

3.6 Noise

This section examines whether implementation of the General Plan will expose persons to noise levels in excess of established standards, permanently substantially increase ambient noise levels, or temporarily substantially increase ambient noise levels. Through the Initial Study, issues regarding exposure of persons to groundborne vibration or groundborne noise and exposure of persons to airport noise were found to have a less-than-significant impact. The following section is based on the *Rancho Santa Margarita Noise Element Technical Report* prepared by Wieland Associates (January 2002) provided in Appendix D of this EIR.

ENVIRONMENTAL SETTING

Noise is generally defined as unwanted sound. Noise can result in speech interference and disrupt activities at home and work, including sleep patterns and recreational pursuits. The long-term effects of excessive noise exposure are physical as well as psychological. Physical effects may include headaches, nausea, irritability, constriction of blood vessels, changes in heart and respiratory rate, and increased muscle tension.

How Sound is Measured

Sound levels are expressed on a logarithmic scale of “decibels” (abbreviated as dB), in which a change of 10 units on the decibel scale reflects a 10-fold increase in sound energy. A tenfold increase in sound energy roughly translates to a doubling of perceived loudness.

In evaluating human response to noise, acousticians compensate for the response of people to varying frequency or pitch components of sound. The human ear is most sensitive to sounds in the middle frequency range used for human speech and is less sensitive to lower and higher-pitched sounds. The “A” weighting scale is used to account for this sensitivity. Thus, most community noise standards are expressed in decibels on the “A”-weighted scale, abbreviated dB(A). Zero on the decibel scale is set roughly at the threshold of human hearing. Sound levels of common sounds in the environment include office background noise at about 50 dB(A); human speech at 10 feet at about 60 to 70 dB(A); cars driving by at 50 feet at 65 to 70 dB(A); trucks at 50 feet at 75 to 80 dB(A); and aircraft overflights directly overhead a mile from the runway at about 95 to 100 dB(A).

Noise Standards

The community noise environment consists of a wide variety of sounds, some near and some far away, which vary over the 24-hour day. People respond to the 24-hour variation in noise but are most sensitive to noise at night. California standards for community noise use the Community Noise Equivalent Level (CNEL), in which a 5-

decibel penalty is added to the 7 to 10 PM period, and a 10-decibel penalty to the 10 PM to 7 AM period. The U.S. Environmental Protection Agency uses the Day-Night Noise Level (Ldn) scale, which is identical to the CNEL except that the evening noise penalty is not added on this scale. For all practical purposes, the CNEL and Ldn scales are equivalent.

Table N-3 of the Noise Element (Figure 10 in this EIR) illustrates a land use compatibility matrix based on noise generation and noise sensitivity. Residential uses generally are the most sensitive to noise. Other noise-sensitive land uses include schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreational areas.

Existing Noise

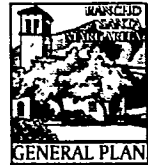
Noise in the project area is the cumulative effect of noise from transportation activities and stationary sources. Transportation noise is the result of noise from automobile use, trucking, and aircraft operations. Non-transportation noise typically refers to noise from stationary sources such as commercial establishments, machinery, air conditioning systems, compressors and landscape maintenance equipment.

Transportation related activity is the primary source of noise in the project area. Transportation noise is related to the transportation corridors that traverse the City, such as SR-241 and major arterials. The project area is not within the 65 dB aircraft noise contour overlay of the MCAS El Toro. MCAS El Toro has been closed and military aircraft operations discontinued.

Vehicular Traffic

The majority of the existing noise environment in the project area is typical of urban areas in Orange County. The primary noise source in the project area is from traffic generated noise on area roadways. Santa Margarita Pkwy generates the highest noise levels in the project area as a result of higher volumes of traffic, vehicular mix of autos and trucks and traffic speeds. As illustrated on Figure 11, vehicular traffic along Alicia Pkwy also contributes substantially to the noise environment in Rancho Santa Margarita. Other roadways that generate substantial noise levels include SR-241, Antonio Pkwy, Ave de las Flores, Ave Empresa, and Los Alisos Blvd.

Currently, the most prevalent and consistent noise in the project area is generated by vehicular traffic along Santa Margarita Pkwy, which currently carries approximately 48,000 average daily trips on some segments. The existing noise level along Santa Margarita Pkwy averages a CNEL of approximately 71 dB at a distance of 50 feet from the roadway centerline. Traffic generated along Alicia Pkwy also contributes to the City's noise levels with an average CNEL of approximately 70 dB at a distance of 50 feet from the roadway centerline. This currently exceeds noise standards for exterior residential uses. Vehicular traffic along Antonio Pkwy, Ave de las Flores, Ave Empresa, Los Alisos Blvd, Melinda Rd, Plano Trabuco Rd, and SR-241 also contribute to the



Land Use Category	Community Noise Equivalent Level (CNEL) or Day-Night Level (Ldn), dB						
	55	60	65	70	75	80	85
Residential- Low-Density Single-Family, Duplex, Mobile Homes			///	///	///	///	///
Residential- Multi-Family			///	///	///	///	///
Commercial- Motels, Hotels, Transient Lodging			///	///	///	///	///
Schools, Libraries, Churches, Hospitals, Nursing Homes			///	///	///	///	///
Amphitheaters, Concert Hall, Auditorium, Meeting Hall	///	///	///	///	///	///	///
Sports Arenas, Outdoor Spectator Sports	///	///	///	///	///	///	///
Playgrounds, Neighborhood Parks				///	///	///	///
Golf Courses, Riding Stables, Water Rec., Cemeteries				///	///	///	///
Office Buildings, Business, Commercial, Professional, and Mixed-Use Developments			///	///	///	///	///
Industrial, Manufacturing Utilities, Agriculture				///	///	///	///

Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB

Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB

Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB

Very noisy urban areas near arterials, freeways or airports.

75+ dB

Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.

 **Normally Acceptable**

Specific land use is satisfactory, based on the assumption that any building is of normal conventional construction, without any special noise insulation requirements

 **Conditionally Acceptable**

New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

 **Normally Unacceptable**

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 design.

 **Clearly Unacceptable**

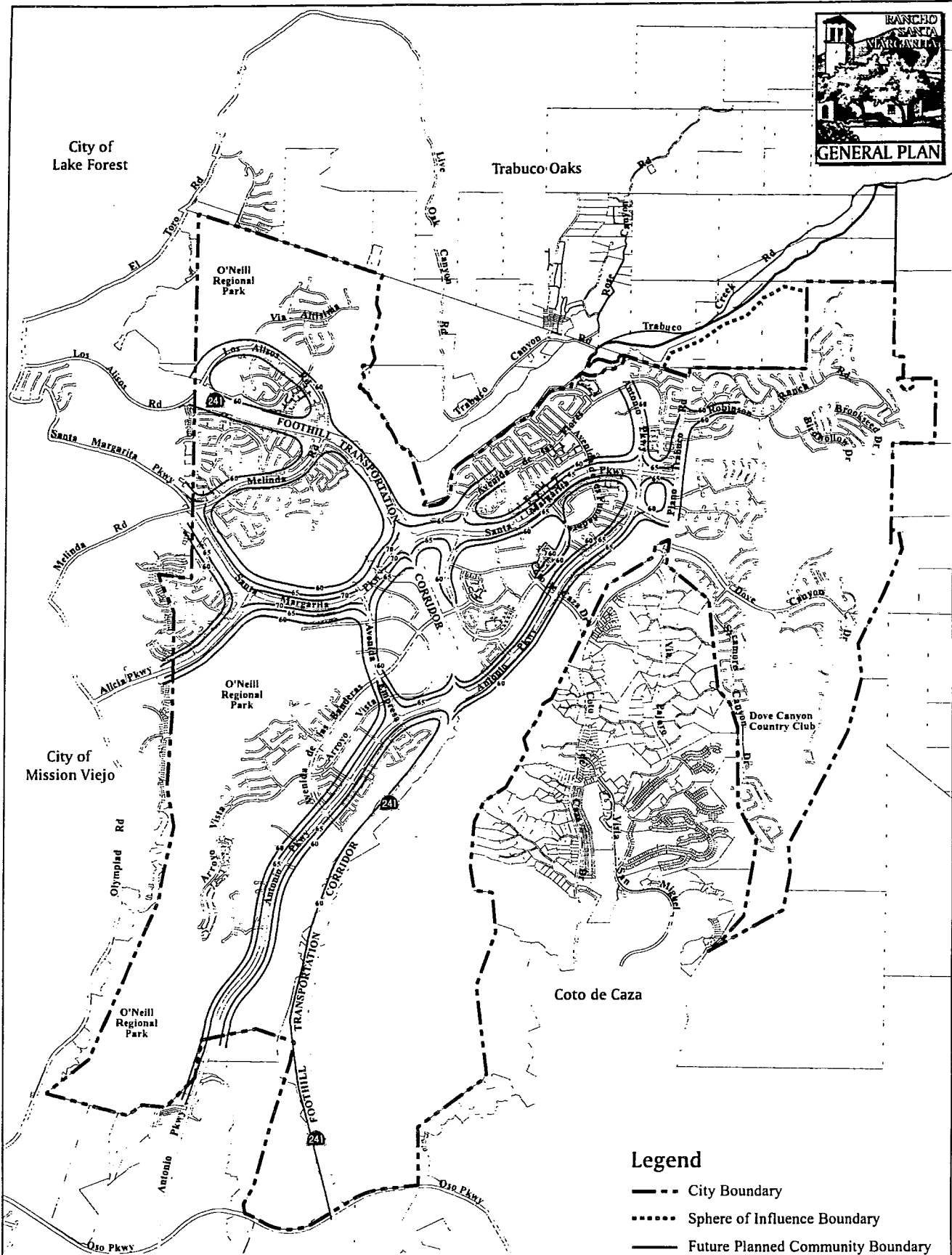
New construction or development should generally not be undertaken.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

Source: California General Plan Guidelines, 1998.

Noise/Land Use Compatibility Criteria

Figure 10



Legend

- City Boundary
- Sphere of Influence Boundary
- Future Planned Community Boundary

Sources: Orange County Land Base, 2001;
Cotton/Bridges/Associates, 2001.

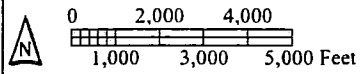


Figure 11
**Existing
Noise Contours**

existing noise level within the project area. The average daily trips on these streets range from 9,400 to 48,000. The current noise levels 50 feet from the roadway centerlines of these roadways range from a low CNEL of approximately 66.5 dB on portions of Ave de las Flores to a high CNEL of approximately 69.5 dB on Antonio Pkwy.

THRESHOLDS USED TO DETERMINE LEVEL OF IMPACT

Implementation of the General Plan will cause a significant impact if the noise /land use compatibility criteria shown in Figure 10 is exceeded.

ENVIRONMENTAL IMPACT

Short-Term Construction Noise

Implementation of the General Plan will result in additional development within the project area, which will generate noise during construction activity. Construction activity will have the potential to impact noise sensitive land uses located adjacent to construction sites.

Figure 12 illustrates typical noise levels from operating construction equipment at a distance of 50 feet. As shown, construction equipment generates high levels of intermittent noise ranging from 70 dB(A) to 105 dB(A), and would result in a significant impact where noise sensitive land uses adjoin construction sites. Although construction activities will result in a noise impact at such locations, this impact will be short-term and will cease upon completion of construction.

The General Plan includes the following goal and policy to control construction noise in order to minimize exposure to excessive noise levels.

Goal 3: *Minimize non-transportation related noise impacts.*

Policy 3.3: Minimize stationary noise sources and noise emanating from construction activities and special events.

The General Plan requires that all building construction shall comply with Title 24 of the Uniform Building Code to ensure that, at a minimum, the established standard noise protection is provided. The Noise Element of the General Plan includes the following goal and policy:

Goal 1: *Minimize the effects of noise through proper land use planning.*

Policy 1.3: Ensure proposed development meets noise insulation standards for construction and residential development.

Equipment		Noise Level [dB(A)] at 50 feet						
		60	70	80	90	100	110	
Equipment Powered by Internal Combustion Engines	Earth Moving	Compactors (Rollers)			75-80			
		Front Loaders			75-85			
		Backhoes			75-90			
		Tractors			75-95			
		Scrapers, Graders			80-95			
		Pavers				85-90		
	Materials Handling	Trucks				85-95		
		Concrete Mixers			75-85			
		Concrete Pumps				80-85		
		Cranes (Movable)			75-85			
	Stationary	Cranes (Derrick)				85-90		
		Pumps		70-75				
		Generators		75-85				
Impact Equipment	Compressors		75-85					
	Pneumatic Wrenches				85-90			
	Jack Hammers and Rock Drills				80-95			
Other	Pile Drivers (Peaks)					95-105		
	Vibrator		70-80					
	Saws		75-85					

Note: Based on limited available data samples
Source: U.S. Environmental Protection Agency

Figure 12
Construction Equipment
Noise Ranges

The City has also adopted a City Noise Control Ordinance that limits the hours of construction and creates standards for excessive noise levels that are not to be exceeded during construction. With implementation of these policies and regulations, an otherwise potentially significant impact can be reduced or avoided.

Vehicular Noise

Implementation of the General Plan will allow new development within the project area. Such development will generate additional traffic that will increase noise levels along the roadways. Development in adjacent communities will also generate additional traffic that will utilize roadways in the project area. Figure 13 depicts the CNEL contours generated by the projected traffic volumes.

Future noise levels along major streets in the project area are projected to range from a CNEL of approximately 62.0 dB(A) to 75.5 dB(A). SR-241 will become the primary noise source with noise levels reaching a CNEL of 75.5 dB(A) at a distance of 50 feet from the roadway centerline. As shown in Figure 13, certain portions of the City will be subject to noise levels exceeding the City's noise standards.

The General Plan includes the following goals and policies to reduce transportation-related noise.

Goal 2: *Minimize transportation-related noise impacts.*

Policy 2.1: Reduce transportation-related noise impacts to sensitive land uses through the use of noise control measures.

Policy 2.2: Control truck traffic routing to reduce transportation-related noise impacts to sensitive land uses.

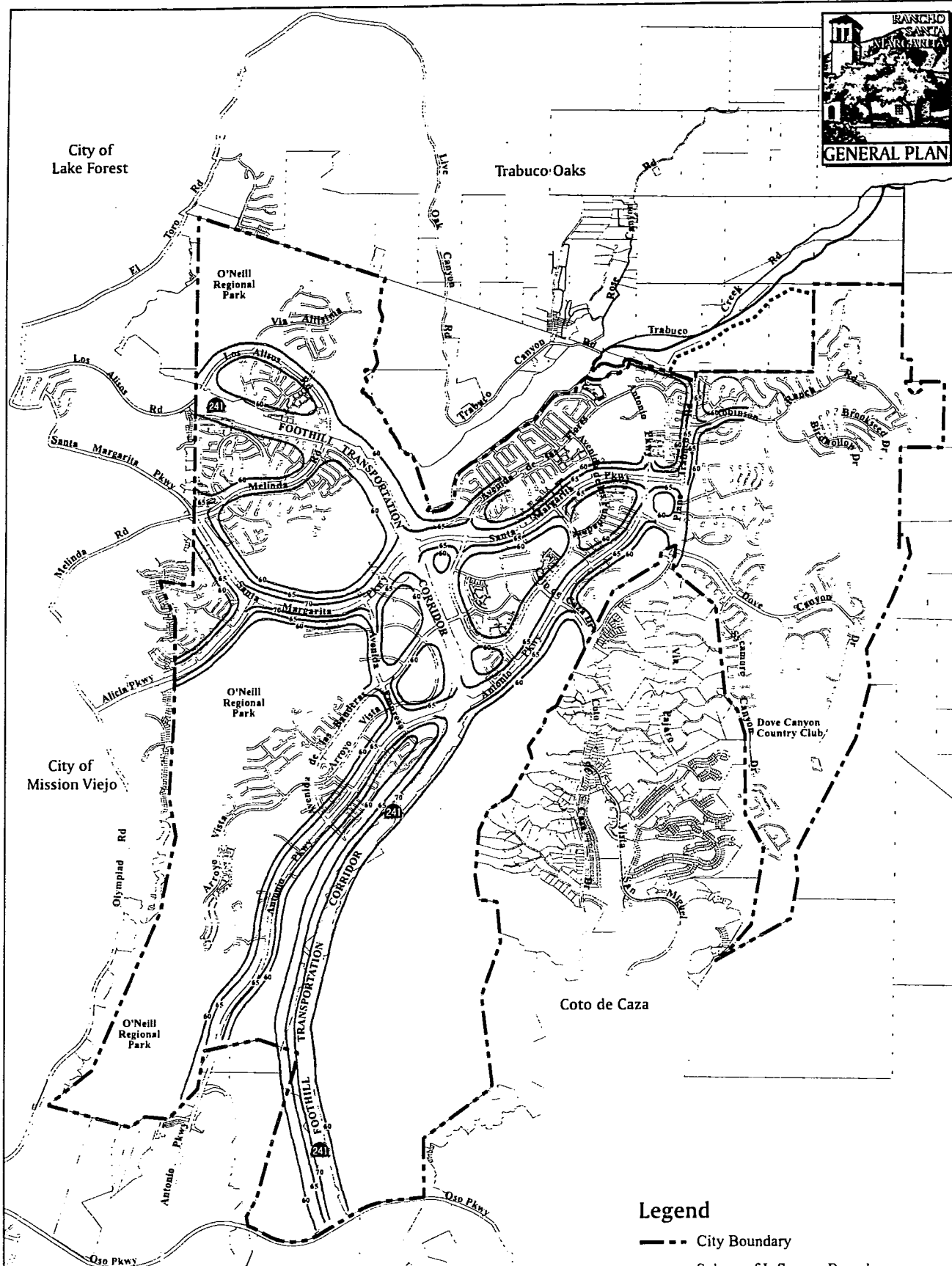
Policy 2.3: Incorporate sound-reduction design in development projects impacted by transportation-related noise.

With implementation of these goals and policies, an otherwise potentially significant impact can be reduced or avoided.

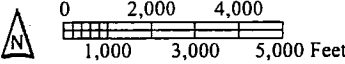
Stationary Noise

Implementation of the General Plan may result in excessive noise generated by non-residential uses such as commercial centers, restaurants and bars, religious institutions, and civic centers. These types of uses are allowed throughout the project area.

The General Plan includes the following goals and policies to control non-transportation related noise:



Sources: Orange County Land Base, 2001;
Cotton/Bridges/Associates, 2001.



Legend

- City Boundary
- Sphere of Influence Boundary
- Future Planned Community Boundary

Figure 13
Future Noise Contours

Goal 3: *Minimize non-transportation related noise impacts.*

Policy 3.1: Reduce the impacts of noise-producing land uses, activities, and businesses on noise-sensitive land uses.

Policy 3.2: Incorporate sound-reduction design in new construction or rehabilitation projects impacted by non-transportation related noise.

Policy 3.3: Minimize stationary noise sources and noise emanating from construction activities and special events.

With implementation of these goals and policies, an otherwise potentially significant impact can be reduced or avoided.

MITIGATION MEASURES

Short-Term Construction Noise

The City will implement Implementation Program N-10 which requires the City to enforce the Noise Control Ordinance with regard to construction activity. Furthermore, the ordinance will be reviewed periodically for adequacy and amended as needed to address community needs and development patterns.

Vehicular Noise

The City will implement Implementation Programs N-1 through N-7 which work to reduce noise impacts associated with vehicles. Implementation Program N-1 requires the use of noise and land use compatibility standards to guide future planning and development decisions. Implementation Program N-2 requires acoustical analyses for new residential development within the 60 dB CNEL contour or in the vicinity of existing and proposed commercial and industrial areas. Compliance with Title 24 provisions, as called for in Implementation Program N-3, will ensure the interior of residential units does not exceed 45 dB CNEL. Implementation Program N-4 charges the Planning Director with enforcing the City noise policy. Implementation Program N-5 requires noise control measures be incorporated into roadway improvement projects. Written information describing methods of retrofitting existing structures and properties to reduce noise impacts will be provided, as required by Implementation Program N-6. Finally, Implementation Program N-7 requires the City to coordinate with the Orange County Sheriff's Department and Highway Patrol to enforce the California Vehicle Code pertaining to noise standards for cars, trucks, and motorcycles.

Stationary Noise

The City will implement Implementation Programs N-8, N-9, and N-11 which reduce noise from stationary noise sources. The City will continue to enforce the City noise regulations to protect residents from excessive stationary noise levels, as required by Implementation Program N-8. Implementation Program N-9 limits delivery or service hours for stores with loading areas, docks, or trash bins near noise-sensitive land uses. The City will comply with local, state, and federal noise standards, including state and federal OSHA standards, as required by Implementation Program N-11.

LEVEL OF IMPACT AFTER MITIGATION

Short-Term Construction Impacts

Implementation of the City Noise Control Ordinance, as called for in Implementation Program N-10, will reduce impact to a less-than-significant level.

Vehicular Noise

Implementation of noise reduction measures outlined in Implementation Programs N-1 through N-7 will reduce impact to a less-than-significant level.

Stationary Noise

Implementation of stationary-source noise reduction measures as called for in Implementation Programs N-8, N-9, and N-11 will reduce impact to a less-than-significant level.