15 Designate one agency in the City to act as the noise control coordinator. This will ensure the continued operation of noise enforcement efforts of the City.

5.0 Glossary

A-WEIGHTED SOUND LEVEL. The sound pressure level in decibels as measured on a sound level meter using the A-Weighted filter network. The A-Weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgement of loudness.

AMBIENT NOISE LEVEL. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). The average equivalent A-Weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DAY-NIGHT AVERAGE LEVEL (LDN). The average equivalent A-Weighted sound level during a 24-hour day, obtained after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

DECIBEL (dB). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A). A-weighted sound level (see definition above)

EQUIVALENT SOUND LEVEL (LEQ). The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

FREQUENCY. The number of times per second that a sound pressure signal oscillates about the prevailing atmosphere pressure. The unit of frequency is the hertz. The abbreviation is Hz.

INTRUSIVE NOISE. That noise which intrudes over and above the ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

L10. The A-Weighted sound level exceeded 10 percent of the sample time. Similarly L50, L90, L99, etc.

NOISE. Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound..."

NOISE ATTENUATION. The ability of a material, substance, or medium to reduce the noise level from one place to another or between one room and another. Noise attenuation is specified in decibels.

NOISE EXPOSURE CONTOURS. Lines drawn around a noise source indicating constant or equal level of noise exposure. CNEL and LDN are typical metrics used.

NOISE REFERRAL ZONES. Such zones are defined as the area within the contour defining a CNEL level of 55 decibels. It is the level at which either State or Federal laws and standards related to land use become important and, in some cases, preempted local laws and regulations. Any proposed noise sensitive development which may be impacted by a total noise environment of 55 dB CNEL or more should be evaluated on a project specific basis.

NOISE SENSITIVE LAND USE. Those specific land uses which have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Such human activity typically occurs daily for continuous periods of 24 hours or is of such a nature that noise is significantly disruptive to activities that occur for short periods. Specifically, noise sensitive land uses include: residences of all types, hospitals, places of worship and schools.

SOUND LEVEL (NOISE LEVEL). The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

SOUND LEVEL METER. An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

Appendix A

Noise Measurement Results

The following pages present the noise data collected during the measurement survey. The data reported is in terms of the Leq, Lmax, and various percentile descriptors. The Leq or noise equivalent level represents the energy average noise level. It is the building block of the CNEL scale, and the Leq noise level measured at a site during the daytime is usually about equal to the CNEL noise level. The CNEL noise level is a 24 hour weighted average noise level as previously discussed. The CNEL noise level is not measured directly because it would require that the monitoring be conducted continuously at each site for a minimum of 24 hours.

The Lmax noise level is simply the loudest noise level that was obtained during the monitoring period. The L1, L5, L10, etc. are percentile noise levels. The L5, for example, represents the noise level that is exceeded 5% of the time. It represents the louder noise levels experienced at the site. For example, at a site along Highway 101, the L5 level may be determined primarily by truck pass-bys. The L50 noise level is the level that is exceeded half of the time. The L90 and L99 noise levels represent the quieter periods at the measurement

site. Sometimes these levels are referred to as the ambient or background noise levels. Usually, these levels are determined by distant roadways or freeways.

The noise measurement results should be considered as a “snapshot” of the noise environment. The noise levels will of course change throughout the day and may change from day to day. However, our past experience when repeating measurements on several different days indicates that the noise levels do not vary greatly from one day to another. Exceptions to this observation include sites near industrial areas, airports, and construction sites.

Site 1 is indicative of the residential areas west of Highway 101. The noise level is relatively low due primarily to local traffic and some construction activities during the day. Although Highway 101 could be heard at the site, the noise from the highway appears to be reduced due to the intervening buildings, which as a noise barrier. The site was also measured during the evening hours to check for potential noise generated by nearby restaurants and other commercial operations.

Sites 2, 3, and 19 attempted to determine the extent of the noise impact generated by the commercial core east of Highway 101. The measurements at Site 2 indicate that the lumber yard generates significant levels of noise. Violations by the lumber yard of the Noise Ordinance may occur from time to time. All three sites can be significantly impacted by train noise.

Sites 4, 5, 6, 7, and 8 were measurements in residential areas that border low traffic volume roadways. The main concern with these sites was how much noise was really generated by these low volume roadways, and how intrusive was the noise from the distant major roadways. In our site selection meeting, many of the residents felt that this was a noisy part of the City. A second purpose of the measurements was to document the noise levels when the fairgrounds were not in operation. Generally, our measurements indicated that these were fairly quite areas. Measurement results at Sites 4, 5 and 8 at first glance appeared higher than expected. However, the microphone location at Sites 4 and 5 was located closer to the street than usual and thus recorded higher levels. A portion of the Site 8 data included lawn mower noise.

Sites 9, 10, and 14 were located along major arterial roadways. The noise data indicate that the noise levels are high along these roadways.

Site 18 was selected as a very quite site near the wetlands area. It was selected to document how quite the wetlands currently are. The noise levels measured at this site were the quietest encountered during our survey.

Sites 11 and 17 were designed to measure freeway noise intrusion into the adjacent residential area. Houses exist between the freeway and the measurement sites. Site 11 data indicate that the substantial noise reduction is provided by the first row of homes along the freeway in protecting the second row. Less reduction was observed at Site 17.

Sites 12, 13, 15, and 16 are representative of various residential location east of the freeway. In general, these areas are considered to be relatively quiet. The noise levels at Sites 12 and 13 were higher than is typical for this type of area. Further review of the data indicated unusual heavy truck activity which appeared to be due to construction activities. Heavy truck noise at Site 12 was made even worse at this location due to the roadway grade. Site 15 and 16 had low noise levels typical for this type of area.

Exhibit A

Noise Measurement Results

SITE: # 1
LOCATION: Cliff Street at Acacia Avenue

DATE: September 10, 1987
TIME: 12:45 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
54.8	72.4	66.4	60.6	57.2	50.6	48.6	45.0	43.2

PRIMARY NOISE SOURCES:
Traffic, Construction

LAND USE:
Commercial/Residential Border

COMMENTS:
Slight traffic noise from Pacific Coast Highway

SITE: # 1
LOCATION: Cliff Street at Acacia Avenue

DATE: September 10, 1987
TIME: 7:45 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
49.1	64.7	60.5	52.9	50.5	47.5	46.1	41.3	38.1

PRIMARY NOISE SOURCES:
Traffic, Construction

LAND USE:
Commercial/Residential Border

COMMENTS:
Slight traffic noise from Pacific Coast Highway

SITE: # 2
LOCATION: 202 Cedros Avenue across from Lumber Yard

DATE: September 10, 1987
TIME: 3:00 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
64.7	82.7	76.7	69.9	67.3	59.7	57.1	51.1	48.7

PRIMARY NOISE SOURCES:
Lumber Yard, Traffic

LAND USE:
Residential/Commercial Border

COMMENTS:
Trucks and Machinery in Lumber Yard are noise source

SITE: # 3
LOCATION: 209 Rios Avenue

DATE: September 10, 1987
TIME: 3:45 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
53.3	73.9	66.9	57.3	50.9	46.5	45.3	43.1	42.1

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Residential

COMMENTS:
Very light Traffic

SITE: # 4
LOCATION: 354 Nardo Avenue

DATE: September 10, 1987
TIME: 4:15 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
61.0	79.9	74.1	67.9	62.3	48.3	44.7	40.1	38.7

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Residential

COMMENTS:
Very light Traffic

SITE: # 5
LOCATION: Nardo Avenue at Solana Circle

DATE: September 10, 1987
TIME: 4:30 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
62.5	80.3	74.1	69.1	65.9	56.3	50.5	41.3	38.9

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Residential

COMMENTS:
Speed limit is 30 MPH

SITE: # 6
LOCATION: Solana Circle

DATE: September 11, 1987
TIME: 8:45 a.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
54.8	67.0	63.6	58.6	57.2	54.4	52.6	49.8	48.4

PRIMARY NOISE SOURCES:
Traffic, Light Construction

LAND USE:
Residential

COMMENTS:
Very light traffic

SITE: # 7
LOCATION: Del Mar Downs at Pepper Tree Lane

DATE: September 11, 1987
TIME: 9:15 a.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
48.1	61.0	58.8	52.2	50.4	47.2	45.6	42.8	41.8

PRIMARY NOISE SOURCES:
Very Light Traffic, Wind Chimes, Single Engine Planes

LAND USE:
Residential, Church

COMMENTS:
There is currently no Race Track noise

SITE: # 8
LOCATION: Highland Court on top of Cliff

DATE: September 11, 1987
TIME: 9:45 a.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
62.4	70.8	67.2	65.0	64.2	62.8	62.0	58.8	55.4

PRIMARY NOISE SOURCES:
Traffic, Lawn Mowers

LAND USE:
Residential below

COMMENTS:
There is no Race Track noise

SITE: # 9
LOCATION: Stevens Avenue in front of City Hall

DATE September 11, 1987
TIME: 10:00 a.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
65.6	79.0	74.6	71.2	69.6	64.8	62.0	52.6	47.2

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Commercial

COMMENTS:

SITE: # 10
LOCATION: 505 Lomas Santa Fe Drive

DATE September 11, 1987
TIME: 10:45 a.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
72.3	88.4	82.8	76.6	75.0	71.4	69.0	60.6	50.0

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
School, Commercial

COMMENTS:
Diesel Air Horn is cause of Lmax
Traffic Count: 96.2% Cars, 1.1% Medium Truck, 2.6% Heavy Truck

SITE: # 11
LOCATION: Santa Florencia at Santa Olivia

DATE: September 11, 1987
TIME: 11:30 a.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
61.4	76.4	74.0	67.6	64.0	57.0	55.8	53.4	52.2

PRIMARY NOISE SOURCES:
Traffic, Interstate 5 Freeway

LAND USE:
Residential

COMMENTS:
Truck with backup beeper is cause of Lmax

SITE: # 12
LOCATION: Santa Helena at Santa Victoria

DATE: September 11, 1987
TIME: 11:45 a.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
72.2	97.4	79.8	71.6	68.8	60.2	56.4	50.8	49.0

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Residential

COMMENTS:
Heavy Truck going up grade is cause of Lmax

SITE: # 13
LOCATION: San Mario Court at Santa Marta Court

DATE: September 11, 1987
TIME: 1:00 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
65.1	81.0	76.0	72.6	69.6	59.8	53.2	43.0	41.4

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Residential, Golf Course

COMMENTS:
Heavy Truck is cause of Lmax

SITE # 14
LOCATION: Lomas Santa Fe Drive at Caminode Villas

DATE: September 11, 1987
TIME: 1:45 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
70.7	84.4	79.0	76.6	75.2	69.8	65.8	52.2	50.2

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Residential, Golf Course

COMMENTS:

SITE: # 15
LOCATION: Via De La Senda at Vista De La Tierra

DATE: September 11, 1987
TIME: 2:15 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
48.5	63.0	58.0	52.8	49.6	46.6	46.0	44.2	43.2

PRIMARY NOISE SOURCES:
Traffic, Bird Calls

LAND USE:
Residential, Golf Course

COMMENTS:
Only two cars drove by location

SITE: # 16
LOCATION: Avocado Place

DATE: September 11, 1987
TIME: 2:45 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
54.5	70.6	65.8	57.0	54.0	52.2	51.8	50.2	49.4

PRIMARY NOISE SOURCES:
Interstate 5 Freeway

LAND USE:
Residential

COMMENTS:

SITE: # 17
LOCATION: Marine View Avenue

DATE: September 11, 1987
TIME: 3:00 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
66.1	79.6	70.0	67.8	67.2	66.2	65.6	64.0	62.8

PRIMARY NOISE SOURCES:
Interstate 5 Freeway

LAND USE:
Residential

COMMENTS:

SITE: # 18
LOCATION: (The Back Road)

DATE: September 11, 1987
TIME: 3:15 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
47.1	53.8	52.0	50.4	49.4	47.2	46.2	43.8	42.4

PRIMARY NOISE SOURCES:
Traffic, Interstate 5 Freeway

LAND USE:
Residential

COMMENTS:
Only four cars drove by location

SITE: # 19
LOCATION: 508 Cedros Avenue

DATE: September 11, 1987
TIME: 3:45 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
58.1	77.3	70.3	59.1	57.3	54.9	53.7	50.7	46.5

PRIMARY NOISE SOURCES:
Traffic from Pacific Coast Highway, Train

LAND USE:
Commercial/Residential Border

COMMENTS:
One Amtrak Train with six cars at seventy MPH passed location

SITE # 20
LOCATION: Pacific Coast Highway at Dahlia Drive

DATE: September 10, 1987
TIME: 8:15 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
66.8	82.1	77.9	72.5	70.7	64.7	61.9	52.9	49.1

PRIMARY NOISE SOURCES:
Traffic, Train

LAND USE:
Commercial

COMMENTS:
One Amtrak Train with seven cars at seventy MPH passed location
Traffic Count: 98.7% Cars, 0.5% Medium Truck, 0.8% Heavy Truck

SITE # 20
LOCATION: Pacific Coast Highway at Dahlia Drive

DATE: September 11, 1987
TIME: 6:15 p.m.

MEASURED VALUES (dBA)

LEQ	Lmax	L1	L5	L10	L33	L50	L90	L99
68.5	80.1	76.3	73.5	72.3	68.5	66.3	58.1	53.1

PRIMARY NOISE SOURCES:
Traffic

LAND USE:
Commercial

COMMENTS:
Traffic Count: 98.3% Cars, 1.1% Medium Truck, 0.6% Heavy Truck

Mobile Version

Chapter 7.34
NOISE ABATEMENT AND CONTROL

Sections:

7.34.010 Purpose.

The city council finds and declares that:

A. Inadequately controlled noise presents a growing danger to the health and welfare of the residents of the city.

B. The making and creating of disturbing, excessive, offensive or unusually loud noises within the jurisdictional limits of the city is a condition which has persisted and the level and frequency of occurrence of such noises continue to increase.

C. The making, creation or continuance of such excessive noises which are prolonged or unusual in their time, place and use affect and are a detriment to the public health, comfort, convenience, safety, welfare and prosperity of the residents of the city.

D. Every person is entitled to an environment in which the noise is not detrimental to his or her life, health and enjoyment of property.

E. The necessity in the public interest for the provisions and prohibitions contained and enacted in this chapter is declared to be a matter of legislative determination and public policy and it is further declared that the provisions and prohibitions contained and enacted in this

chapter are in pursuance of and for the purpose of securing and promoting the public health, comfort, convenience, safety, welfare, prosperity, peace and quiet of the city and its inhabitants.

F. In furtherance of the above objective, the city council will when appropriate initiate cooperation with other area agencies, including the 22nd Agricultural District, the Federal Aviation Administration and military authorities at Camp Pendleton and Miramar Naval Air Station, to reduce noise as part of maintaining an overall environment in which noise is not detrimental to life, health, commerce and the enjoyment of property.

G. In consideration of noise abatement and control, the effects of noise on the citizens of Solana Beach shall be considered more important than the measured level of such noises. (Ord. 190 § 1, 1994; Ord. 147 § 1, 1991)

7.34.020 Definitions.

Whenever the following words and phrases are used in this chapter, unless otherwise defined herein, they shall have the meaning ascribed to them in this section:

A. “Aircraft” means any powered vehicle which at any time of its operation is airborne and is used to transport people or materials for whatever purpose.

B. “Ambient sound level” means the composite noise from all sources near and far. In this context, the ambient noise level constitutes a normal or existing level of environmental noise at a given location and time.

C. “Average sound level” means a sound level typical of the sound levels at a certain place during a given period of time, averaged by the general rule of combination for sound levels, the general rule being set forth in American National Standards Institute Specifications for Sound Level Meters S1.4-1971. Average sound level is also called equivalent continuous sound level (Leq).

D. “Commercial purpose, loudspeaking amplifiers for advertising” means and includes the use, operation or maintenance of any sound amplifying equipment for the purpose of advertising any business, or any goods, or any services, or for the purpose of attracting the attention of the public to, or advertising for, or soliciting patronage or customers to or for any performance, show, entertainment, exhibition, or event, or for the purpose of demonstrating such sound equipment.

E. “Container” means any receptacle, regardless of contents, manufactured from wood, metal, plastic, paper or any other material including but not limited to any barrel, basket, box, crate, tub, bottle, can or refuse container.

F. “Decibel” means a unit for measuring the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals.

G. “Disturbing, excessive or offensive noise” means:

1. Any sound or noise which constitutes a nuisance involving discomfort or annoyance to persons of normal sensitivity residing in the area;

2. Any sound or noise exceeding criteria standards, or levels as set forth in this chapter.

H. “Emergency work” means work made necessary to restore property to a safe condition following a public calamity or work required to protect persons or property from imminent exposure to danger or damage or work by public or private utilities when restoring utility service.

I. “Motor vehicles” means any and all self-propelled vehicles as defined in the California Vehicle Code and shall specifically include, but not be limited to, “minibikes” and “go-carts.”

J. “Noise control officer” means the city manager of the city of Solana Beach, or his duly authorized representatives.

K. “Noise level” means “sound level” and the terms may be used interchangeably in this chapter.

L. “Noncommercial purpose, loudspeaking amplifiers for advertising” means the use, operation or maintenance of any sound equipment for other than a “commercial purpose.” “Noncommercial purposes” means and includes, but shall not be limited to, philanthropic, political, patriotic and charitable purposes.

M. “Person” means a person, firm, association, copartnership, joint venture, corporation or any entity, public or private.

N. “Powered model vehicles” means, but shall not be limited to, airborne, waterborne or land vehicles such as model airplanes, model boats, and model vehicles of any type or size which are not designed for carrying persons or property and which can be propelled in any form other than manpower or wind power.

O. “Sound-amplifying equipment” means any machine or device, mobile or stationary, used to amplify music, the human voice, or any sound.

P. “Sound level (noise level)” means the weighted sound pressure level obtained by the use of a sound level meter and frequency weighted network as specified in American National Standards Institute Specifications for Sound Level Meters (ANSI S1.4-1971, or the latest revision thereof). If the frequency weight employed is not indicated, the A-weight is implied.

Q. “Sound level meter” means the instrument, including a microphone, an amplifier, readout, and frequency weighted networks for the measurement of sound levels, which meets or exceeds the requirements pertinent for type S2A meters in the American National Standards Institute Specifications for Sound Level Meters, S1.4-1971, or the latest revision thereof.

R. “Sound truck” means any motor vehicle or other vehicle regardless of motive power whether in motion or stationary having mounted thereon, built-in or attached thereto any sound-amplifying equipment other than a car radio or television.

S. “Watercraft” means any boat, ship, barge, craft or floating thing designed for navigation in the water which is propelled by machinery, whether or not such machinery is the principal source of propulsion, but shall not include a vessel possessing a valid marine document issued by the United States Bureau of Customs or any federal agency successor thereto.

Supplementary definitions of technical terms not defined in this section shall be obtained from the American National Standard, “Acoustical Terminology” S1.1-1961 (R-1971) or the latest revision thereof. (Ord. 147 § 1, 1991)

7.34.030 Sound level measurement.

A. Any sound or noise level measurement made pursuant to the provisions of this chapter shall be measured with a sound level meter using the A-weight and “slow” response pursuant to applicable manufacturer’s instructions.

B. The sound level meter shall be appropriately calibrated and adjusted as necessary by means of an acoustical calibrator of the coupler-type to assure meter accuracy within the tolerances set forth in the American National Standards ANSI S1.4-1971.

C. For outside measurements, the microphone shall be not less than four feet above the ground, at least four feet distant from walls or other large reflecting surfaces and shall be protected from the effects of wind noises by the use of appropriate wind screens and the location selected shall be at any point on the affected property. In cases when the microphone must be located within 10 feet of walls or similar large reflecting surfaces, the actual measured distances and orientation of sources, microphone and reflecting surfaces shall be noted and recorded. In no case shall a noise measurement be taken within five feet of the noise source.

D. For inside measurements, the microphone shall be at least three feet distant from any wall, ceiling or partition, and the average measurement of at least three microphone positions throughout the room shall be determined. (Ord. 147 § 1, 1991)

7.34.040 Sound level limits.

A. Unless a permit has been applied for and granted pursuant to this chapter, it shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below except as provided in SBMC 7.34.170 and construction noise level limits governed by SBMC 7.34.100. The noise subject to the limits set forth below is that part of the total noise at the specified location that is due solely to the action of said person. The limits apply to the source of the noise only, not the source of the noise plus the ambient noise level.

Zone	Applicable Limit One-Hour Average Sound Level (Decibels)	
ER1, ER2, LR, LMR, MR	7:00 a.m. to 10:00 p.m.	50
Residential	10:00 p.m. to 7:00 a.m.	45
MHR, HR	7:00 a.m. to 10:00 p.m.	55
Residential	10:00 p.m. to 7:00 a.m.	45
C, LC, OP	7:00 a.m. to 10:00 p.m.	60
Commercial Office	10:00 p.m to 7:00 a.m.	55

LI, SC	7:00 a.m. to 10:00 p.m.	70
Light Industrial and Special Commercial	10:00 p.m. to 7:00 a.m.	60
PI, ROW	7:00 a.m. to 10:00 p.m.	60
Public/Institutional	10:00 p.m. to 7:00 a.m.	45
OSR	7:00 a.m. to 10:00 p.m.	60
Park/Recreational	10:00 p.m. to 7:00 a.m.	45

B. In the event the alleged offensive noise, as judged by the noise control officer, contains a steady, audible tone such as a whine, screech, or hum, or is a repetitive noise such as hammering or riveting, the applicable limits set forth above shall be reduced by five dB. The noise control officer may use an octave band spectral filter coupled to a sound level meter to aid in the judgment of the presence of an audible tone. If the sound intensity measured in any audible octave band exceeds that in adjacent bands by five dB, then an audible tone shall be judged as present.

C. The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts.

D. Fixed location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

E. “Noise control officer” as used in this chapter shall mean the city manager or his/her designee. (Ord. 399 § 1, 2009; Ord. 190 § 2, 1994; Ord. 147 § 1, 1991)

7.34.050 Motor vehicles.

A. Repairs of Motor Vehicles. It is unlawful for any person within the city to repair, rebuild or test any motor vehicle in such a manner as to cause disturbing, excessive or offensive noises as defined in SBMC 7.34.020.

B. On-Highway. Violations for exceeding applicable noise level limits as to persons operating motor vehicles on a public street or highway in the city shall be prosecuted under applicable California Vehicle Code provisions and under federal regulation adopted pursuant to 42 U.S.C. 4905 (a)(1)(A), (B) and (C)(ii), (iii) for which enforcement responsibility is delegated to local governmental agencies.

C. Off-Highway. Except as otherwise provided for in this chapter, it shall be unlawful to operate any motor vehicle of any type on any site other than on a public street or highway as defined in the California Vehicle Code in a manner so as to cause noise in excess of those noise levels permitted for on-highway motor vehicles as specified in the table “35 miles per hour or less speed limits” contained in Section 23130 of the California Vehicle Code.

D. Emergency Vehicles. Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations.

E. Urban Transit Buses. Buses as defined in the California Vehicle Code shall at all times comply with requirements of this section. (Ord. 147 § 1, 1991)

7.34.060 Powered model vehicles.

It is unlawful for any person to operate any powered model vehicle except between the hours of 7:00 a.m. and 9:00 p.m. and then only in such a manner so as not to emit noise in excess of those levels set forth in SBMC 7.34.040; however, if powered model vehicles are operated in public parks at a point more than 100 feet from the property line, the noise level shall be determined at a distance of 100 feet from the noise source instead of at the property line, and noises from powered model vehicles measured at that distance in excess of the noise limits specified in SBMC 7.34.040 are prohibited. (Ord. 147 § 1, 1991)

7.34.070 Solid waste management vehicles and parking lot and sidewalk vacuums.

No person shall operate, or permit to be operated, a refuse compacting, processing, or collection vehicle or a parking lot or sidewalk vacuum between the hours of 6:00 p.m. and 6:30 a.m. in or immediately adjacent to any residential area of the city unless a permit has been applied for and granted pursuant to this chapter. (Ord. 399 § 2, 2009; Ord. 147 § 1, 1991)

7.34.080 Leaf blowers.

A. Regulation. It is unlawful for any person to use or operate within the city any leaf blower powered by a two-stroke gas-powered engine to blow leaves, dirt and other debris off sidewalks, driveways, lawns and other surfaces, except between the hours of 9:00 a.m. and 5:00

p.m. Only non-commercial residential uses of leaf blowers are permitted on Sundays.

B. No person shall operate any leaf blower without attachment of all mufflers and full extension tubes supplied by the manufacturer for that leaf blower.

C. Beginning January 1, 2011, no leaf blower powered by a two-stroke gas engine shall be permitted to operate within the city. (Ord. 399 § 3, 2009; Ord. 147 § 1, 1991)

7.34.090 Watercraft.
Violations for excessive noise of watercraft operating in waters under the jurisdiction of the city shall be prosecuted under applicable provisions of the California Harbors and Navigation Code. (Ord. 147 § 1, 1991)

7.34.100 Construction hours and noise levels limited.
A. The erection, demolition, alteration or repair of any building structure or the grading or excavation of land in such a manner as to create disturbing, excessive or offensive noise during the following hours, except as hereinafter provided, is a violation of this code:

1. Before 7:00 a.m. or after 7:00 p.m., Monday through Friday, and before 8:00 a.m. or after 7:00 p.m. on Saturday;

2. All day on Sunday, New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

B. Exceptions.

1. An owner/occupant or resident/tenant of residential property may engage in home improvement or a home construction project involving the erection, demolition, alteration or repair of a building or structure or the grading or excavation of land on any weekday between the hours of 7:00 a.m. and 7:00 p.m., and on weekends between the hours of 8:00 a.m. and 7:00 p.m.; provided such project is for the benefit of the residential property and is personally carried out by said owner/occupant or resident/tenant.

2. The city manager may grant exceptions of this section by issuing a permit in the following circumstances:

a. When emergency repairs are required to protect the health and safety of any member of the community;

b. In nonresidential zones, provided there are not inhabited dwellings within 1,500 feet of the building or structure being erected, demolished, altered or repaired or the exterior boundaries of the site being graded or excavated.

C. Construction noise levels shall not exceed 75 decibels for more than eight hours [Leq (8)] during any 24-hour period when measured at or with in property lines of any property which is developed and used either in part or in whole for residential purposes.

In the event that lower noise limit standards are established for such construction activity pursuant to state or federal law, such lower limits shall be used as a basis for revising and amending the noise level limits specified in subsection C of this section. (Ord. 147 § 1, 1991)

7.34.110 Containers and construction material.
It is unlawful for any person to handle or transport or cause to be handled or transported in any public place, any container or any construction material in such a way as to create a disturbing, excessive or offensive noise as defined in SBMC 7.34.020. (Ord. 147 § 1, 1991)

7.34.120 Signal device for food trucks.
No person shall operate or cause to have operated or used any sound signal device other than sound-amplification equipment attached to a motor vehicle wagon or manually propelled cart from which food or any other items are sold which emits a sound signal more frequently than once every 10 minutes in any one street block and with a duration of more than 10 seconds for any single emission. The sound level of this sound signal shall not exceed 80 decibels at 50 feet. (Ord. 190 § 3, 1994; Ord. 147 § 1, 1991)

7.34.130 Multiple-family dwelling units.
Notwithstanding any other provisions of this code, is shall be unlawful for any person to create, maintain or cause to be maintained any sound within the interior of any multiple-family dwelling unit which causes the noise level to exceed those limits set forth in the following table in any other dwelling unit. The monitoring procedures outlined under SBMC 7.34.030 shall be followed in enforcing this section.

Multiple-Family Dwelling Units

Type of Land Use	Time	Allowable Interior Noise Level Not to Exceed		
Multifamily Residential	10:00 p.m. to 7:00 a.m.	45 dbA	40dbA	35dbA

7:00 a.m. to 10:00 p.m.	55dbA	50dbA	
	At any time	1 minute in 1 hour	5 minutes in 1 hour

(Ord. 147 § 1, 1991)

7.34.140 General noise regulations.

A. General Prohibitions. Notwithstanding SBMC 7.34.040, it is unlawful for any person to make, continue or cause to be made or continued, within the limits of the city, any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in the area.

The characteristics and conditions which should be considered in determining whether a violation of the provisions of this section exists, include, but are not limited to, the following:

1. The level of noise;

2. Whether the nature of the noise is usual or unusual;

3. Whether the origin of the noise is natural or unnatural;

4. The level of the background noise;

5. The proximity of the noise to sleeping facilities;

6. The nature and zoning of the area within which the noise emanates;

7. The density of the inhabitation of the area within which the noise emanates;

8. The time of the day or night the noise occurs;

9. The duration of the noise; and

10. Whether the noise is recurrent, intermittent or constant.

B. Disturbing, Excessive and Offensive Noises. The following acts, among others, are declared to be disturbing, excessive or offensive noises in violation of this section, but the enumeration shall not be deemed to be exclusive, namely:

1. Horns, Signaling Devices, Etc. Disturbing, excessive or offensive noises associated with the use or operation of horns, signaling devices, etc., on automobiles, motorcycles, or any other vehicles except as provided in SBMC 7.34.100, are prohibited and constitute a violation of this section.

2. Stationary Nonemergency Signaling Devices. The use, operation or the permitting to be used or operated of any stationary nonemergency signaling device including, but not limited to, outside telephone bells, buzzers, beepers or paging systems in such a manner as to disturb the peace, quiet or comfort of neighboring residents or persons of normal sensitivity residing in the area is prohibited.

3. Radios, Television Sets, Phonographs and Similar Devices.

a. Uses Restricted. The use, operation, or permitting to be played, used or operated, any radio, musical instrument, phonograph, CD player, automobile or truck sound system, television set or other device for the production or reproduction of sound in such a manner as to disturb the peace, quiet and comfort of neighboring residents or persons of normal sensitivity residing in the area; or in a manner to exceed those levels set forth in SBMC 7.34.040 when measured at a distance of 25 feet from such device operating in a public right-of-way or public space, except that subject to permit issued by the city of Solana Beach parks and recreation department specifying time, location and other conditions, amplified sound may be permitted within city parks; provided, that said sound does not exceed a level of 90 decibels 50 feet from the source or exceed those levels set forth in SBMC 7.34.040 at the park boundary. This provision will be enforced by the director, parks and recreation department, or his duly authorized representative.

4. Loudspeaking Amplifiers for Advertising. The use, operation or the permitting to be played, used or operated of any sound production or reproduction device or machine including, but not limited to, radio receiving sets, phonographs, musical instruments, loudspeakers and sound amplifiers, for commercial or business advertising purposes in, upon, over or across any street, alley, sidewalk, park or public property in such a manner as to violate the provisions of this chapter is prohibited. This provision shall not be applicable to sound-amplifying equipment mounted on any sound truck or vehicle for commercial or noncommercial purposes where the owner or operator complies with the following requirements:

a. The only sound permitted is music or human speech.

b. Operations are permitted between the hours of 8:00 a.m. and 9:00 p.m., or after 9:00 p.m. during public events and affairs of interest to the general public.

c. Sound-amplifying equipment shall not be operated unless the sound truck upon which such equipment is mounted is operated at a speed of at least 10 miles per hour, except when such truck is stopped or impeded by traffic. Where stopped by traffic the sound-amplifying equipment shall not be operated for longer than one minute at each stop.

d. Sound shall not be issued within 100 yards of hospitals, schools or churches.

e. The volume of sound shall be controlled so that the volume is not raucous, jarring, disturbing or a nuisance to persons within the area of audibility and so that the volume of sound shall not exceed a sound level of 65 decibels (on the A scale) at a distance of 50 feet from the sound-amplifying equipment as measured by a sound level meter which meets the American National Standard ANSI S1.4-1971 or the latest revision thereof.

f. No sound-amplifying equipment shall be operated unless the axis of the center of any sound-reproducing equipment used shall be parallel to the direction of travel of the sound truck; provided, however, that any sound-reproducing equipment may be so placed upon the sound truck as to not vary more than 15 degrees either side of the axis of the center of the direction of travel.

g. No sound truck with its amplifying device in operation shall be driven on the same street past the same point more than twice in a period of one hour.

5. Yelling, Shouting, Etc. Disturbing or raucous yelling, shouting, hooting, whistling or singing on the public streets, particularly between the hours of 10:00 p.m. and 8:00 a.m. or at any other time or place so as to annoy or disturb the quiet, comfort or repose of neighboring residents or persons of normal sensitivity within the area for whatever reason, is prohibited.

6. Hawkers and Peddlers. The shouting or crying out of any peddlers, hawkers and vendors which disturbs the peace and quiet of a neighborhood or persons of normal sensitivity is prohibited. This provision shall not be construed to prohibit the selling by outcry of merchandise, food and beverages at sporting events, parades, fairs, celebrations, festivals, circuses, carnivals and other similar special events for public entertainment.

7. Drums, Other Instruments. The use of any drum or other instrument or device of any kind for the purpose of attracting attention by the creation of noise within the city is prohibited. This provision shall not apply to any person who is a participant in a school band or legally authorized parade or who has been otherwise duly authorized by the city to engage in such conduct.

8. Animals. The keeping or maintenance, or the permitting to be kept or maintained upon any premises owned, occupied or controlled by any person of any animal which by any frequent or long-continued noise shall cause annoyance or discomfort to persons of normal sensitivity in the vicinity; provided, however, that nothing contained herein shall be construed to apply to occasional noises emanating from legally operated dog and cat hospitals, humane societies, pounds, farm and/or agricultural facilities.

9. Schools, Libraries, Churches, Hospitals. The creation of any noise on any street, sidewalk or public place adjacent to any school, institution of learning (except recreational areas of schools), church or library, while the same are in use; or adjacent to a hospital, rest home, or long-term medical or mental care facility which noise interferes with the workings of such institution or which disturbs or annoys patients in the hospital, rest home or long-term medical or mental care facility, provided conspicuous signs are displayed in such streets, sidewalks or public places indicating the presence of a school, institution of learning, church, library, rest home or long-term medical or mental care facility, is prohibited.

10. Steam Whistles and Air Horns. The operation, use or causing to be operated or used of any steam whistle attached to any stationary boiler or of any air horn is prohibited except to give notice of the time to start or stop work or as a sound signal of imminent danger. Use of steam whistles and air horns for time signals shall be prohibited between the hours of 10:00 p.m. and 7:00 a.m.

11. Engines and Motor Vehicles. Any disturbing or raucous noises caused off streets or highways by racing or accelerating the engine of any motor vehicle while moving or not moving, by the willful backfiring of any engine and exhaust from the engine tailpipe or muffler, or from the screeching of tires, is prohibited.

12. Evidence to Initiate Investigation. The written affirmation by two persons having separate residences that a violation of this section disturbs the peace and quiet of such persons shall be sufficient evidence to prompt an investigation by the city as to whether a violation of this section of this chapter has occurred. (Ord. 399 § 4, 2009; Ord. 190 §§ 4, 5, 6, 1994; Ord. 147 § 1, 1991)

7.34.150 Burglar alarms.

A. Any building burglar alarm must have an automatic cutoff, capable of terminating its operation within 15 minutes of the time it is activated. Notwithstanding the requirements of this provision, any member of the sheriff's department of the county of San Diego shall have the right to take such steps as may be reasonable and necessary to disconnect any such alarm during the period of its activation.

B. No owner of a motor vehicle shall have in operation an audible burglar alarm therein unless such burglar alarm shall be capable of terminating its operation within 15 minutes of the time it is activated. Notwithstanding the requirements of this provision, any member of the sheriff's department of the county of San Diego shall have the right to take such steps as may be reasonable and necessary to disconnect any such alarm installed on a motor vehicle at any time during the period of its activation. (Ord. 147 § 1, 1991)

7.34.160 Miscellaneous offenses.

Helicopters shall not be permitted to land within the city of Solana Beach except for emergency or public agency training purposes, without a special permit granted by the city council. (Ord. 190 § 7, 1994; Ord. 147 § 1, 1991)

7.34.170 Exemptions.

A. Emergency Work. The provisions of this chapter shall not apply to any emergency work as defined herein; provided, that:

1. The noise control officer has been notified in advance, if possible, or as soon as practical after the emergency; and

2. Any vehicle, device, apparatus or equipment used, related to or connected with emergency work is designed, modified or equipped to reduce sounds produced to the lowest possible level consistent with effective operation of such vehicle, device, apparatus or equipment.

B. Sporting, Entertainment, Public Events. The provisions of this chapter shall not apply to:

1. Those reasonable sounds emanating from authorized school bands, school athletic and school entertainment events;

2. Sporting, entertainment and public events which are conducted pursuant to a license or permit issued by the city for noise exceeding criteria, standards or levels as set forth in this chapter;

3. Those reasonable sounds emanating from a sporting, entertainment, or public event; provided, however, it shall be unlawful to exceed those levels set forth in SBMC 7.34.040 when measured at or within the property lines of any property which is developed and used either in part or in whole for residential purposes unless a permit has been granted pursuant to this chapter allowing sounds in excess of said levels.

C. Federal or State Preempted Activities. The provisions of this chapter shall not apply to any activity to the extent regulation thereof has been preempted by state or federal law.

D. Minor Maintenance to Residential Property. The provisions of SBMC 7.34.040 shall not apply to noise sources associated with minor maintenance to property used either in part or in whole for residential purposes, provided said activities take place between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday or between the hours of 8:00 a.m. and 7:00 p.m. on Saturday. Work on Sundays and holidays is prohibited unless an owner/ occupant or resident/tenant is engaged in the minor maintenance between the hours of 8:00 a.m. and 7:00 p.m.

E. Agricultural Operations. The provisions of SBMC 7.34.040 shall not apply to equipment associated with agricultural operations; provided, that all equipment and machinery powered by internal-combustion engines is equipped with a proper muffler and air intake silencer in good working order, and provided further, that:

1. Operations do not take place between 7:00 p.m. and the following 7:00 a.m.; or

2. Such operations and equipment are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions; or

3. Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by, or regulations enforced by, the county department of agriculture. (Ord. 399 § 5, 2009; Ord. 147 § 1, 1991)

7.34.180 Manner of enforcement.

The county sheriff shall have primary responsibility for the enforcement of SBMC 7.34.050 and 7.34.150; provided, however, that whenever noise level measurements are required for enforcement, the sheriff shall be assisted by the noise control officer and/or his duly authorized representatives with instrumentation operated and provided by the noise control officer. The noise control officer shall have primary responsibility for the enforcement of all other provisions of this chapter. Pursuant to the provisions of Penal Code Section 836.5, the above-specified enforcement officers are designated as and given the powers of arresting officers including the power to issue citations. Violations of these regulations will be prosecuted in the same manner as other infraction or misdemeanor violations of the municipal code, however, nothing in these regulations shall prevent the sheriff or the noise control officer or his duly authorized representatives from efforts to obtain voluntary compliance by way of warning, notice or educational means. (Ord. 147 § 1, 1991)

7.34.190 Violation – Penalty.

Penalties are designated by SBMC 1.16.010. (Ord. 147 § 1, 1991)

7.34.200 Violations – Additional remedies – Injunctions.

As an additional remedy the operation or maintenance of any device, instrument, vehicle, machinery, or other item in violation of any provision of this chapter for which operation or maintenance causes discomfort or annoyance to persons of normal sensitivity or which endangers the comfort, repose, health or peace of residents in the area, shall be deemed and is declared to be a public nuisance and shall be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction. (Ord. 147 § 1, 1991)

7.34.210 False statement.

No person shall knowingly make a false statement or submit a false document to the noise control officer as to any matter within his jurisdiction. (Ord. 147 § 1, 1991)

7.34.220 Reproductions of permits, etc.

No person shall make, reproduce, alter or cause to be made, reproduced or altered a permit, certificate, or other document issued by the noise control officer or required by this chapter if the purpose of such reproduction or alteration is to evade or violate the provisions of this chapter. (Ord. 147 § 1, 1991)

7.34.230 Display of permits.

Any permit, certificate or other notice required in this chapter shall be displayed or maintained on the premises designated thereon. (Ord. 147 § 1, 1991)

7.34.240 Temporary permits to exceed noise limits.

The noise control officer shall evaluate all applications for temporary permits to exceed the noise limits of this chapter and may grant the permit with respect to time for compliance, subject to such terms, conditions, and requirements as he may deem reasonable to achieving compliance with the provisions of the chapter. Each such permit shall set forth in detail the approved method of achieving compliance and a time schedule for its accomplishment. If in the judgment of the noise control officer, the time for compliance cannot be reasonably determined, a permit to cause the noise may be issued for a specified period of time, subject to revocation or modification after review by the noise control officer at interim times to be designated by the noise control officer in the permit. In determining the reasonableness of the terms of any proposed permit, the noise control officer shall consider the magnitude of nuisance caused by the offensive noise, the uses of the property within the area of impingement by the noise, operations carried on under the existing nonconforming rights or conditional use permits or zone variances, the time factors related to study, design, financing and construction of remedial work, the economic factors related to age and useful life of the equipment and general public interest and welfare. (Ord. 399 § 6, 2009; Ord. 147 § 1, 1991)

7.34.250 Applications for temporary permits.

Every applicant for a temporary permit required by this chapter shall file with the noise control officer a written application on a form prescribed by the officer. The application shall state the name and address of the applicant, the nature of the noise source involved, and such other information as the noise control officer may require. (Ord. 399 § 7, 2009; Ord. 147 § 1, 1991)

7.34.260 Application fees.

Every applicant, except any state or local governmental agency or public district, shall pay a fee of $100.00 for each application for a temporary permit. A request for a duplicate permit shall be made in writing to the noise control officer within 10 days after the destruction, loss or defacement of a permit. A fee of $5.00 shall be charged, except to any state or local government agency or public district, for issuing a duplicate permit. (Ord. 399 § 8, 2009; Ord. 147 § 1, 1991)

7.34.270 Extension fees.

If a permit is to be extended beyond the original use termination date on the permit, the extension fee shall be $50.00. (Ord. 399 § 9, 2009; Ord. 147 § 1, 1991)

7.34.280 Actions on applications.

A. The noise control officer shall act, within 30 days if possible, on an application for a permit and shall notify the applicant in writing by mail or in person of the action taken, namely approval, conditional approval, or denial. Notice of the action taken shall be deemed to have been given when the written notification has been deposited in the mail, postpaid addressed to the address shown on the application, or when personally delivered to the applicant or his representative. Before acting on an application for a permit, the noise control officer may require the applicant to furnish further information or further plans or specifications. Failure of the applicant to provide such further information or further plans or specifications within 10 days shall be grounds for denial of the permit.

B. In the event of denial of an application for a permit, the noise control officer shall notify the applicant in writing of the reasons therefor. Service of this notification may be made in person or by mail, and such service may be proved by the written acknowledgment of the person served or affidavit of the person making the service. The noise control officer shall not accept a further application unless the applicant has complied with the objections specified by the noise control officer as his reasons for denial. (Ord. 399 § 10, 2009; Ord. 147 § 1, 1991)

7.34.290 Applications deemed denied.

The applicant may, at his option, deem the permit denied if the noise control officer fails to act on the application within 30 days after filing, or within 10 days after applicant furnishes the further information, plans and specifications requested by the noise control officer,

whichever is later. (Ord. 399 § 11, 2009; Ord. 147 § 1, 1991)

7.34.300 Provision of sampling and testing facilities.
A person operating under a permit shall provide and maintain such sampling and testing facilities as specified in the permit. (Ord. 399 § 12, 2009; Ord. 147 § 1, 1991)

7.34.310 Appeals.
Within 10 days after notice by the noise control officer of denial or conditional approval of a permit, or within 10 days after the effective date of the revocation of a permit by the noise control officer, the affected person may petition the city council, in writing, for a public hearing. The city council, after notice and a public hearing after filing the petition, may sustain, reverse or modify the action of the noise control officer; such order may be made subject to specified conditions. (Ord. 399 § 13, 2009; Ord. 147 § 1, 1991)

7.34.320 Filing of petition for hearing.
A request for a hearing shall be initiated by the filing of a petition with the city manager's office. A copy of the petition shall also be served to the noise control officer. Service may be made in person or by mail and service may be proved by written acknowledgment of the person served or by the affidavit of the person making the service. (Ord. 147 § 1, 1991)

7.34.330 Contents of petition.
A petition to review a denial or conditional approval of a permit shall include a copy of the permit application, and a copy of the noise control officer's action setting forth the reasons for the denial or the conditions of the approval, and the reasons for appeal. A petition to review a permit revocation shall include a copy of the permit, the noise control officer's revocation notice, including his reasons for revocation, and the reasons for appeal. (Ord. 399 § 14, 2009; Ord. 147 § 1, 1991)

7.34.340 Dismissal of petition.
The petitioner may dismiss his petition at any time before submission of the case to the city council, without a hearing or meeting of the city council. The city manager's office shall notify all interested persons of such dismissal. (Ord. 147 § 1, 1991)

7.34.350 Place of hearing.
All hearings shall be held at the city council chambers. (Ord. 147 § 1, 1991)

7.34.360 Notice of hearing.
The city manager's office shall mail or deliver a notice of hearing to the petitioner and the noise control officer. (Ord. 147 § 1, 1991)

7.34.370 Evidence.
A. Oral evidence shall be taken only on oath or affirmation.

B. Each party shall have these rights: to call and examine witnesses; to introduce exhibits; to cross-examine opposing witnesses on any matter relevant to the issues even though the matter was not covered in the direct examination; to impeach any witness regardless of which party first called him to testify; and to rebut the evidence against him. If respondent does not testify in his own behalf, he may be called and examined as if under cross-examination.

C. The hearing need not be conducted according to technical rules relating to evidence and witnesses. Any relevant evidence shall be admitted if it is the sort of evidence on which responsible persons are accustomed to rely in the conduct of serious affairs, regardless of the existence of any common law or statutory rule which might make improper the admission of such evidence over objection in civil actions. Hearsay evidence may be used for the purpose of supplementing or explaining any direct evidence but shall not be sufficient in itself to support a finding unless it would be admissible over objection in civil actions. The rules of privilege shall be effective to the same extent that they are now or hereafter may be recognized in civil actions and irrelevant and unduly repetitious evidence shall be excluded. (Ord. 147 § 1, 1991)

7.34.380 Official notice.
The city council may take official notice of any matter which may be judicially noticed by the courts of the state. (Ord. 147 § 1, 1991)

7.34.390 Decision.
The city council may affirm, modify or overrule the noise control officer's decisions on permit applications, and shall be guided by the same consideration as set forth in SBMC 7.34.010. A majority of the members of the city council shall be necessary for any action. The decision shall be by written order. If requested by either party, the decision shall contain a brief statement of facts found to be true, the determination of the issues presented and the order of the city council. A copy of the decision shall be mailed or delivered to the noise control officer and the petitioner and to every person who files a written request for the decision with the city manager's office. (Ord. 399 § 15, 2009; Ord. 147 § 1, 1991)

7.34.400 Effective date of decision.
The decision shall become effective 15 days after delivering or mailing a copy of the decision, as provided in SBMC 7.34.380 or the city council may order that the decision shall become effective sooner. (Ord. 147 § 1, 1991)

7.34.410 Severability.

If any section, subsection, sentence, clause, phrase or portion of this chapter is for any reason held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining portions thereof. The city council declares that it would have passed the ordinance codified in this chapter, and each section, subsection, sentence, clause, phrase or portion thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, phrases or portions have been declared invalid or unconstitutional. (Ord. 147 § 1, 1991)

Mobile Version

CONSTRUCTION DATA

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/26/2019
Case Description: SBSD-05

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Building Demo	Residential	60.0	65.0	60.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	250.0	0.0
Excavator	No	40		80.7	250.0	0.0
Excavator	No	40		80.7	250.0	0.0
Excavator	No	40		80.7	250.0	0.0
Dozer	No	40		81.7	250.0	0.0
Dozer	No	40		81.7	250.0	0.0

Results

	Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	75.6	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.6	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/26/2019
Case Description: SBSD-05

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Site Prep	Residential	60.0	65.0	60.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	250.0	0.0
Dozer	No	40		81.7	250.0	0.0
Dozer	No	40		81.7	250.0	0.0
Tractor	No	40	84.0		250.0	0.0
Front End Loader	No	40		79.1	250.0	0.0
Backhoe	No	40		77.6	250.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.0	66.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.0	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/26/2019
Case Description: SBSD-05

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Grading	Residential	60.0	65.0	60.0

Equipment

Description	Impact Device	Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Excavator	No	40		80.7	250.0	0.0
Grader	No	40	85.0		250.0	0.0
Dozer	No	40		81.7	250.0	0.0
Tractor	No	40	84.0		250.0	0.0
Front End Loader	No	40		79.1	250.0	0.0
Backhoe	No	40		77.6	250.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	71.0	67.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.0	66.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.0	71.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/26/2019
Case Description: SBSD-05

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Architectural Coating	Residential	60.0	65.0	60.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	250.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq	Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq	Noise Limit Exceedance (dBA) Day Lmax	Leq	Evening Lmax	Leq	Night Lmax	Leq
Compressor (air)	63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	63.7	59.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/26/2019
Case Description: SBSD-05

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Paving	Residential	60.0	65.0	60.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	250.0	0.0
Paver	No	50		77.2	250.0	0.0
Pavement Scarafier	No	20		89.5	250.0	0.0
Pavement Scarafier	No	20		89.5	250.0	0.0
Roller	No	20		80.0	250.0	0.0
Roller	No	20		80.0	250.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Calculated (dBA) Leq	Noise Limits (dBA) Day Lmax	Noise Limits (dBA) Day Leq	Noise Limits (dBA) Evening Lmax	Noise Limits (dBA) Evening Leq	Noise Limits (dBA) Night Lmax	Noise Limits (dBA) Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Noise Limit Exceedance (dBA) Day Leq	Noise Limit Exceedance (dBA) Evening Lmax	Noise Limit Exceedance (dBA) Evening Leq	Noise Limit Exceedance (dBA) Night Lmax	Noise Limit Exceedance (dBA) Night Leq
Paver	63.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.2	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	75.5	68.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.0	59.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.0	59.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.5	72.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 04/26/2019
Case Description: SBSD-05

**** Receptor #1 ****

Baselines (dBA)

Description	Land Use	Daytime	Evening	Night
Building Construction	Residential	60.0	65.0	60.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	250.0	0.0
Man Lift	No	20		74.7	250.0	0.0
Man Lift	No	20		74.7	250.0	0.0
Man Lift	No	20		74.7	250.0	0.0
Generator	No	50		80.6	250.0	0.0
Tractor	No	40	84.0		250.0	0.0
Front End Loader	No	40		79.1	250.0	0.0
Backhoe	No	40		77.6	250.0	0.0

Results

	Calculated (dBA)		Noise Limits (dBA)				Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	66.6	58.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	60.7	53.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	60.7	53.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	60.7	53.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	66.7	63.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.0	66.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	63.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	70.0	70.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

N/A