

## CHAPTER 7.0

### NOISE

#### 7.1 INTRODUCTION

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 operations.

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 foreseeable 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 indicate 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.

##### 7.1.1.1 Contents of Element

This 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 Noise Element quantifies the community noise environment in terms of noise exposure contours for both near-term 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.

##### 7.1.1.2 Key Issues

1. **Transportation Noise Control** - Within the City of Fountain Valley are a number of transportation related noise sources including one major highway, major arterials and collector roadways. These sources are the major contributors of noise in Fountain Valley. 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 construction activities. 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 City of Fountain Valley 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.

#### 7.1.1.3 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 City of Fountain Valley residents will be protected from excessive noise intrusion.

## 7.2 DESCRIPTION OF NOISE

Noise is unwanted sound which is considered unpleasant and bothersome. Noise has become a serious environmental problem because of its adverse effects on people and the environment. People are exposed to various levels and sources of noise every day, which affects them physically and psychologically. The most apparent physiological effect of noise is the temporary, or in some cases, permanent, loss of

hearing. Noise can disrupt or interfere with communication and disturb sleep. It can also decrease children's ability to discriminate among different sounds, which affects their learning ability.

**7.2.1 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 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are shown in Table 7-1.

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:

**TABLE 7-1**  
**Sound Levels and Loudness of Illustrative Noises**  
**in Indoor and Outdoor Environments**

db(A)	Over-All Level (Sound Pressure Level Approx 0.002 Microbar)	Community (Outdoor)	Home or Industry (Indoor)	Loudness (Human Judgement of Different Sound Levels)
130	UNCOMFORTABLY LOUD	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		Turbo-Fan Aircraft @ Takeoff Power @ 200 Ft. (118)	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times As Loud
110	VERY LOUD	Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (97) Bell J-2A Helicopter @ 200 Ft. (100)		100 dB (A) 8 Times As Loud
100		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
90	MODERATELY LOUD	Car Wash @ 20 Ft. (89) Prop. Plane 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
80		High Urban Ambient Sound (80)** Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. from Pavement Edge. 10 A.M. (76 ± 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner (70)	70 dB (A)
70	QUIET	Air Conditioning Unit @ 100 Ft. (50)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (10)	60 dB (A) 1/2 As Loud
60				
50		Large Transformer @ 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
10	JUST AUDIBLE	{db(A) Scale Interrupted}		
0	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.

\*\* Urban Ambient Sound - includes noises typically found in an urban environment which may consist of the following: automobiles, voices, animals, televisions, radios, lawnmowers, air conditioners, and other various appliances and machinery.

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. Figure 7-1 shows the relationship between noise levels and speech interference.

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.

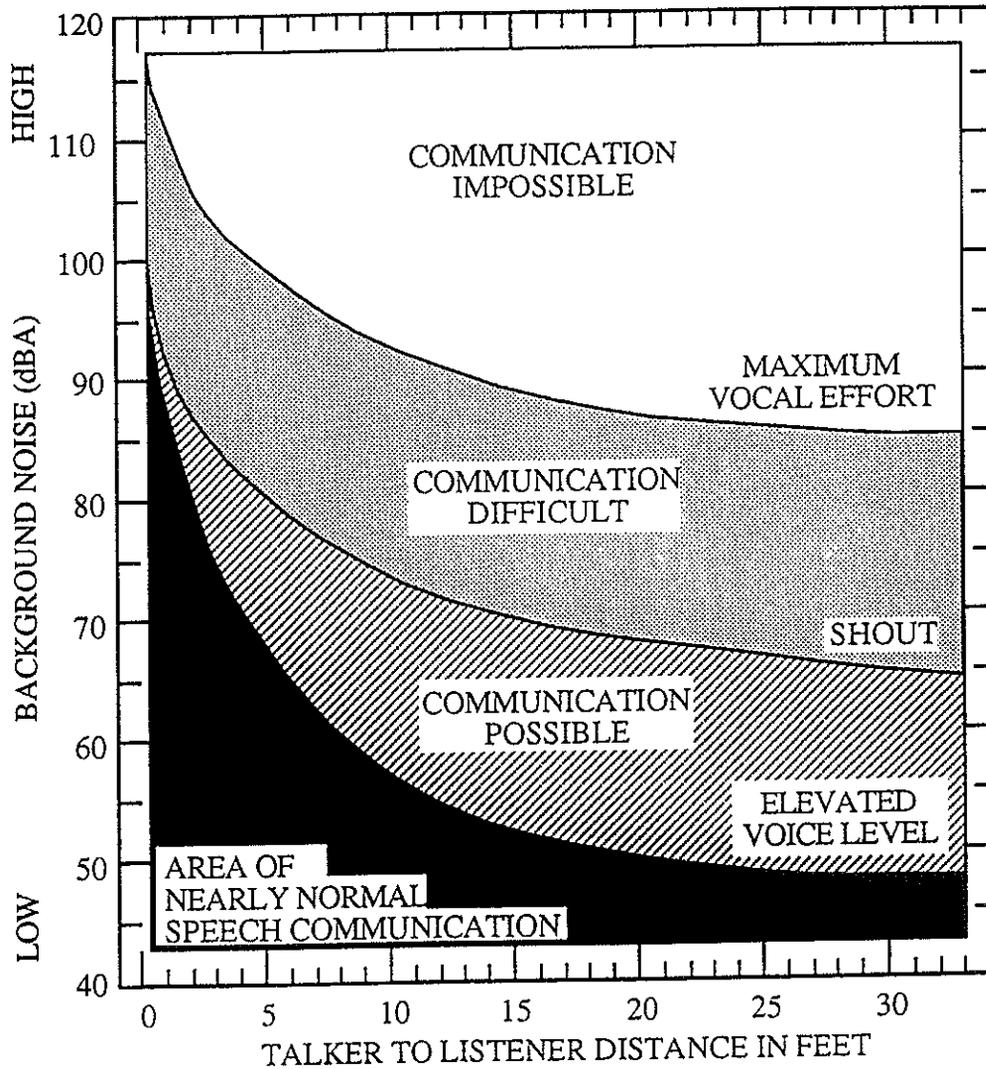
PHYSIOLOGICAL RESPONSES are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

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.

#### 7.2.2 Standards

Community noise is generally not steady state and varies with time. Under conditions of fluctuating noise levels, 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.



Source: Mestre Greve Associates

# Effects of Noise on Speech Interference

## Fountain Valley

Figure 7-1

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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 dB 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 Figure 7-2.

The public reaction to different noise levels varies from community to community. Extensive research has been conducted to human responses to exposure of different levels of noise. Figure 7-3 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.

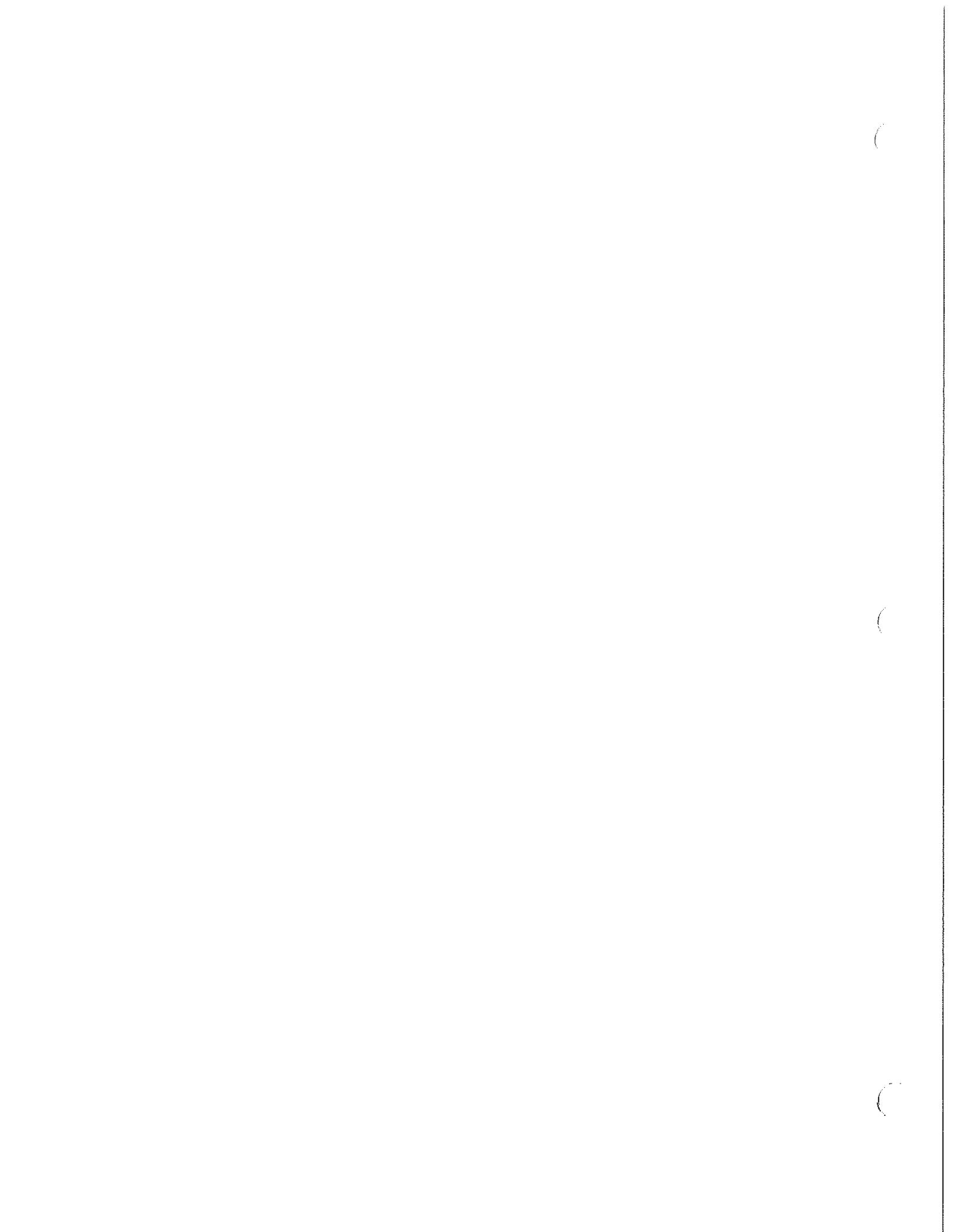
Intermittent or occasional noise such as those associated with stationary noise sources is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the LDN scale. To account for intermittent noise, another method to characterize noise is the Percent 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 Figure 7-4.

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.

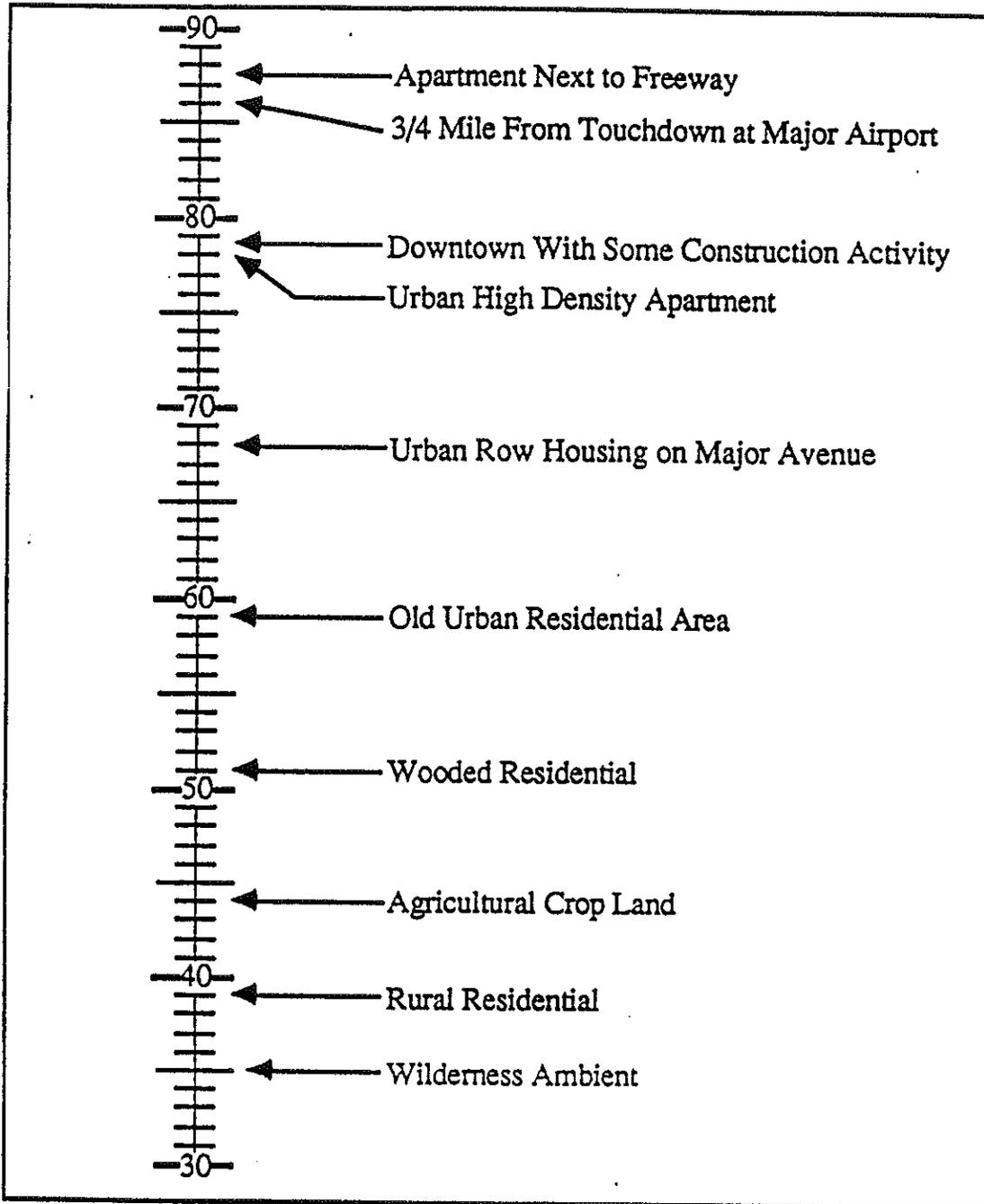
#### **Noise/Land Use Compatibility Guidelines**

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 Fountain Valley 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



# CNEL Outdoor Location



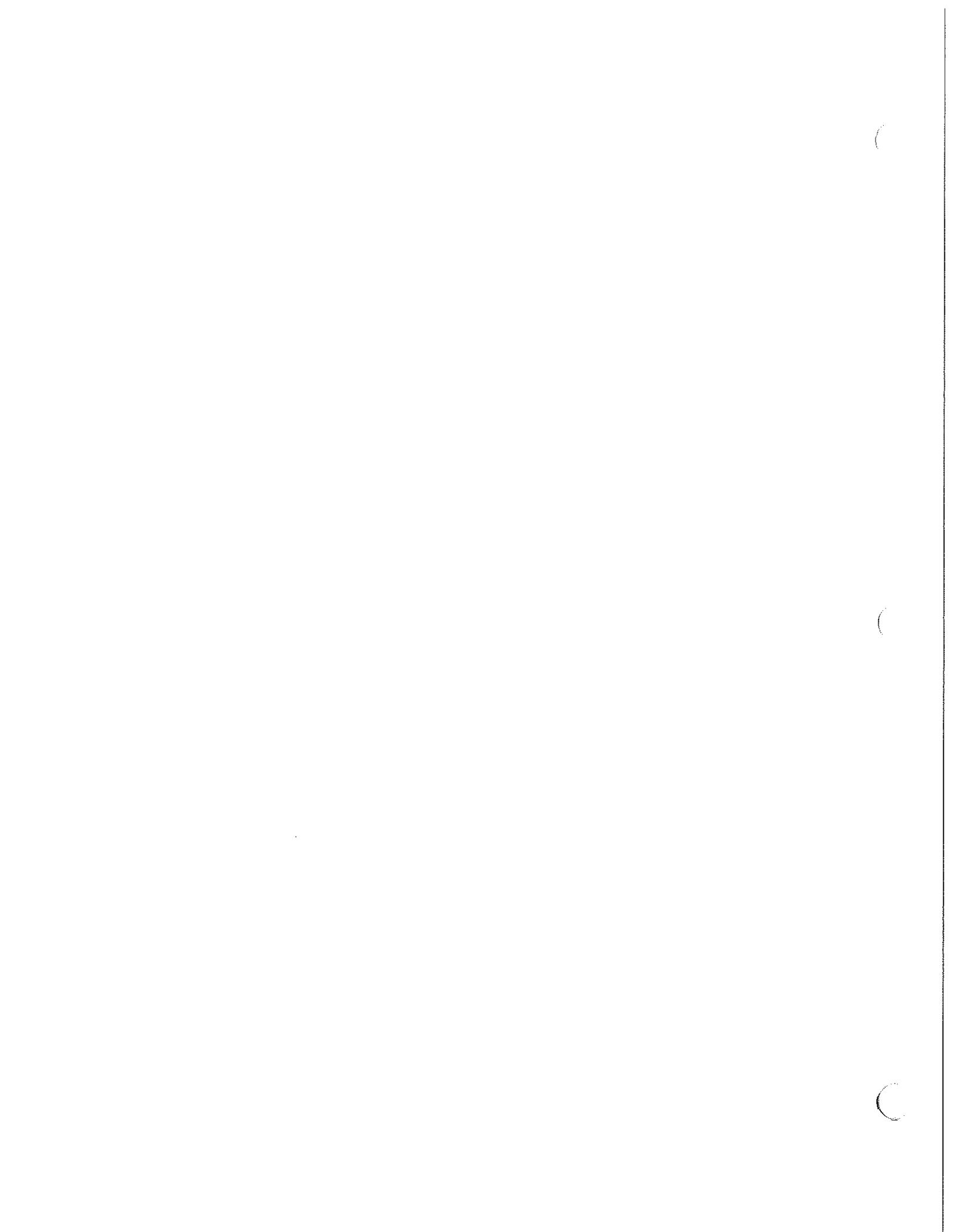
## Typical Outdoor Noise Levels Fountain Valley

Figure 7-2



THE  
KEITH  
COMPANIES

1/25/95



**COMMUNITY REACTION**

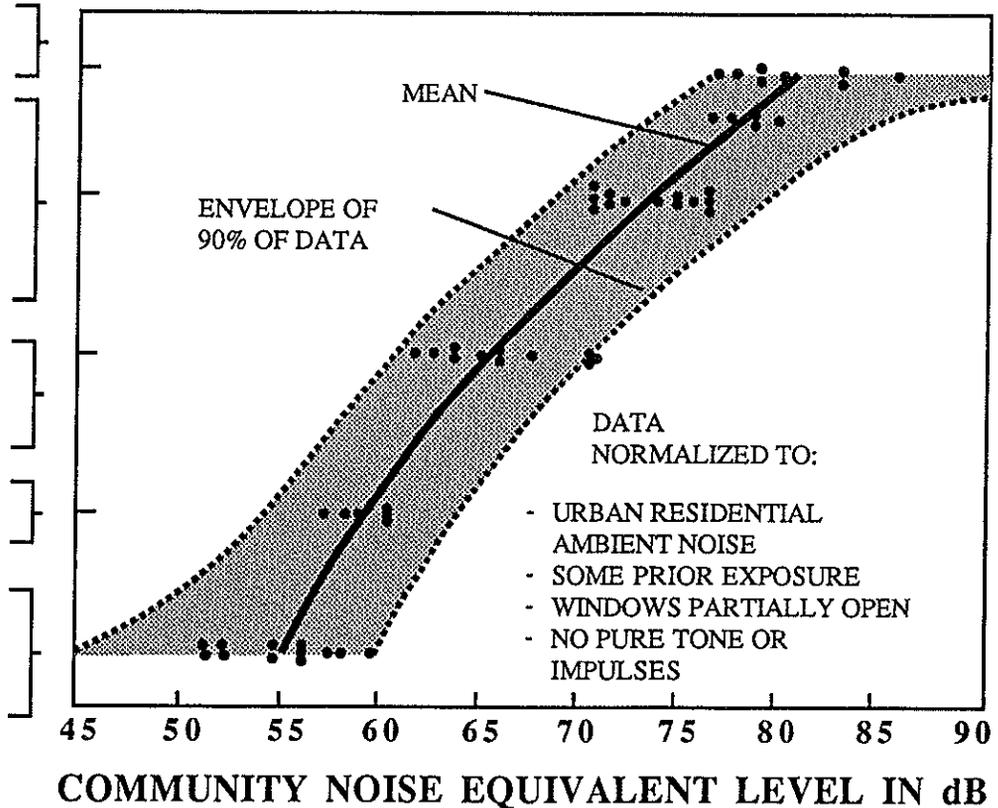
VIGOROUS COMMUNITY ACTION

SEVERAL THREATS OF LEGAL ACTION, OR STRONG APPEALS TO LOCAL OFFICIALS TO STOP NOISE

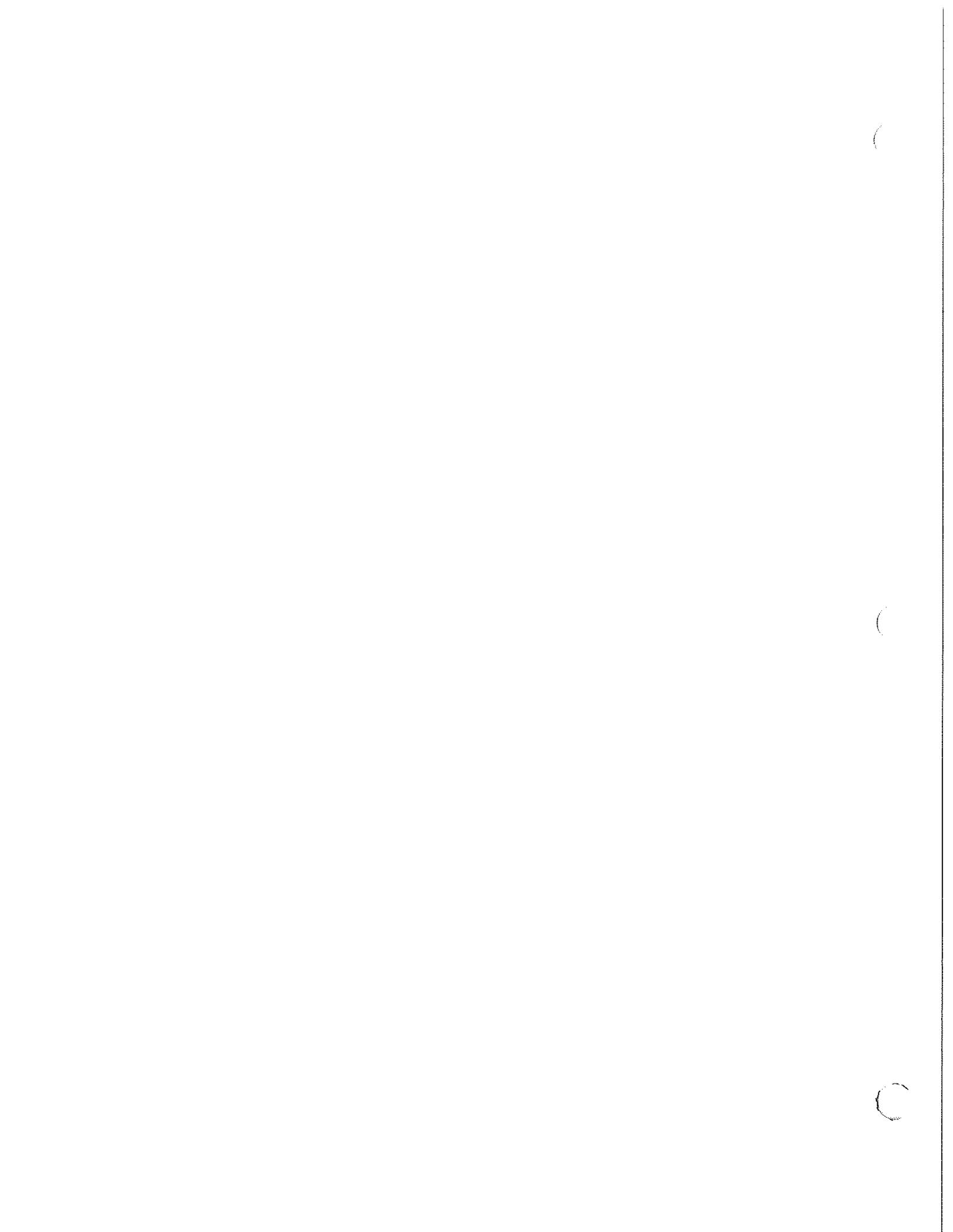
WIDESPREAD COMPLAINTS OR SINGLE THREAT OF LEGAL ACTION

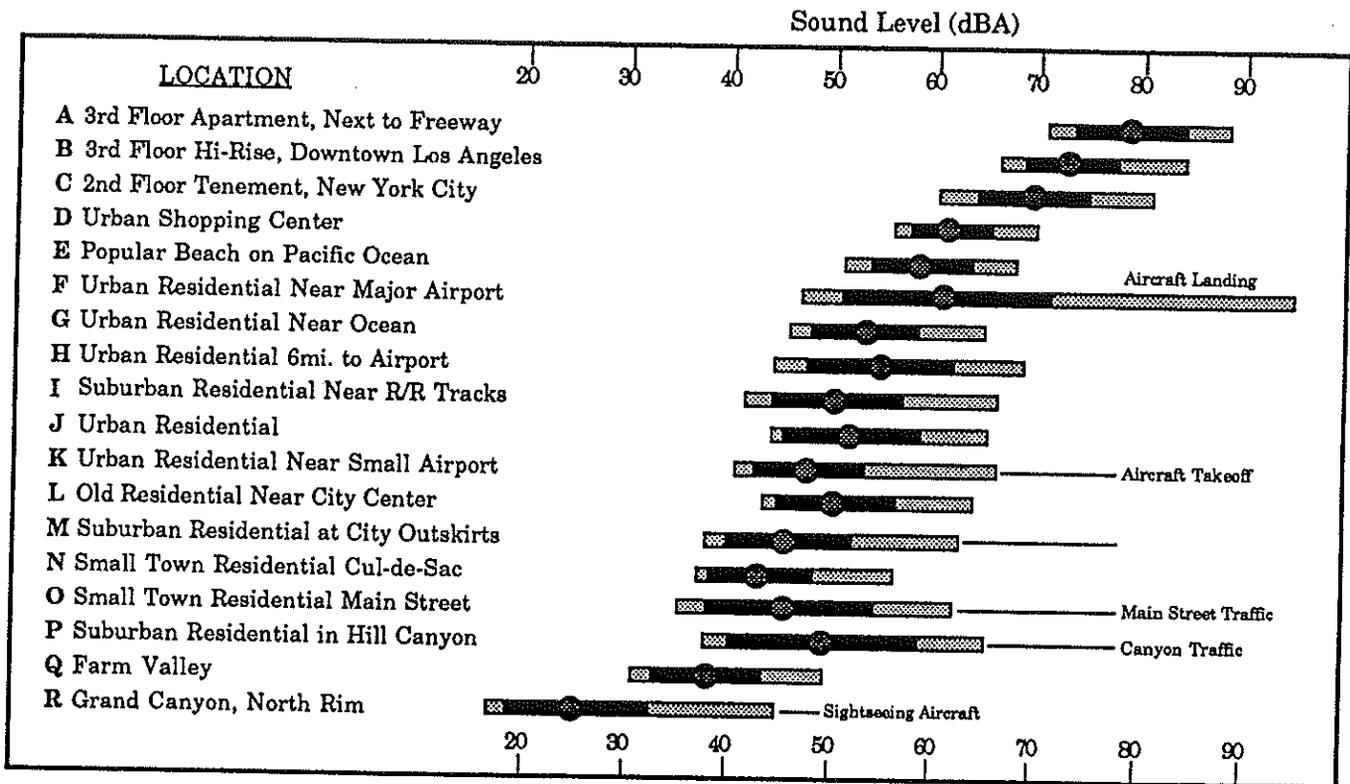
SPORADIC COMPLAINTS

NO REACTION, ALTHOUGH NOISE IS GENERALLY NOTICEABLE

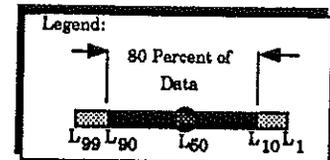


Source: Mestre Greve Associates





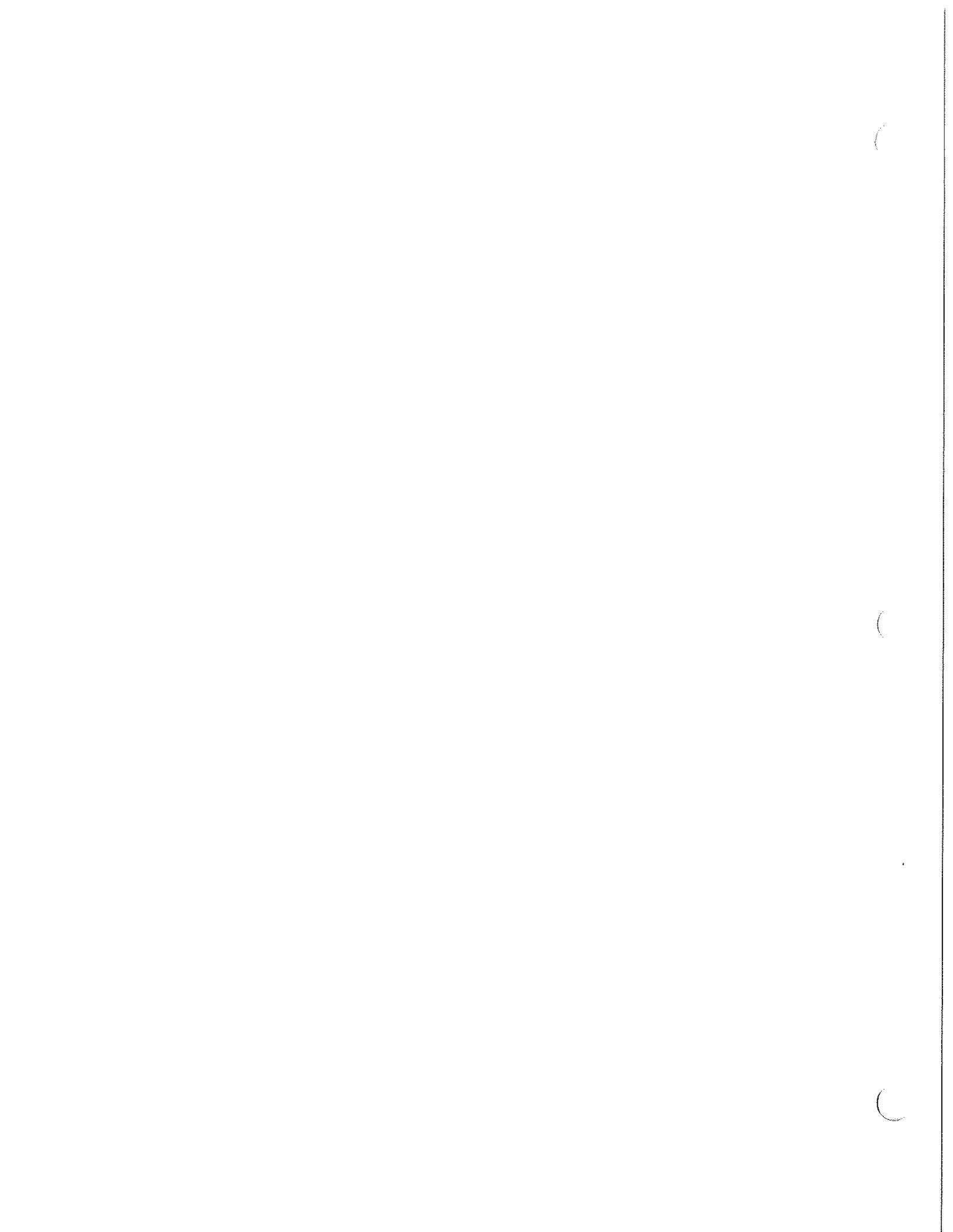
SOURCE: Community Noise, EPA, 1971



# Daytime Outdoor Noise Levels

## Fountain Valley

Figure 7-4



Welfare With an Adequate Margin of Safety" (EPA550/9-74-004). Table 7-2 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 Table 7-3 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). Table 7-4 presents this recommended matrix.

The CITY OF FOUNTAIN VALLEY 1974 NOISE ELEMENT OF THE GENERAL PLAN contains specific guidelines for land use compatibility with community noise environments. These guidelines indicate acceptable and unacceptable noise levels for specific land uses. The County of Orange Noise/Land Use Compatibility Manual also includes exterior and interior noise standards adopted June 11, 1985. The City of Fountain Valley requires that residential outdoor areas not exceed 60 CNEL.

### 7.2.3 Methods of Measurement

The noise environment in Fountain Valley was assessed using a comprehensive noise measurement survey of existing noise sources and incorporating these results into computer noise models for future noise estimates.) The noise environment is commonly presented graphically in terms of lines of equal noise levels, or contours. The following paragraphs detail the methodology used in the above.

**Measurement Procedure.** Sensitive receptor sites were selected for measurement of the existing noise environment of Fountain Valley. A review of noise complaints 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 twelve measurement locations are depicted in Figure 7-5.

The Fountain Valley Noise Element measurement survey utilized the Bruel & Kjaer 2231 automated digital noise data acquisition system for short-term (10 min.) LEQ readings. This instrument automatically calculates both the Equivalent Noise Level (LEQ) and Percent Noise Level (L%) for any specific time period. The noise monitor was equipped with a Bruel & Kjaer calibrator with calibrations traceable to

TABLE 7-2

ENVIRONMENTAL PROTECTION  
AGENCY GUIDELINES

	Measure	Indoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)	Outdoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)
Residential with Outside Space and Farm Residences	Ldn	45		45	55		55
	Leq(24)		70			70	
Residential with No Outside Space	Ldn	45		45			
	Leq(24)		70				
Commercial	Leq(24)	(*)	70	70(c)	(*)	70	70(c)
Inside Transportation	Leq(24)	(*)	70	(*)			
Industrial	Leq(24)(d)	(*)	70	70(c)	(*)	70	70(c)
Hospitals	Ldn	45		45	55		55
	Leq(24)		70			70	
Educational	Ldn	45		45	55		55
	Leq(24)		70			70	
Recreational Areas	Leq(24)	(*)	70	70(c)	(*)	70	70(c)
Farm Land and General Unpopulated Land	Leq(24)				(*)	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 Leq(8) of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours p day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an Leq 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.

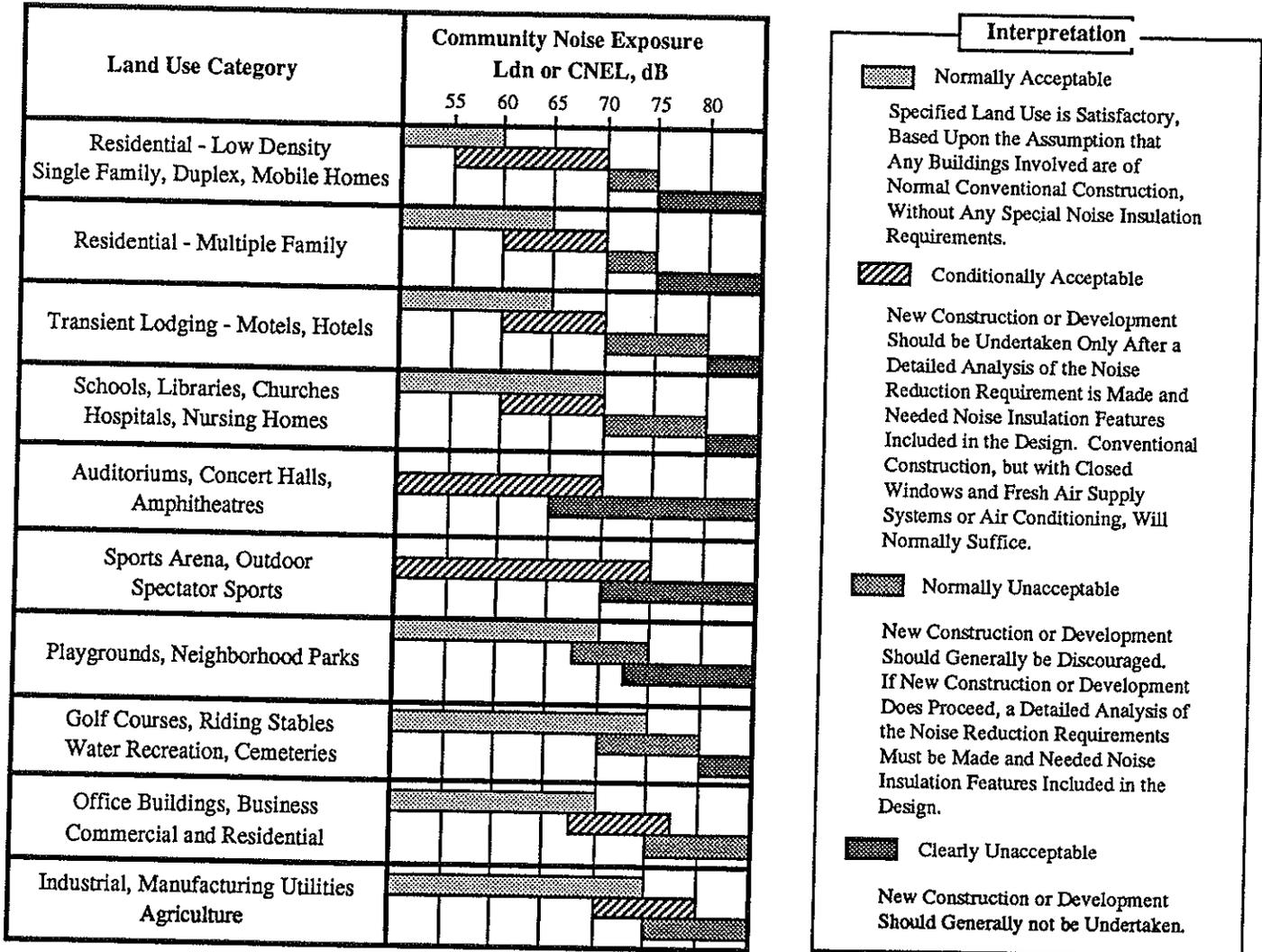
SOURCE : EPA

TABLE 7-3  
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.

Source: Federal Highway Administration

**TABLE 7-4**  
**STATE OF CALIFORNIA NOISE AND LAND USE COMPATIBILITY**



the National Bureau of Standards. Calibration for the calibrators are 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.

Based upon the identification of the major noise sources and the location of sensitive receptors, a noise measurement survey was conducted. The function of the survey is threefold. The first is to determine the existing noise levels at noise sensitive land uses. The second function is to provide empirical data for the correlation and calibration of the computer noise modeled environment. A third important aspect of the survey is to obtain an accurate description of the ambient noise levels in various communities throughout the City. Ambient traffic noise measurements at each site were designed to provide a "snapshot" indication of the traffic noise at the measurement site. (The noise contours based on the CNEL noise scale are perhaps a better indicator of the traffic noise at a given location.) The ambient traffic noise measurements were also used to provide an indication as to the validity of the FHWA traffic noise model used for the CNEL noise projections.

### **7.3 EXISTING ACOUSTIC ENVIRONMENT**

This section contains a detailed description of the current noise environment within the City. This description of the noise environment includes 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 major noise sources in the City are from roadway traffic noise. The

major traffic noise source in the City is Interstate 405 which runs through the City from southeast to northwest. In addition, the City contains a large number of arterials spread uniformly throughout the City. As mandated by the State, noise sensitive receptors include, but are not limited to, residential 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.

#### **7.3.1 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 elementary schools, junior high schools, parks, a hospital and churches.

The City of Fountain Valley is almost fully developed, but it is still heavily used by vehicular traffic by all of the surrounding cities because of the I-405 that traverses through the City. This traffic use will result in increased traffic noise levels throughout the City. Maintenance of a moderately quiet ambience is important to maintaining the overall atmosphere of the area. The ambient noise levels for the City are lower in areas not adjacent to the I-405. Motor vehicle noise will continue to be significant even if each individual vehicle eventually meets state noise standards.

The majority of noise in Fountain Valley originates from motor vehicles. The I-405 is the major roadway noise source for the City. Other primary roadway noise sources include Brookhurst Street, Harbor Boulevard, Warner Avenue, Slater Avenue, Talbert Avenue and Euclid Street. Other arterials which were included in the traffic analysis for the City include Ellis Avenue, Garfield Avenue, Heil Avenue, Edinger Avenue, Magnolia Street, Bushard Street, Ward Street and Newhope Street. Other roadways in the City do not have sufficient traffic volumes to generate significant noise impacts, or were not included in the traffic analysis for the City.

The noise environment for Fountain Valley 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 element.

The traffic noise contours for existing conditions are presented in Figure 7-6 (This map is available for review at the City at 1" = 500' scale.) The 70 CNEL, 65 CNEL and 60 CNEL contours are shown on the map. The noise contours are also presented in tabular format in Table 7-5. 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 volumes used to project these noise levels were obtained from the "Fountain Valley General Plan Traffic Analysis", April 2, 1992 by Austin Foust Associates, Inc., Table 7-6 indicates truck mix data for Interstate 405 obtained from the "1988 Annual Average Daily

Truck Traffic on The California State Highway System" prepared by the U.S. Department of Transportation in August of 1989. Truck mixes for all other arterials are shown in Table 7-7.

The existing noise contours in Table 7-5 and Figure 7-6 can be used with a Land/Use Compatibility Matrix to determine the compatibility of the existing land uses with the existing noise environment. Table 7-8 presents criteria used to assess the compatibility of the existing land uses with the existing noise environment. This land/use compatibility matrix was developed based on the City's current land/use compatibility guidelines from the current Noise Element of the City General Plan and the County's exterior and interior compatibility matrix. The new land/use compatibility matrix Table 7-8 mainly reflects the City guidelines for residential, mobile home, hotel, motel, as well as retail commercial, theater and restaurant land uses.

The existing noise contours (Figure 7-6) show that the noise levels from I-405 constitute a major noise corridor. Commercial and industrial land/uses in the vicinity of this noise corridor have a relatively high noise tolerance. According to the compatibility matrix the commercial and industrial land uses along this noise corridor experience unmitigated noise levels greater than 70 CNEL and are considered "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. Other industrial or commercial land uses in the City are exposed to worst case noise levels in excess of 65 CNEL which is "normally compatible" according to the compatibility matrix.

Residences currently exist along much of the I-405 and are exposed to traffic noise from this major noise corridor. The traffic noise contours

**TABLE 7-5**  
**EXISTING TRAFFIC NOISE CONTOURS**

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet)		
				70 CNEL	65 CNEL	60 CNEL
I-405	North of Magnolia	248.0	55	426	918	1,979
	Magnolia to Brookhurst	247.0	55	425	916	1,973
	Brookhurst to Euclid	263.0	55	443	955	2,058
	South of Euclid	286.0	55	469	1,010	2,176
Edinger	Magnolia to Bushard	18.0	45	RW	99	214
	Bushard to Brookhurst	19.0	45	RW	103	222
	Brookhurst to Ward	22.0	45	53	114	245
	Ward to Euclid	21.0	45	51	110	237
	Euclid to Newhope	18.0	45	RW	99	214
	Newhope to Harbor	18.0	45	RW	99	214
	East of Harbor	19.0	45	RW	103	222
Heil	Magnolia to Bushard	6.0	40	RW	RW	85
	Bushard to Brookhurst	5.0	40	RW	RW	75
	Euclid to Newhope	4.0	40	RW	RW	65
	Newhope to Harbor	5.0	40	RW	RW	75
Warner	Newland to Magnolia	38.0	45	76	164	352
	Magnolia to Bushard	29.0	45	63	137	294
	Bushard to Brookhurst	31.0	45	66	143	308
	Brookhurst to Ward	34.0	45	70	152	327
	Ward to Euclid	28.0	45	62	133	288
	Euclid to Newhope	31.0	45	66	143	308
	Newhope to Harbor	27.0	45	60	130	281
Slater	Newland to Magnolia	18.0	40	RW	82	176
	Magnolia to Bushard	17.0	40	RW	79	170
	Bushard to Brookhurst	20.0	40	RW	88	189
	Brookhurst to Ward	25.0	40	RW	102	220
	Ward to Euclid	17.0	40	RW	79	170
	Euclid to Newhope	17.0	40	RW	79	170
	Newhope to Harbor	20.0	40	RW	88	189
Talbert	Newland to Magnolia	17.0	45	RW	96	206
	Magnolia to Bushard	22.0	45	53	114	245
	Bushard to Brookhurst	28.0	45	62	133	288
	Brookhurst to Ward	26.0	45	59	127	274
	Ward to Euclid	20.0	45	RW	107	230
	Euclid to Newhope	27.0	45	60	130	281

RW - contour falls on roadway right-of-way

ADT - Average Daily Traffic.

\* Represents speed used with FHWA noise model and not necessarily posted speed limit.

Source: Mestres Greve Associates

TABLE 7-5  
(continued)

## EXISTING TRAFFIC NOISE CONTOURS

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet)		
				70 CNEL	65 CNEL	60 CNEL
Ellis	Newland to Magnolia	17.0	40	RW	79	170
	Magnolia to Bushard	18.0	40	RW	82	176
	Bushard to Brookhurst	21.0	40	RW	91	196
	Brookhurst to Ward	22.0	40	RW	94	202
	Ward to Euclid	28.0	40	51	110	237
Garfield	Newland to Magnolia	15.0	45	RW	88	190
	Magnolia to Bushard	17.0	45	RW	96	206
	Bushard to Brookhurst	15.0	45	RW	88	190
	Brookhurst to Ward	9.0	45	RW	63	135
Newland	Garfield to Ellis	16.0	40	RW	76	163
	Ellis to Talbert	17.0	40	RW	79	170
	Talbert to Slater	16.0	40	RW	76	163
	Slater to Warner	17.0	40	RW	79	170
Magnolia	Garfield to Ellis	25.0	45	57	124	267
	Ellis to Talbert	28.0	45	62	133	288
	Talbert to Slater	28.0	45	62	133	288
	Slater to Warner	30.0	45	65	140	301
	Warner to Heil	28.0	45	62	133	288
	Heil to Edinger	30.0	45	65	140	301
Bushard	Garfield to Ellis	18.0	40	RW	82	176
	Ellis to Talbert	19.0	40	RW	85	183
	Talbert to Slater	16.0	40	RW	76	163
	Slater to Warner	18.0	40	RW	82	176
	Warner to Heil	18.0	40	RW	82	176
	Heil to Edinger	14.0	40	RW	69	149
Brookhurst	Garfield to Ellis	49.0	45	90	194	418
	Ellis to Talbert	50.0	45	91	196	423
	Talbert to Slater	54.0	45	96	207	446
	Slater to Warner	42.0	45	81	175	377
	Warner to Heil	41.0	45	80	172	371
	Heil to Edinger	39.0	45	77	166	359
	Edinger to MacFadden	35.0	45	72	155	334
Ward	Garfield to Ellis	15.0	45	RW	88	190
	Ellis to Talbert	10.0	40	RW	55	119
	Talbert to Slater	11.0	40	RW	59	127
	Slater to Warner	6.0	40	RW	RW	85
	Edinger to McFadden	7.0	40	RW	RW	94

RW - contour falls on roadway right-of-way

ADT - Average Daily Traffic.

\* Represents speed used with FHWA noise model and not necessarily posted speed limit.

**TABLE 7-5**  
**(continued)**

**EXISTING TRAFFIC NOISE CONTOURS**

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet)		
				70 CNEL	65 CNEL	60 CNEL
Euclid	Ellis to Talbert	31.0	45	66	143	308
	Talbert to Slater	27.0	45	60	130	281
	Slater to Warner	26.0	45	59	127	274
	Warner to Heil	33.0	45	69	149	321
	Heil to Edinger	31.0	45	66	143	308
	Edinger to McFadden	28.0	45	62	133	288
Newhope	MacArthur to Slater	9.0	40	RW	52	111
	Slater to Warner	20.0	40	RW	88	189
	Warner to Heil	19.0	40	RW	85	183
	Heil to Edinger	20.0	40	RW	88	189
Harbor	Warner to Edinger	39.0	45	77	166	359
	Edinger to McFadden	39.0	45	77	166	359

RW - contour falls on roadway right-of-way

ADT - Average Daily Traffic.

\* Represents speed used with FHWA noise model and not necessarily posted speed limit.

Source: Mestres Greve Associates

**TABLE 7-6**

**TRUCK MIX DATA FOR MAJOR NOISE SOURCES**

ROADWAY	% Medium Trucks	% Heavy Trucks
I-405	4.3	28

The traffic distribution used in the arterial roadway CNEL calculations are presented below in Table 7-7. These traffic distribution estimates are based upon traffic surveys, and are considered typical for residential roadways in California.

**TABLE 7-7**

**TRAFFIC DISTRIBUTION PER TIME OF DAY  
IN PERCENT OF ADT FOR ARTERIALS**

VEHICLE TYPE	PERCENT OF ADT		
	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

Existing noise contours for the City were generated using the above input data with the FHWA computer noise model. The results are shown in Table 7-5 Figure 7-6 and do not account for barrier effects due to intervening topography such as berms or existing noise barriers along the roadways.

in Figure 7-6 and the data in Table 7.5 indicate that without considering the existing sound walls, the residences along I-405 are exposed to worst case unmitigated noise levels just less than 75 CNEL. However, a comparison of calibrated modeled levels and the measured noise levels along the freeway indicate that the existing sound wall provides a noise reduction ranging from 8 dB to 16 dB depending on the wall height and location along I-405. Therefore, the residences along the I-405 experience mitigated noise levels ranging from just less than 60 CNEL to just less than 70 CNEL with the existing freeway sound wall. The compatibility matrix indicates that residences experiencing noise levels less than 60 CNEL are considered "clearly compatible." The land/use compatibility matrix defines "clearly compatible" as "Specified land use is satisfactory based upon the assumption that buildings involved are of normal conventional construction without any special noise insulation requirements." According to the compatibility matrix residential land uses experiencing noise levels between 60 and 65 CNEL are considered "normally compatible" as defined earlier those existing residences experiencing mitigated traffic noise levels just less than 70 CNEL are considered "normally incompatible"; New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Existing residences experience traffic noise from all of the major arterials which traverse the City. The traffic noise contours shown in Figure 7-6 indicate that the existing residences along Garfield Avenue, Ellis Avenue, Talbert Avenue, Slater Avenue, Warner Avenue, Edinger Avenue, Magnolia Street, Bushard Street, Brookhurst Street, Ward Street, Euclid Street, Newhope Street and Harbor Boulevard experience unmitigated traffic noise levels in excess of 65 CNEL, which is considered "normally incompatible" according to the compatibility matrix. Residences located along

Heil Avenue experience traffic noise levels greater than 60 CNEL which is considered "normally compatible". Existing residences which are not located directly adjacent to these roadways will experience traffic noise levels less than 60 CNEL which is considered "clearly compatible".

The existing mobile homes located along Talbert Avenue experience traffic noise levels just greater than 65 CNEL. According to the compatibility matrix in Table 7-8 mobile home land uses experiencing noise levels in just greater than 65 CNEL are considered "normally incompatible". The existing mobile homes located along Bushard Street experience traffic noise levels just less than 65 CNEL which is considered "normally compatible".

Hospital land uses located at the corner of Warner Avenue and Euclid Street, and at the corner of Talbert Avenue and Brookhurst Street experience worst case traffic noise levels greater than 65 CNEL. The compatibility matrix indicates that hospital land uses experience traffic noise levels greater than 65 CNEL and are considered "normally incompatible".

Existing school land uses throughout the City are generally located away from I-405, except for Fountain Valley High School and the McDowell Elementary School. This high school and elementary school experience worst case traffic noise levels in excess of 70 CNEL, which is considered "normally incompatible." Existing schools located along Newhope Street, between Slater Avenue and Edinger Avenue, and along Slater Avenue, Bushard Street and Ellis Avenue generally experience worst case traffic noise levels ranging between 60 and 65 CNEL. The compatibility matrix indicates that school land uses exposed to noise levels in excess of 60 CNEL are considered "normally incompatible." All other school land uses in the City are set back from roadways and experience traffic noise levels less than 60 CNEL, which is considered "clearly acceptable."

**TABLE 7-8  
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	C	C	D
RESIDENTIAL	Mobile Homes	A	A	B	C	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	A	B	C	D
COMMERCIAL Regional Village District, Special	Commercial Retail, Bank Restaurant, Movie Theatre	A	A	B	B	B	D
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research and Development, Professional Offices City Office Building	A	A	B	B	B	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	A	B	C	C	D	D
COMMERCIAL Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track Equestrian Center, Sports Club	A	A	B	B	C	D
COMMERCIAL General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing Wholesale, Utilities	A	A	A	B	B	D
INSTITUTIONAL General	Hospital, Church, Library Schools' Classroom	A	B	C	C	C	D
OPEN SPACE	Parks	A	A	B	C	C	D
OPEN SPACE	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	B	B	C	D
AGRICULTURE	Agriculture	A	A	A	A	A	B

**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.

The parks in the City generally experience traffic noise levels ranging from less than 60 CNEL to 65 CNEL, except for Mile Square Park and along I-405. Mile Square Park experiences worst case traffic noise levels in excess of 65 CNEL which is considered "normally incompatible." However, most of the area within Mile Square Park is located outside the 60 CNEL and is considered "clearly compatible" according to the compatibility matrix. Los Alamos Park, which is adjacent to the I-405, experiences traffic noise levels in excess of 70 CNEL and is considered "normally incompatible." Most other parks throughout the City experience worst case traffic noise levels between 60 and 65 CNEL and are considered "normally compatible" as indicated in the compatibility matrix. Those parks which are set back from major roadways in the City experience traffic noise levels less than 60 CNEL and are considered "clearly compatible."

Most of the existing churches throughout the City are located along major arterials and experience worst case traffic noise levels greater than 65 CNEL which is considered "normally incompatible." Figure 7-6 indicates that two existing church sites are located adjacent to I-405 and experience unmitigated traffic noise levels in excess of 70 CNEL, which is considered "normally incompatible."

It appears that 60 CNEL is a reasonable noise standard for future outdoor living areas for two main reasons. The first is that City is almost fully developed and traffic noise along most of the roadways is not expected to increase significantly. Secondly, this 60 CNEL standard is consistent with the existing compatibility guidelines for the City and would help maintain the overall moderately quiet ambient noise level for the City. A reasonable indoor noise standard is 45 CNEL which is consistent with the State indoor residential standards. Therefore these standards are consistent with current guidelines for the City of Fountain Valley and are a reasonable long term goal for existing residential areas considering the limited amount of future development proposed for the City.

### 7.3.2 Noise Sensitive Land Uses

The most noise sensitive land use in Fountain Valley 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 Fountain Valley has a number of public educational facilities, hospital and parks that are considered noise sensitive. These facilities are generally spread evenly throughout the City.

Noise contours represent lines of equal noise exposure, just as the contour lines on a topographic map are lines of equal elevation. The contour lines shown in Figure 7-6 are the 60, 65 to 70 CNEL traffic noise contours. The noise contours along with Table 7-8 should be used as a guide for land use planning. The 55 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 60 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 the Noise Element are achieved.

## 7.4 FUTURE ACOUSTIC ENVIRONMENT

### 7.4.1 Noise Sources and Levels

Future traffic noise levels were computed using the FHWA Highway Traffic Noise Prediction Model with projected traffic volumes from the Fountain Valley General Plan Traffic Analysis by Austin Foust Associates, June 2, 1992. Table 7-9A shows the future buildout traffic noise contour data along the I-405 and the City's major arterials that are projected for future buildout of the proposed general plan, without the extension of Newhope Street from Talbert to Euclid. For future buildout conditions with the Newhope extension noise contour distances are shown in Table 7-9B, but only for those roadway segments where traffic noise will be significantly different from the "without Newhope extension" scenario.

TABLE 7-9A

**FUTURE TRAFFIC NOISE CONTOURS  
(Without the Newhope Extension from  
Talbert Avenue to Euclid Street)**

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet)		
				70 CNEL	65 CNEL	60 CNEL
I-405	North of Magnolia	323.0	55	508	1,095	2,360
	Magnolia to Brookhurst	317.0	55	502	1,082	2,330
	Brookhurst to Euclid	335.0	55	521	1,122	2,418
	South of Euclid	360.0	55	546	1,177	2,537
Edinger	Magnolia to Bushard	23.0	45	54	117	252
	Bushard to Brookhurst	25.0	45	57	124	267
	Brookhurst to Ward	31.0	45	66	143	308
	Ward to Euclid	30.0	45	65	140	301
	Euclid to Newhope	28.0	45	62	133	288
	Newhope to Harbor	27.0	45	60	130	281
	East of Harbor	27.0	45	60	130	281
Heil	Magnolia to Bushard	16.0	40	RW	76	163
	Bushard to Brookhurst	12.0	40	RW	62	135
	Euclid to Newhope	7.0	40	RW	RW	94
	Newhope to Harbor	10.0	40	RW	55	119
Warner	Newland to Magnolia	41.0	45	80	172	371
	Magnolia to I-405	33.0	45	69	149	321
	I-405 to Bushard	51.0	45	92	199	429
	Bushard to Brookhurst	43.0	45	82	178	383
	Brookhurst to Ward	51.0	45	92	199	429
	Ward to Euclid	43.0	45	82	178	383
	Euclid to Newhope	45.0	45	85	183	395
	Newhope to Harbor	38.0	45	76	164	352
Slater	Newland to Magnolia	20.0	40	RW	88	189
	Magnolia to Bushard	22.0	40	RW	94	202
	Bushard to Brookhurst	25.0	40	RW	102	220
	Brookhurst to Ward	33.0	40	57	123	264
	Ward to Euclid	23.0	40	RW	96	208
	Euclid to Newhope	23.0	40	RW	96	208
	Newhope to Harbor	25.0	40	RW	102	220
Talbert	Newland to Magnolia	23.0	45	54	117	252
	Magnolia to Bushard	27.0	45	60	130	281
	Bushard to Brookhurst	33.0	45	69	149	321
	Brookhurst to I-405	35.0	45	72	155	334
	I-405 to Ward	24.0	45	56	120	259
	Ward to Euclid	29.0	45	63	137	294
	Euclid to Newhope	42.0	45	81	175	377
	Newhope to Harbor	41.0	45	80	172	371

RW - contour falls on roadway right-of-way

ADT - Average Daily Traffic.

\* Represents speed used with FHWA noise model and not necessarily posted speed limit.

**TABLE 7-9A  
(Continued)**

**FUTURE TRAFFIC NOISE CONTOURS  
(Without the Newhope Extension from  
Talbert Avenue to Euclid Street)**

Roadway		ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet)		
				70 CNEL	65 CNEL	60 CNEL
Euclid	Ellis to I-405 on-ramp	36.0	45	73	158	340
	I-405 on-ramp to Talbert	47.0	45	87	188	406
	Talbert to Slater	36.0	45	73	158	340
	Slater to Warner	31.0	45	66	143	308
	Warner to Heil	38.0	45	76	164	352
	Heil to Edinger	37.0	45	75	161	346
	Edinger to McFadden	35.0	45	72	155	334
Newhope	MacArthur to Slater	15.0	40	RW	73	156
	Slater to Warner	28.0	40	51	110	237
	Warner to Heil	25.0	40	RW	102	220
	Heil to Edinger	25.0	40	RW	102	220
Harbor	Warner to Heil	56.0	45	98	212	456
	Heil to Edinger	54.0	45	96	207	446
	Edinger to McFadden	48.0	45	89	191	412

RW - contour falls on roadway right-of-way

ADT - Average Daily Traffic.

\* Represents speed used with FHWA noise model and not necessarily posted speed limit.

TABLE 7-9B

**FUTURE TRAFFIC NOISE CONTOURS  
(With the Newhope Extension from  
Talbert Avenue to Euclid Street)**

Roadway	ADT (in 1000's)	SPEED MPH*	Distance to CNEL Contour (feet)		
			70 CNEL	65 CNEL	60 CNEL
Slater Euclid to Magnolia	19.0	40	39	85	183
Talbert I-405 to Ward	22.0	45	53	114	245
	Ward to Euclid	27.0	45	60	130
Euclid Euclid to Newhope	27.0	45	60	130	281
	I-405 on-ramp to Talbert	25.0	45	57	124
Newhope Talbert to Slater	31.0	45	66	143	308
	I-405 to MacArthur	24.0	40	46	99
MacArthur to Slater	21.0	40	42	91	196

NOTE: These roadway segments will generate noise levels significantly different from future the "without the Newhope extension" scenario)

RW - Contour falls inside the roadway right-of-way.

\* Represents speed used with FHWA noise model and not necessarily posted speed limit.

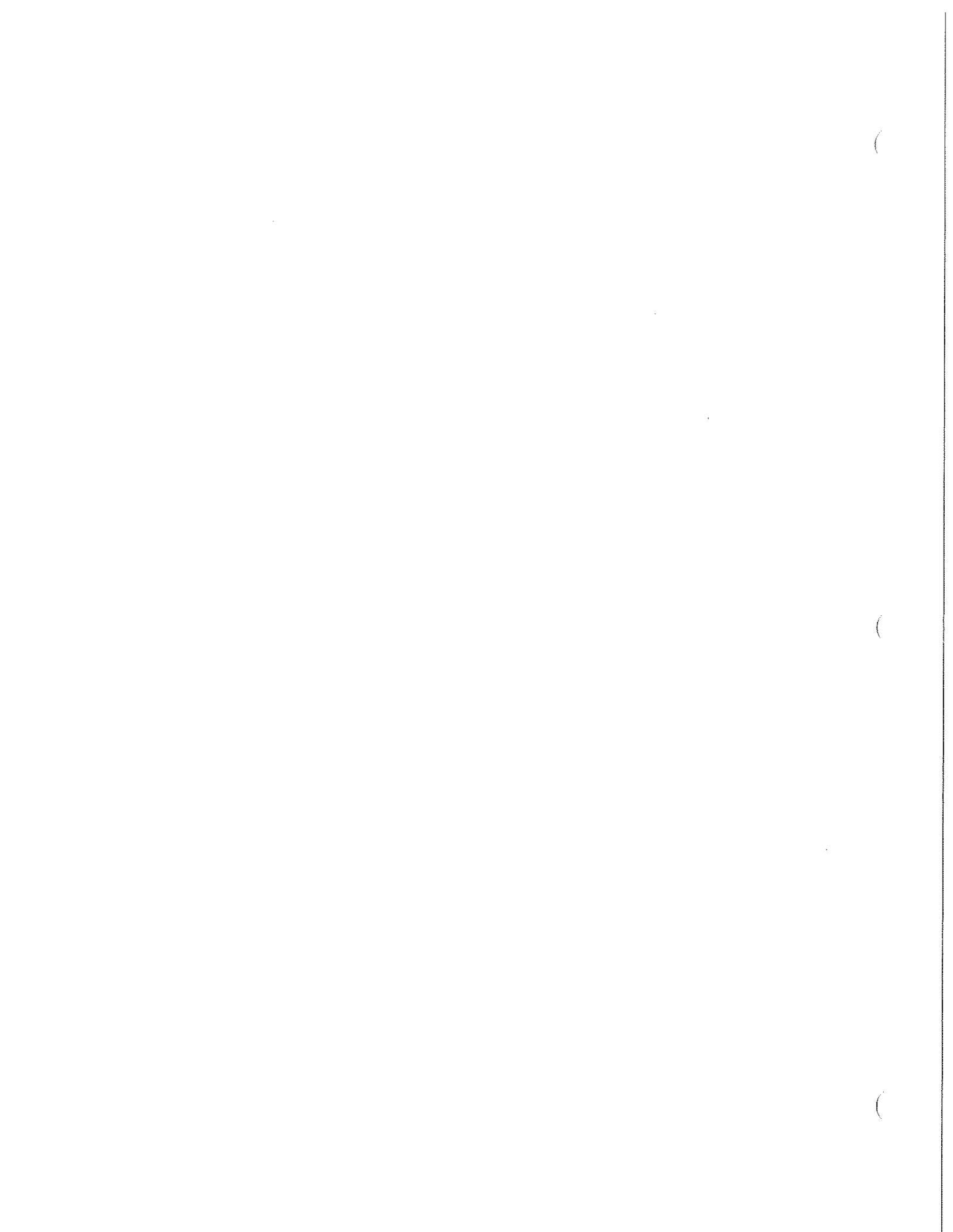
Land use compatibility was assessed by comparing future traffic noise levels represented in Table 7-9A and 7-9B and Figure 7-7 with the land/use compatibility matrix presented in Table 7-8. This land/use compatibility matrix indicates acceptable limits of noise recommended for the City. The following discussion applies to future conditions with or without the Newhope extension unless stated otherwise.

Based on future traffic levels shown in Figure 7-7 the areas of the City that will experience future traffic noise levels up to 75 CNEL are along I-405. In general land uses along other major roadways throughout the City will experience worst case traffic noise levels up to 70 CNEL. Areas along other principal arterials in the City will generally experience worst case future traffic noise levels ranging from 60 to 65 CNEL.

The future noise contours (Figure 7-7) show that the noise levels from I-405 constitute a major noise corridor. Commercial and industrial land/uses have a relatively high noise tolerance. According to the compatibility matrix the commercial and industrial land uses along this noise corridor experience unmitigated noise levels up to 75 CNEL and are considered "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. Other industrial or commercial land uses will be located along major roadways throughout the City and are exposed to worst case noise levels up to 70 CNEL which is "normally compatible" according to the compatibility matrix. Figure 7-7 indicates that the above results will apply for future conditions with or without the Newhope Street extension. However, for future conditions with the Newhope extension, the commercial manufacturing land use adjacent to the extended portion of Newhope Street will experience traffic noise levels up to 70 CNEL which is considered "normally compatible" according to the compatibility matrix.

Residences are planned along much of the I-405 and are exposed to traffic noise from this major noise corridor. The traffic noise contours in Figure 7-7 and the data in Table 7-9A indicate that without considering the existing sound walls, the residences along I-405 are exposed to worst case unmitigated noise levels up to 75 CNEL. However, as mentioned earlier the existing sound wall provides a noise reduction ranging from 8 dB to 16 dB depending on the wall height and location along I-405. Therefore, the residences along the I-405 experience mitigated noise levels ranging from just less than 60 CNEL to just below 70 CNEL with the existing freeway sound wall. The compatibility matrix indicates that residences experiencing noise levels less than 60 CNEL are considered "clearly compatible." The land/use compatibility matrix defines "clearly compatible" as "Specified land use is satisfactory based upon the assumption that buildings involved are of normal conventional construction without any special noise insulation requirements." According to the compatibility matrix residential land uses experiencing noise levels between 60 and 65 CNEL are considered "normally compatible" as defined earlier. Those future residences experience mitigated traffic noise levels just less than 70 CNEL are considered "normally incompatible"; New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Future residences experience traffic noise from all of the major arterials which traverse the City. The traffic noise contours shown in Figure 7-7 indicate that the existing residences along Garfield Avenue, Ellis Avenue, Talbert Avenue, Slater Avenue, Warner Avenue, Edinger Avenue, Magnolia Street, Bushard Street, Brookhurst Street, Ward Street, Euclid Street, Newhope Street and Harbor Boulevard experience unmitigated traffic noise levels up to 70 CNEL, which is considered "normally incompatible" according to the compatibility matrix.



Residences located along Heil Avenue experience traffic noise levels up to 65 CNEL which is considered "normally compatible". Residences which are not located directly adjacent to these roadways will generally experience traffic noise levels less than 60 CNEL and are considered "clearly acceptable".

The City General Plan includes a number of public facility land uses as seen in Figure 7-7. According to the City a number of public facility land uses, including existing school sites, will be converted to residential land uses. The Harper Elementary School, for example, which is located near Ellis Avenue and Newland Street will be converted to residences. Another example is the Lighthouse Maintenance Facility which will be converted to town homes. The McDowell Elementary School is presently used for administrative offices but may be considered in the future for residential uses. The compatibility of these land uses was included in the above compatibility discussion regarding residential land uses. Noise land/use compatibility for other public facility land use areas will depend upon the type of public facility, and should be addressed in a future EIR for each specific facility.

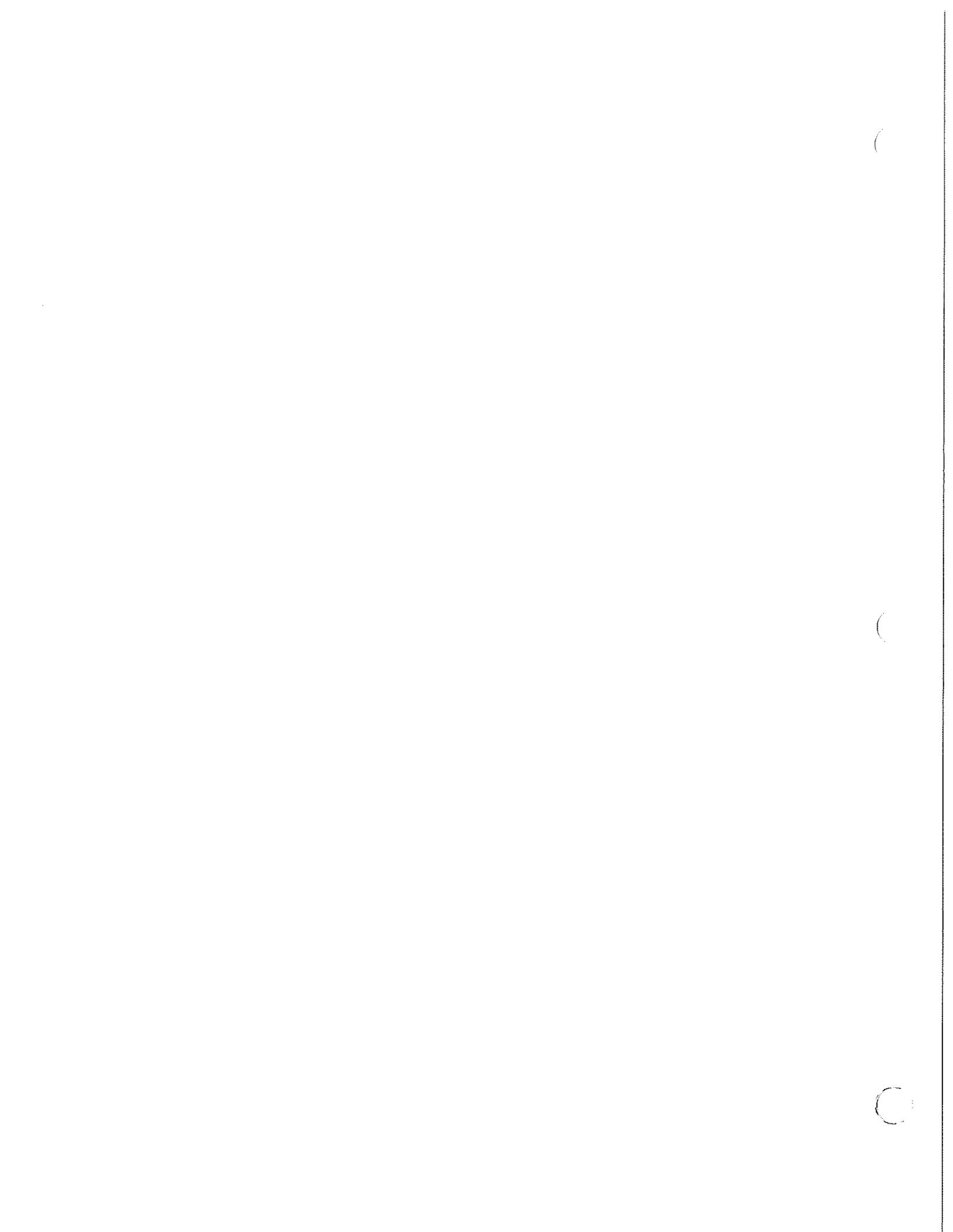
School sites throughout the City are generally located away from I-405, except for Fountain Valley High School and the McDowell Elementary School. However, as mentioned above, the McDowell Elementary School will eventually be converted to a residential land use. The Fountain Valley High School will experience worst case traffic noise levels up to 75 CNEL, which is considered "normally incompatible." Schools located along Newhope Street, between Slater Avenue and Edinger Avenue, and along Slater Avenue, Bushard Street and Ellis Avenue generally will experience worst case traffic noise levels ranging between just above 60 and to greater than 65 CNEL. The compatibility matrix indicates that school land uses exposed to noise levels in excess of 60 CNEL are considered "normally incompatible." All other school land uses in the City are set back from roadways and experience traffic noise levels less than 60 CNEL, and will be considered "clearly compatible."

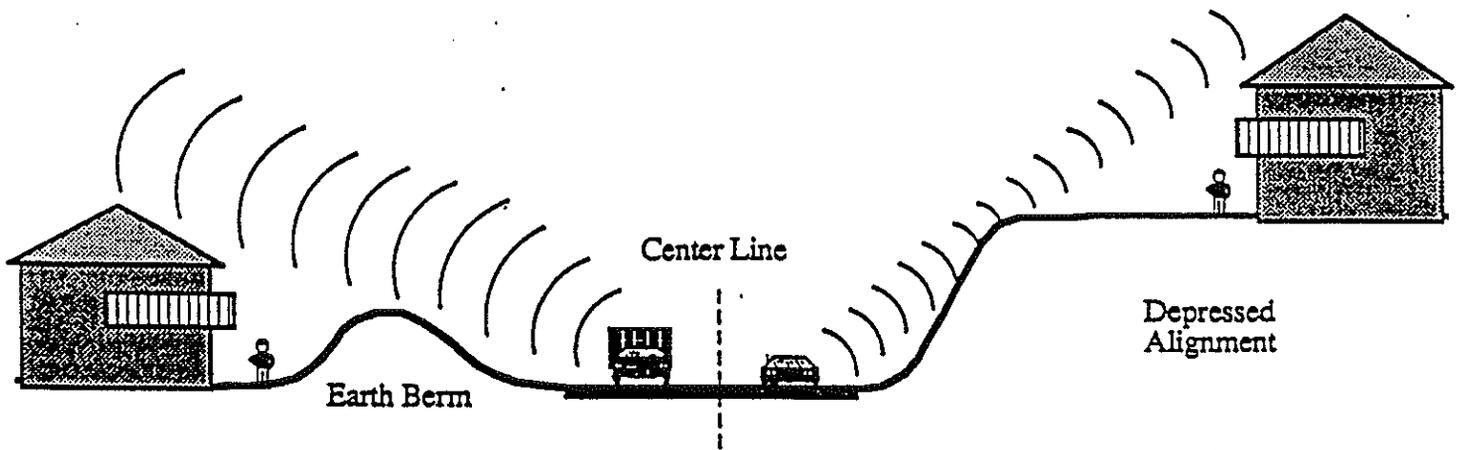
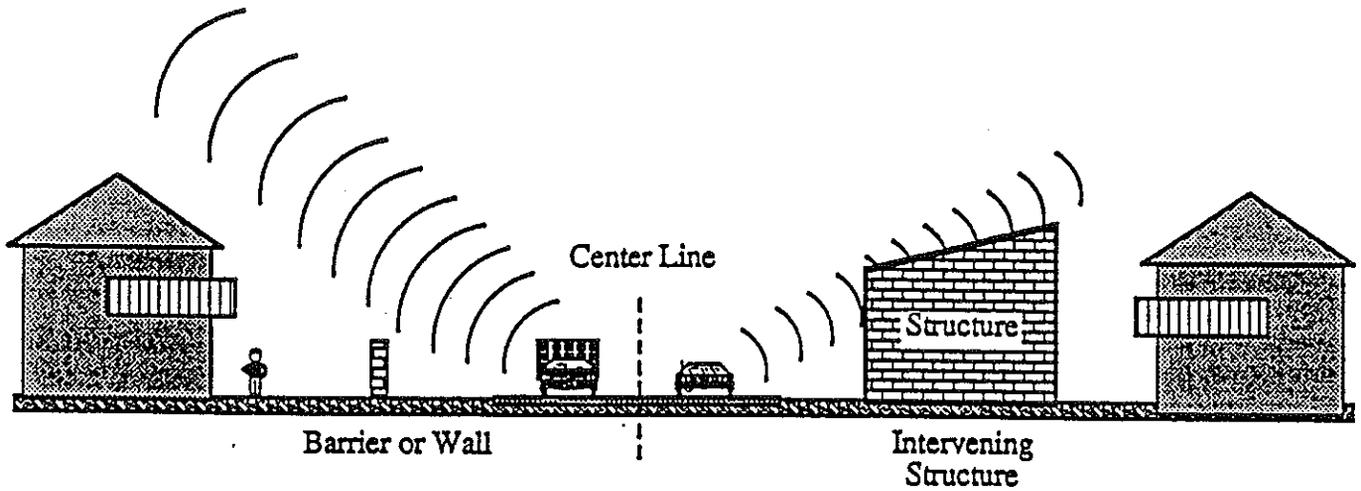
The parks in the City generally will experience traffic noise levels ranging from less than 60 CNEL to greater than 65 CNEL, except for Mile Square Park and along I-405. Mile Square Park will experience worst case traffic noise levels in excess of 65 CNEL which is considered "normally incompatible." However, most of the area within Mile Square Park will be located outside the 60 CNEL which is considered "clearly compatible" according to the compatibility matrix. Los Alamos Park, which is adjacent to the I-405, will experience traffic noise levels in up to 75 CNEL and is considered "normally incompatible." Most other parks throughout the City will experience worst case traffic noise levels greater than 65 CNEL and are considered "normally incompatible" as indicated in the compatibility matrix. Those parks which will be set back from major roadways in the City will experience traffic noise levels less than 60 CNEL and are considered "clearly compatible."

Most of the existing churches throughout the City are located along major arterials and will experience worst case traffic noise levels up to 70 CNEL which is considered "normally incompatible." Figure 7-7 indicates that two existing church sites located adjacent to I-405 will experience unmitigated traffic noise levels in up to 75 CNEL, which is considered "normally incompatible."

#### 7.4.2 Mitigation Measures

The noise sources in Fountain Valley consist mainly of transportation related noise. 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 (Figure 7-8). The effect of a noise barrier is critically dependent on the geometry between the noise source and the receiver. A noise barrier effect

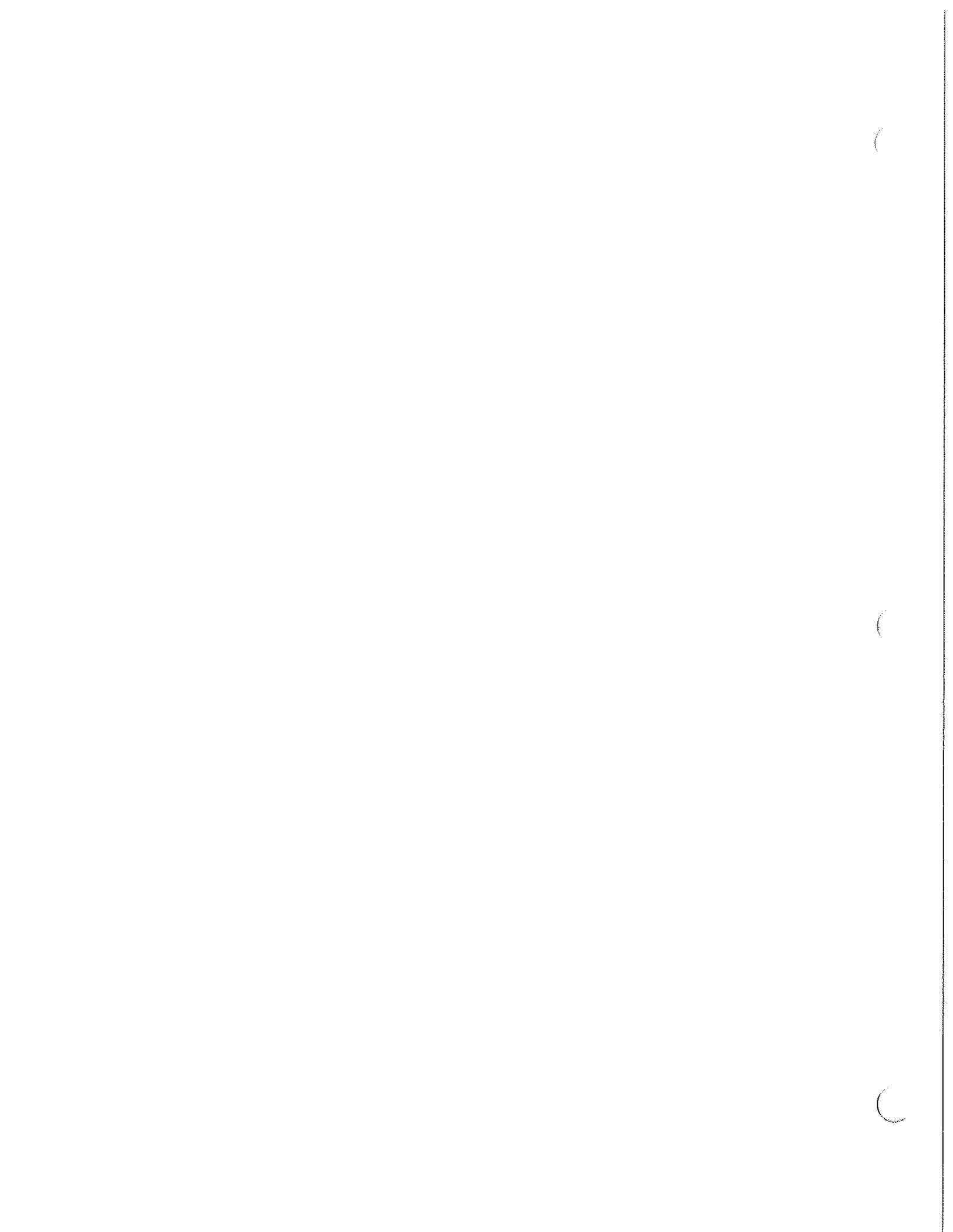




Examples of Noise Barrier Effects

Figure 7-8

# Fountain Valley



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.

Another common approach to mitigation noise impacts is through the use of setbacks which prevent the "walled in" look. The setback approach simply requires that homes or noise sensitive uses be setback away from the roadway at a distance great enough so that they are outside the noise impact zone. The setback area is landscaped. The landscaping actually provides very little noise reduction, however, residents seem to become less aware of the noise probably because they can not see or have an obstructed view of the road.

#### **7.4.3 Noise/Land Use Compatibility**

Noise concerns should be incorporated into land use planning to reduce future noise and land use incompatibility. 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. The noise/land use compatibility matrix presented in Table 7-8 and mentioned previously is used to assess the compatibility of proposed land uses with the noise environment. This matrix is also the basis for the development of specific Noise Standards. The proposed standards, presented in Figure 7-9, 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 the application of the existing Fountain Valley Noise Ordinance. The existing Noise Ordinance for the City will be a useful tool in controlling any resulting noise impacts on the future residential areas.

The Fountain Valley Noise Ordinance should be applied to protect existing residences from construction noise associated with redevelopment projects planned for the City. As mentioned previously a number of school sites within the City will be converted to residential uses. Construction noise associated with these redevelopment projects could potentially impact adjacent residences. In addition, redevelopment is planned for much of the southeastern side of the City. This area is bounded by Warner Avenue, the Santa Ana River, Ellis Avenue, Ward Street, Talbert Avenue, Euclid Street and Slater Avenue. Construction noise related to development in this area could potentially impact residences adjacent to these roadways. Specific projects planned for this area include development of the area just east of the Fountain Valley Hospital, light industrial/commercial development of the South Park area, and commercial manufacturing development of the "furniture-row" area just south of Talbert Avenue. Construction noise from the development of the Civic Center, located near the corner of Slater Avenue and Brookhurst Street, and at the corner of Talbert Avenue and Brookhurst Street could also impact adjacent land uses. Finally, the County of Orange's plans for the Sanitation Treatment Plant may include further development on site which could potentially impact the adjacent residences located west of the plant and along Ward Street. The Fountain Valley Noise Ordinance should be applied to protect existing residences against construction related noise impacts due to the above projects.

The Noise Ordinance should also be enforced to protect adjacent residences against noise impacts due to special concerts held within Mile Square Park.

#### **Goal**

- 7.1 Protect public health and welfare by eliminating existing noise problems and preventing significant degradation of the future acoustic environment.

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LAND USE CATEGORIES		ENERGY AVERAGE CNEL	
CATEGORIES	USES	INTERIOR <sup>1</sup>	EXTERIOR <sup>2</sup>
RESIDENTIAL	Single Family, Duplex, Multiple Family	45 <sup>3</sup>	60
	Mobile Home	45*	60
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Hotel, Motel, Transient Lodging	45	60 <sup>4</sup>
	Commercial Retail, Bank Restaurant	55	----
	Office Building, Research and Development, Professional Offices, City Office Building	45	----
	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, office patio  
Park's picnic area  
School's playground  
Hotel and motel recreation area
  3. Noise level requirement with closed windows. Mechanical ventilation system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of the UBC..
  4. Except those areas effected by aircraft noise.
- \* Due to the variable nature of mobile homes, a 15 dB outdoor to indoor noise reduction with windows closed should be assumed for indicating compliance with this standard.

Exterior and Interior Noise Standards

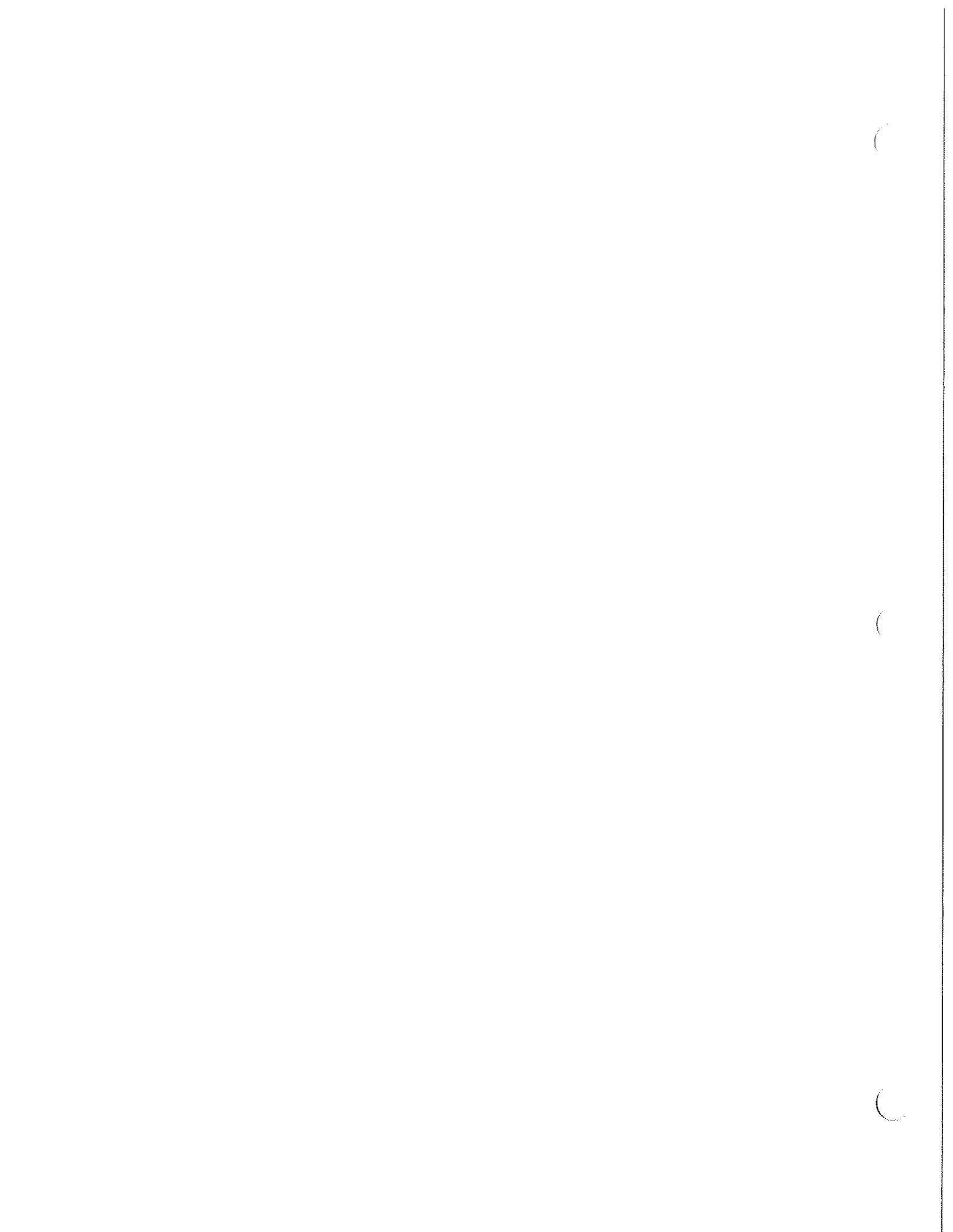
Figure 7-9

Fountain Valley



THE  
KEITH  
COMPANIES

1/25/95



**Policies**

## 7.1.1 Incorporate noise considerations into land use planning decisions.

- a. Establish acceptable limits of noise for various land uses throughout the community. The City adopts the noise standards presented in Figure 7-9 which identify interior and exterior noise standards in relation to specific land uses; particularly residential areas, schools, hospitals, open space preserves and parks. The standards specify the maximum noise levels allowable for new developments impacted by noise sources operating in public or quasi-public property.
- b. The City may require an environmental and noise impact evaluation for projects if determined necessary by the Environmental Review Committee. 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.
- c. The City shall consider establishing a periodic noise monitoring program to identify progress in achieving noise abatement and to perform necessary updating of the noise element and community noise standards.
- d. The City shall minimize potential transportation noise through proper design of street circulation, coordination of routing, and other traffic control measures.

## 7.1.2 Establish measures to reduce noise impacts from traffic noise sources.

- a. The City may require the construction of barriers to mitigate sound emissions where necessary or where feasible. Barriers shall not have gaps or

openings. Wherever possible, freeway walls shall not stop short of bridge overcrossings but shall continue until meeting with the walls supporting the bridges. Without prevention, openings or gaps could render the sound walls ineffective.

- b. The City shall insure the effective enforcement of City, State and Federal noise levels by all appropriate City divisions.
- c. The City shall actively advocate noise control requirements for all new motor vehicles.

## 7.1.3 Establish measures to control non-transportation noise impacts.

- a. The City shall enforce the Fountain Valley Noise Ordinance to mitigate noise conflicts between adjacent land uses. The Noise Ordinance establishes noise limits that cannot be exceeded at the property line. The Noise Ordinance, because it is a City statute, can only control noise generated on private property. Therefore, the primary function of the Noise Ordinance is to control stationary noise sources and construction noise.
- b. The City shall evaluate noise generated by construction activities, and subject them to the requirements of the Noise Ordinance.
- c. The City shall establish and maintain coordination among the City agencies involved in noise abatement.
- d. The City shall insure the effective enforcement of City, State and Federal noise levels 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.

- e. 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.
  
- f. The City shall coordinate with the County of Orange to ensure that special events in Mile Square Park adhere to adopted noise standards and ordinances to minimize noise impacts surrounding neighborhoods.