

**APPENDIX A**

**CITY OF LAKE FOREST  
CEQA SIGNIFICANCE THRESHOLDS GUIDE**

**Published November 20, 2001  
Revised March, 2009**

## TABLE OF CONTENTS

<b><u>Section</u></b>	<b><u>Page</u></b>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 CEQA Significance Thresholds .....	1
1.2 City of Lake Forest .....	2
1.3 Summary of Significance Thresholds .....	2
<b>2 CIRCULATION AND PARKING</b> .....	<b>7</b>
2.1 Background .....	7
2.2 Applicable Performance Standards/Requirements .....	9
2.3 Thresholds of Significance .....	11
2.4 Potential Mitigation .....	11
2.5 References .....	13
<b>3 NOISE</b> .....	<b>14</b>
3.1 Background .....	14
3.2 Noise Metrics .....	14
3.3 Applicable Noise Standards .....	15
3.4 Thresholds of Significance .....	17
3.5 Potential Mitigation .....	17
3.6 References .....	19
<b>4 AIR QUALITY</b> .....	<b>20</b>
4.1 Background .....	20
4.2 Regulatory and Planning Setting .....	21
4.3 Established SCAQMD Air Pollution Thresholds .....	24
4.4 Thresholds of Significance .....	24
4.5 SCAQMD Additional Indicators for Air Quality Impacts .....	27
4.6 Potential Mitigation .....	27
4.7 References .....	28
<b>5 LAND USE</b> .....	<b>29</b>
5.1 Background .....	29
5.2 Land Use Goals, Policies, and Regulations .....	29
5.3 Thresholds of Significance .....	30
5.4 Potential Mitigation .....	30
5.5 References .....	31
<b>6 AESTHETICS</b> .....	<b>32</b>
6.1 Background .....	32
6.2 Aesthetic/Design Guidelines and Standards .....	32
6.3 Assessment of Visual Changes .....	33
6.4 Thresholds of Significance .....	34
6.5 Potential Mitigation .....	34

6.6	References .....	36
<b>7</b>	<b>WATER RESOURCES</b> .....	<b>37</b>
7.1	Background .....	37
7.2	Water Quality Regulatory Setting .....	38
7.3	Thresholds of Significance .....	39
7.4	Potential Mitigation .....	40
7.5	References .....	42
<b>8</b>	<b>LIST OF PREPARERS</b> .....	<b>43</b>
8.1	City of Lake Forest .....	43
8.2	Consultant .....	43

## SECTION 1 INTRODUCTION

### 1.1 CEQA SIGNIFICANCE THRESHOLDS

The *City of Lake Forest CEQA Significance Thresholds Guide* has been prepared as an internal guidance document for City staff. The information presented herein shall be used by staff for the review of projects, and in the preparation of environmental documents pursuant to the California Environmental Quality Act (CEQA). CEQA requires the analysis of discretionary projects to disclose their potential effects on the environment.

As stated in Section 15064(a) of the State CEQA Guidelines, “Determining whether a project may have a significant effect plays a critical role in the CEQA process.” The identification of significance of an impact determines the level of environmental review required and the need for mitigation measures to reduce or eliminate project impacts. The tools used by a lead agency to make significance determinations include, but are not limited to: CEQA’s Mandatory Findings of Significance, Appendix G of the CEQA Guidelines (the model Initial Study checklist), agency regulatory standards (e.g., South Coast Air Quality Management District), consultation with other agencies, and the lead agency’s specific thresholds of significance. As defined in the CEQA Guidelines (Section 15064.7) “a threshold of significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant.”

Section 15064(b) of the State CEQA Guidelines states: “The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting.” The *City of Lake Forest CEQA Significance Thresholds Guide* is a tool that compiles information that is useful in the preparation of environmental documents. This information can be used to improve the level of consistency, predictability, and objectivity of the City’s environmental documents. The Guide provides assistance in evaluating the significance of project impacts for six key topical issues in the City of Lake Forest: traffic, noise, air quality, land use, aesthetics, and water resources. For each topical issue the following information is provided: background information; discussion of relevant standards, planning guidelines, policies etc.; thresholds of significance; and potential mitigation. It should be noted that the mitigation measures suggested in this document are examples of the types of mitigation that could be applied to a project to reduce identified environmental impacts. The actual mitigation recommended for a project will vary depending on the project itself, the specific impact, and other issues that may arise on a case-by-case basis. It is not intended that each mitigation measure identified in this document be applied to every project or that the mitigation be written exactly as presented herein. Similarly there may be mitigation required of a project that is not identified in this document.

The *City of Lake Forest CEQA Significance Thresholds Guide* is a document that provides guidance and does not require mandatory application of all thresholds for every project. The guidance provided in this document does not substitute for the use of independent judgment to determine significance or the evaluation of the evidence in the record, but is intended to provide sufficient flexibility to use the most appropriate criteria (i.e., on a case-by-case basis) for a particular project. (See *Mejia v. City of Los Angeles* (2005) 130 Cal.App.4th 322; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th 1099.) CEQA includes additional topics and requirements that are not addressed in this *City of Lake Forest CEQA Significance*

*Thresholds Guide.* The lead agency is responsible for ensuring that all CEQA requirements are met.

## **1.2 CITY OF LAKE FOREST**

The City of Lake Forest is located between the coastal floodplain and the Santa Ana Mountains. The western portion of the City is near sea level while the northeastern portion of the City becomes progressively higher and steeper, reaching elevations of up to 1,500 feet. The Santa Ana Mountains can be seen from various points within the City (including major roadways) while views of the Saddleback Valley floor and the Pacific Ocean can be seen from the higher elevations. The Recreation and Resources Element of the City of Lake Forest General Plan states that “Preserving the unique topographic character of the Planning Area (City of Lake Forest) is important for visual quality.”

Notable natural features in the City include the foothills of the Santa Ana Mountains and natural water courses. The Whiting Ranch Wilderness Park is a prominent visual feature in the northern portion of the City located generally between the planned communities of Portola Hills and Foothill Ranch. There are five water courses that traverse the City: Aliso Creek, Serrano Creek, Borrego Canyon Wash, and two smaller creeks. While portions of these creeks are channelized for flood control purposes, significant portions of Aliso Creek and Serrano Creek include trails and open space and have a natural/undeveloped character. The City of Lake Forest also has four man-made lakes, three located within residential developments and one in Village Park.

The City has developed as a series of primarily residential Planned Communities. Development within each Planned Community is designed to be compatible and form a consistent visual image. In older areas of the City, particularly near I-5, residential neighborhoods were not developed as part of Planned Communities and have less architectural and visual consistency.

Low-scale (one- to three-story) commercial development is concentrated near I-5 and along the primary arterials of El Toro Road, Lake Forest Drive, Bake Parkway and Portola Parkway. Existing sources of night lighting within the City include commercial districts, parking areas, outdoor sports facilities, and roadways.

## **1.3 SUMMARY OF SIGNIFICANCE THRESHOLDS**

The following provides a compilation of the thresholds of significance presented in Sections 2 through 7 of this document.

### **CIRCULATION AND PARKING**

#### **Traffic/Circulation**

A proposed project would normally have a significant impact if the following criteria are met:

- ICU (intersection capacity utilization) values at intersections, with the proposed project, exceed the City of Lake Forest performance criteria as specified in Table C-3 of the General Plan Circulation Element (Table 2-2 herein); and,
- The proposed project includes design features or uses that may cause traffic hazards such as sharp curves, tight turning radii from streets, limited roadway visibility, short merging lanes, uneven road grades, or any other conditions determined by the City traffic engineer to be a hazard.

## **PARKING**

A project would normally have a significant impact on parking if:

- The project provides less parking than required, applying the standards found in the City of Lake Forest Municipal Code.

## **NOISE**

### **Traffic Noise**

A proposed project would normally have a significant offsite traffic noise impact if both of the following criteria are met:

- Project traffic will cause a noise level increase of 3dB or more on a roadway segment adjacent to a noise sensitive land use. Noise sensitive land uses include the following: residential (single-family, multi-family, mobile home); hotels; motels; nursing homes; hospitals; parks, playgrounds and recreation areas; and schools.
- The resulting “future with project” noise level exceeds the noise standard for sensitive land uses as identified in the City of Lake Forest General Plan (refer to Table 3-1 in Section 3.3, Interior and Exterior Noise Standards).

### **Stationary Noise**

The project would normally have a significant noise impact if it would:

- Exceed the stationary source noise criteria for the City of Lake Forest as specified by the Exterior noise standards set fourth in the Noise Control Chapter of the Lake Forest Municipal Code

## **AIR QUALITY**

Appendix G, Section III of the Environmental Checklist Form in the State CEQA Guidelines states that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding air quality impacts. A project would normally have a significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation. The SCAQMD construction and operational emission thresholds identified in Table 4-3 are used for this assessment.

**TABLE 4-3  
SCAQMD EMISSION EMISSION THRESHOLDS**

<b>Emission Thresholds of Significance</b>		
<b>Pollutant</b>	<b>Construction pounds/day</b>	<b>Operation pounds/day</b>
Nitrous Oxides (NO <sub>x</sub> )	100	55
Volatile Organic Compounds (VOC)	75	55
Particulate Matter <10µg (PM10)	150	150
Particulate Matter <2.5µg (PM2.5)	55	55
Sulfur Oxides (SO <sub>x</sub> )	150	150
Carbon Monoxide (CO)	550	550
Lead (Pb)	3	3
Source: SCAQMD CEQA Air Quality Handbook, 1993 (As amended at <a href="http://www.aqmd.gov/ceqa/handbook/signthres.doc">http://www.aqmd.gov/ceqa/handbook/signthres.doc</a> ).		

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release in emissions which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations. Methodologies established by SCAQMD for assessing local impacts, including but not limited to Local Significance Thresholds and thresholds for PM2.5 are used for this assessment.
- Create objectionable odors affecting a substantial number of people.
- A project will be considered to result in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors) where the incremental effect of the project emissions, considered together with past, present, and reasonably anticipated further project emissions, increase the level of any criteria pollutant above the existing ambient level.

**LAND USE**

A project would normally have a significant land use impact if it would:

- Physically divide an established community.
- Substantially conflict with existing on-site or adjacent land use due to project-related significant unavoidable indirect effects (e.g., noise, aesthetics, etc) that preclude use of the land as it was intended by the General Plan.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, planned community, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

- Conflict with the Central and Coastal Natural Communities Conservation Program/Habitat Conservation Plan (NCCP/HCP) of which the City of Lake Forest is a participant.

## **AESTHETICS**

A project would normally have a significant visual impact if any of the following occurs:

- A project will substantially damage scenic resources, including scenic vistas from public parks and views from designated scenic highways or arterial roadways.
- A project will create a new source of substantial night lighting that would result in “sky glow” (i.e. illumination of the night sky in urban areas) or “spill light” (i.e. light that falls outside of the area intended to be lighted) onto adjacent sensitive land uses.
- A project will create a new source of substantial glare which would adversely affect daytime visibility and/or views in the area.
- A project will substantially degrade the existing visual character or quality of the site and its surroundings where:
  - The project exceeds the allowed height or bulk regulations, or exceeds the prevailing height and bulk of existing structures.
  - The project is proposed to have an architectural style or to use building materials that will be in vivid contrast to an adjacent development where that development had been constructed adhering to a common architectural style or theme;
  - The project is located on a visually prominent site and, due to its height, bulk, architecture or signage, will be in vivid contrast to the surrounding development or environment degrading the visual unity of the area.
  - A project would include unscreened outdoor uses or materials.
  - A project would result in the introduction of an architectural feature or building mass that conflicts with the character of the surrounding development.

## **WATER RESOURCES**

### **Surface Water and Flooding**

A project would normally have a significant impact if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff above pre-development condition in a manner which would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems.

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Cause inundation by seiche, tsunami, or mudflow.
- Deposit sediment and debris materials within existing channels obstructing flows.
- Exceed the capacity of a channel and cause overflow during design storm conditions.

### **Groundwater**

A project would normally have a significant impact if it would:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Adversely change the rate, direction or flow of groundwater.
- Have an impact on groundwater that is inconsistent with a groundwater management plan prepared by the water agencies with the responsibility for groundwater management.

### **Water Quality**

A project would normally have a significant impact if it would:

- Violate any water quality standards or waste discharge requirements.
- Cause a significant alteration of receiving water quality during or following construction.
- Substantially degrade groundwater quality.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Create or contribute runoff water which would generate substantial additional sources of polluted runoff.
- Substantially degrade water quality by discharge which affects the beneficial uses (i.e. swimming, fishing, etc.) of the receiving or downstream waters.
- Increase in any pollutant for which the receiving water body is already impaired as listed on the Clean Water Act Section 303(d) list.



## SECTION 2 CIRCULATION AND PARKING

### 2.1 **BACKGROUND**

#### **TRAFFIC/CIRCULATION**

Traffic is acknowledged as one of southern California's serious environmental issues. Traffic congestion delays the movement of people and merchandise, and is the source of over half the air pollution in California. The environmental review process is a useful tool in understanding the source of traffic problems and identifying ways to reduce their impacts.

The City of Lake Forest is served by a circulation system which includes regional and local facilities: Interstate 5 (I-5); the State Route 241 (SR-241), also referred to as the Foothill Transportation Corridor; and local arterials. The City of Lake Forest General Plan outlines goals and policies for the City related to circulation, and also provides performance criteria for evaluating the City's intersections.

There are regional transportation plans that also must be considered when addressing traffic conditions in the City of Lake Forest: the Orange County Congestion Management Program (CMP), and the County of Orange Master Plan of Arterial Highways (MPAH). The CMP was created statewide as a result of Proposition 111 (gas tax increase) and has been implemented locally by the Orange County Transportation Authority (OCTA). The goals of the CMP are to reduce traffic congestion and to provide a mechanism for coordinating land use development and transportation improvement decisions. The CMP for Orange County requires that the traffic impacts of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. The following CMP roadways and monitoring intersections are located in the City of Lake Forest:

- El Toro Road
- Trabuco Road west of El Toro Road
- Intersection of Trabuco Road/El Toro Road
- Intersection of I-5 Northbound/Bridge/El Toro Road

The County of Orange MPAH is an important element for the overall transportation planning in Orange County because it defines a countywide circulation system in response to existing and planned land uses. As the administrator of the MPAH, OCTA is responsible for maintaining the integrity of the MPAH map through coordination with cities and the County and determinations of cities' and County consistency with the MPAH map. Consistency with the MPAH is required for local agencies to be eligible for the Orange County Combined Transportation Funding Programs.

The following MPAH facilities (per General Plan ultimate build-out) are within the City of Lake Forest:

#### **Principal Arterial (Eight-lane divided roadway)**

- El Toro Road (I-5 to Trabuco Road)

#### **Major Arterial (Six-lane divided roadway)**

- Trabuco Road (Bake Parkway to El Toro Road)
- Lake Forest Drive (I-5 to Trabuco Road)
- El Toro Road (north of Trabuco Road to the City limit)
- Los Alisos Boulevard (north of I-5)
- Bake Parkway (Muirlands Boulevard to Trabuco Road)
- Alton Parkway (within the City limits)
- Portola Parkway (within the City limits)

**Primary Arterial (Four-lane divided roadway)**

- Bake Parkway (north of Trabuco Road)
- Rancho Parkway
- Lake Forest Drive (north of Trabuco Road)
- Glenn Ranch Road
- Jeronimo Road
- Muirlands Boulevard
- Rockfield Boulevard
- Ridge Route Drive (southern City boundary to Rockfield Boulevard)

**Secondary Arterial (Four-lane undivided roadway)**

- Toledo Way
- Ridge Route Drive (Rockfield Boulevard to Trabuco Road)
- Commercentre Drive

Roadway performance is most often controlled by the performance of intersections, specifically during peak traffic periods. This is because traffic control at intersections interrupts traffic flow which would otherwise be relatively unimpeded except for the influences of on-street parking, access to adjacent land uses, or other factors resulting in interaction of vehicles between intersections. For this reason, traffic analyses for individual projects typically focus on peak-hour operating conditions for key intersections rather than roadway segments. Operating conditions at intersections are typically described in terms of “level of service” (LOS). Level of service is a measure of a facility’s operating performance, and is a tool used in defining thresholds of significance. Level of service is described with a letter designation from LOS A to LOS F, with LOS A representing the best operating conditions and LOS F the worst. Table 2-1 describes the level of service concept and the operating conditions expected under each level of service for signalized intersections.

**PARKING**

Parking is another component of transportation and circulation that must be addressed through the CEQA process. Parking impacts can result from the provision of insufficient parking supply to serve a project. Such impacts can be manifested by spillover of project parking demands to nearby on-street or off-street parking facilities. Concerns often arise if project parking demands intrude into nearby residential neighborhoods. The City of Lake Forest Municipal Code establishes parking requirements for various uses.

**TABLE 2-1  
LEVEL OF SERVICE DESIGNATIONS FOR SIGNALIZED INTERSECTIONS**

<b>LOS</b>	<b>Volume/Capacity Value</b>	<b>Average Vehicle Delay (Sec)</b>	<b>Description</b>
A	0.00 - 0.60	less than 5.0	Primarily free flow operations at average travel speeds usually about 90 percent of free flow speed. Vehicles can maneuver unimpeded within the traffic stream. Delay at signalized intersections is minimal.
B	0.61-0.70	5.1 to 15.0	Reasonably unimpeded operations at average travel speeds usually about 70 percent of free flow speed. Ability to maneuver is only slightly restricted and stopped delays are not bothersome. Drivers are not subjected to appreciable tension.
C	0.71-0.80	15.1 to 25.0	Represents stable operations, however, ability to maneuver and change lanes in mid-block locations may be more restricted. Longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50 percent of free-flow speed. Drivers will experience some appreciable tension.
D	0.81-0.90	25.1 to 40.0	Borders on a range in which small increases in flow may cause substantial increases in approach delay, and hence, decreases in arterial speed. Causes range from adverse signal progression, inappropriate signal timing, high volumes, or any combination. For planning purposes, this Level of Service is the lowest that is considered acceptable. Average travel speeds are about 40 percent of free-flow speed.
E	0.91-1.00	40.1 to 60.0	Characterized by significant approach delays and average travel speeds of one-third of free-flow speed or lower, caused by adverse progression, high signal density, extensive queuing at critical intersections, inappropriate signal timing, or some combination.
F	Above 1.00	greater than 60.0	Characterized by arterial flow at extremely low speeds below one-third to one-quarter of free flow speed. Congestion is likely at critical signalized intersections, resulting in high approach delays. Adverse progression is frequently a contributor to this condition.

## **2.2 APPLICABLE PERFORMANCE STANDARDS/REQUIREMENTS**

### **TRAFFIC/CIRCULATION**

#### **City of Lake Forest**

The Circulation Element of the City of Lake Forest General Plan identifies performance criteria based on peak hour intersection data as intersection performance dictates the level of service experience by drivers. The performance criteria are summarized in Table C-3 of the General Plan Circulation Element and included below in table 2-2. Please refer to the General Plan Circulation Element for a discussion of Critical Intersections.

Table 2-2  
CITY OF LAKE FOREST PERFORMANCE CRITERIA

**Calculation Methodology**

Level of service (LOS) to be based on peak hour intersection capacity utilization (ICU) values calculated using the following values:

Saturation Flow Rate: 1,700 vehicles/hour/lane

Clearance Interval: .05

Right-Turn-On-Red Utilization Factor\*: .75

\* "De-facto" right-turn lane is assumed in the ICU calculation if 19 feet from edge to outside of through-lane exists and parking is prohibited during peak periods.

**Performance Standard**

LOS "D" (peak hour ICU less than or equal to .90) for all intersections except Critical Intersections where LOS "E" (peak hour ICU less than or equal to 1.00) is acceptable with the requirement that regular monitoring take place.

**Mitigation Requirement for Project Impacts**

For ICU greater than the acceptable level of service, mitigation of the project contribution is required to bring intersection back to acceptable level of service or to no-project conditions if project contribution to the ICU is greater than .01.

Source: City of Lake Forest General Plan Circulation Element table C-3, July 2008

**Congestion Management Plan**

The requirements of the CMP legislation include, among other things, analysis of impacts of land use decisions on the CMP Highway System. Each jurisdiction in Orange County selected a CMP Traffic Impact Analysis (TIA) process to analyze impacts of development project submittals on the CMP Highway System. The 2005 Orange County Congestion Management Program includes *CMP Traffic Impact Analysis Guidelines*. The TIA must be applied to all development projects meeting the adopted trip generation thresholds (i.e., 2,400 or more daily trips for proposed developments, and 1,600 or more daily trips for proposed developments that directly access the CMP Highway System). The CMP identifies LOS E as the minimum acceptable LOS for CMP intersections. When an intersection is already operating at LOS E, a project must cause a three percent increase in the ICU value for an impact to be considered significant.

**PARKING**

Parking requirements for the City of Lake Forest are outlined in Section 9.168.020 of the Municipal Code. Residential parking requirements are outlined in Sec. 9.168.040 (Residential off-street parking requirements), and parking requirements for other uses are outlined in Sec. 9.168.050, and Sec. 9.168.070. When assessing the parking impacts of an individual project,

the parking requirements outlined in the Municipal Code should be used, unless otherwise determined by the City of Lake Forest.

## **2.3 THRESHOLDS OF SIGNIFICANCE**

### **TRAFFIC/CIRCULATION**

#### **Project-Specific**

For the purpose of identifying those intersections where significant impacts occur and project-related mitigation is required, the following criteria have been established for all intersections within the City of Lake Forest. A proposed project would normally have a significant impact if the following criteria are met:

- ICU (intersection capacity utilization) values at intersections, with the proposed project, exceed the City of Lake Forest performance criteria as specified in Table C-3 of the General Plan Circulation Element (Table 2-2 herein); and,
- The proposed project includes design features or uses that may cause traffic hazards such as sharp curves, tight turning radii from streets, limited roadway visibility, short merging lanes, uneven road grades, or any other conditions determined by the City traffic engineer to be a hazard.

### **PARKING**

A project would normally have a significant impact on parking if:

- The project provides less parking than required, applying the standards found in the City of Lake Forest Municipal Code.

## **2.4 POTENTIAL MITIGATION**

The mitigation measures suggested in this section are examples of the types of mitigation that could be applied to a project to reduce identified traffic and/or parking impacts. The actual mitigation recommended for a project will vary depending on the project itself, the specific impact, and other issues that may arise on a case-by-case basis. It is not intended that each mitigation measure identified in this section be applied to every project or that the mitigation be written exactly as presented herein. Similarly there may be mitigation required of a project that is not identified in this document.

Potential mitigation measures include transportation demand management (TDM) measures, transit capacity and access improvements, physical roadway improvements, or a combination thereof. The following lists a variety of possible mitigation measures.

### **TRANSPORTATION DEMAND MANAGEMENT (TDM) MEASURES**

If appropriate, TDM measures may be applied to reduce single occupancy vehicle trips and encourage ridesharing and transit use. Individual measures and actions which could be included in a TDM plan include the following:

- A commuter transportation coordinator;

- Car pool and van pool program, including participation in a computerized matching system;
- Parking management techniques, including preferential parking for rideshare vehicles, offering a cash equivalent of parking costs as travel allowance, etc.;
- Encourage non-vehicle modes such as bicycling, walking, or telecommuting;
- Flexible or staggered work hours, potentially including compressed work weeks (i.e., 4/40 or 9/80 plans);
- Transit incentives and improvements, including subsidized transit passes, distribution of transit information and schedules, and provision of shelters or benches at bus stops and/or layover areas;
- Vehicle trip reduction incentives and services affecting visitors to the project, such as shoppers, clients, patrons, etc.; and
- Site trip generation cap and/or parking cap including trip monitoring agreements.

#### **TRANSIT CAPACITY AND ACCESS IMPROVEMENTS**

- Implementation of a local shuttle bus service providing direct access from the project site to multi-modal or rail transit stations;
- Bus benches, shelters, or other amenities; and,
- Concrete bus pads and bus stops.

#### **TRAFFIC SIGNAL IMPROVEMENTS**

- Signal modifications, including signal timing, coordination, phasing improvements, etc.; and
- The provision of new signals when a traffic signal warrant analysis identifies a need.

#### **PHYSICAL IMPROVEMENTS**

- Turn restrictions;
- One-way streets;
- New roadway;
- Roadway widening to add lanes;
- Extension of truncated street;
- Intersection grade separation;
- Redesign of freeway on- and off-ramps;
- Median construction/modification to restrict access;

- Pedestrian crossing grade separation; and
- Flaring of intersections to add turn lanes.

### **STREET RE-STRIPING AND PARKING PROHIBITIONS**

- Re-striping to add lanes, with or without parking removal or restrictions;
- Protected left-turn pockets, or free right-turn lanes; and
- Parking restrictions, daily or during peak hours.

## **2.5 REFERENCES**

*City of Lake Forest General Plan Circulation Element Revised July 2008.*

*City of Lake Forest Municipal Code.*

*Guidance for Administration of the Orange County Master Plan of Arterial Highway.* 1995 (November). County of Orange.

*Master Plan of Arterial Highway Map, Orange County, California.* 2000 (May). County of Orange.

*2005 Orange County Congestion Management Program.* 2005. Orange County Transportation Authority.

## SECTION 3 NOISE

### 3.1 BACKGROUND

Potential noise impacts are commonly divided into two groups: short-term construction and long-term operational (stationary source and mobile vehicular noise). Short-term impacts are usually associated with noise generated by construction activities. Long-term impacts include effects on surrounding land uses generated by a project once it is operational, and those impacts which occur at a project site. Construction-related and operational noise impacts are addressed in this section.

Noise has been defined as unwanted sound and it is known to have adverse effects on people. Based on these effects, 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.

Most noise metrics use the A-weighted noise level to quantify noise impacts on humans. A-weighting is a frequency weighting that accounts for human sensitivity to different frequencies. When the A-scale is used, the decibel levels are represented by dBA (A-weighted decibels). The City of Lake Forest's noise guidelines are expressed in terms of dBA. On this scale, the range of human hearing extends from about 3 dBA to about 140 dBA. A 10 dBA increase is judged by most people as a doubling of the sound level. Generally, noise increases of less than three dB are not detectable by the human ear.

Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud). Noise from transportation activities (transportation corridors, major arterials, collector roadways, railroad, etc.) is the primary component of the noise environment in the City of Lake Forest. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers, pile drivers, and portable generators, can reach high levels. Noise levels from construction equipment generally range from 76 to 91 dBA for equipment powered by internal combustion engines, saws, vibrating equipment, and from the mid-80s to more than 100 dBA for impact equipment. Excavation and grading activities typically represent the highest potentials for noise impacts.

### 3.2 NOISE METRICS

To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. Two of the most commonly used noise scales are the Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL).

**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 one hour. It is the energy sum of all the events and background noise levels that occur during that time period.

**CNEL** is the predominant rating scale used in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. "Time weighted" means that noise that occurs during certain sensitive time periods is penalized in noise analyses. Noises occurring in the evening time period (7 p.m. to 10 p.m.) are penalized by 5 dBA and nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dBA. A CNEL noise level may be reported as a "CNEL of 60 dBA," "60 dBA CNEL," or simply "60 CNEL."

### 3.3 APPLICABLE NOISE STANDARDS

The City of Lake Forest General Plan (Safety and Noise Element), and the City’s Municipal Code (Chapter 11.16, Noise Control) establish noise standards for the City.

#### SAFETY AND NOISE ELEMENT OF THE GENERAL PLAN

Table SN-2 of the Safety and Noise Element summarizes City noise standards for various types of land uses (Table 3-1 below). The standards represent the maximum allowable noise level for the identified uses and are used by the City to determine noise impacts associated with implementation of projects. These noise standards are summarized below:

**TABLE 3-1  
INTERIOR AND EXTERIOR NOISE STANDARDS**

Land Use	Noise Standards <sup>1</sup>	
	Interior <sup>2, 3</sup>	Exterior
Residential - Single-family, multi-family, duplex, mobile home	CNEL 45 dB	CNEL 65 dB <sup>4</sup>
Residential - Transient lodging hotels, motels, nursing homes, hospitals	CNEL 45 dB	CNEL 65 dB <sup>4</sup>
Private offices, church sanctuaries, libraries, board rooms, conference rooms, theaters, auditoriums, concert halls, meeting halls, etc.	Leq(12) 45 dB(A) <sup>(6)2</sup>	--
Schools	Leq(12) 45 dB(A)	CNEL 65dB <sup>(5)</sup>
General offices, reception, clerical, etc.	Leq(12) 50 dB(A)	--
Bank lobby, retail store, restaurant, typing pool, etc.	Leq(12) 55 dB(A)	--
Manufacturing, kitchen, warehousing, etc.	Leq(12) 65dB(A)	--
Parks, playgrounds	--	CNEL 65 dB <sup>(5)</sup>
Golf courses, outdoor spectator sports, amusement parks	--	CNEL 70 dB <sup>(5)</sup>

Notes:

- 1 CNEL - Community Noise Equivalent Level  
Leq(12) - The A-weighted equivalent sound level averaged over a 12-hour period (usually the hours of operation).
- 2 Noise standard with windows closed. Mechanical ventilation shall be provided per UBC requirements to provide a habitable environment.
- 3 Indoor environment excluding bathrooms, toilets, closets, and corridors.
- 4 Outdoor environment limited to rear yard of single-family homes, multi-family patios and balconies (with a depth of 6' or more) and common recreation areas.
- 5 Outdoor environment limited to playground areas, picnic areas, and other areas of frequent human use.
- 6 Religious institutions (Churches, temples, and other places of worship) of a small size (occupancy of 100 persons or less) may occupy existing buildings within areas of exterior noise levels ranging from 65 to 75 dB CNEL without providing additional noise insulation for the building.

Source: City of Lake Forest General Plan, July 11, 1995.

## NOISE ORDINANCE

The Noise Control Chapter of the Lake Forest Municipal Code (“Noise Ordinance”), is designed to protect people from non-transportation (stationary) noise sources such as music, construction activity, machinery and pumps, and air conditioners. The Noise Ordinance sets limits on the level and the duration of time a stationary noise source may impact a residential use. The louder the level becomes, the shorter the time becomes that it is allowed to occur. Table 3-2 lists the A-weighted noise level and the maximum cumulative period of time that the noise level may occur during a 1-hour period.

The ordinance applies different criteria during different time periods. The noise criteria are much more stringent in late night and early morning hours and reflect a heightened sensitivity to noise during these time periods.

**TABLE 3-2  
CITY OF LAKE FOREST NOISE ORDINANCE**

Noise Level <sup>a</sup>		Maximum Cumulative Duration
Exterior Noise	Interior Noise	
<b>DAYTIME ORDINANCE (7 a.m. - 10 p.m.)</b>		
75 dBA	65 dBA	Not to be exceeded at any time
70 dBA	60 dBA	1 minute
65 dBA	55 dBA	5 minutes
60 dBA	--	15 minutes
55 dBA	--	30 minutes
<b>NIGHTTIME ORDINANCE (10 p.m. - 7 a.m.)</b>		
70 dBA	55 dBA	Not to be exceeded at any time
65 dBA	50 dBA	1 minute
60 dBA	45 dBA	5 minutes
55 dBA	--	15 minutes
50 dBA	--	30 minutes

Source: City of Lake Forest Municipal Code, Section 11.16, Noise Control.

- a. In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the noise levels shall be reduced by 5 dBA.

Section 11.16.060 of the Noise Ordinance identifies specific activities that would be exempt from the provisions of the noise restrictions. Exempted activities include, but are not limited to, construction, repair, remodeling and grading, provided such activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

### **3.4 THRESHOLDS OF SIGNIFICANCE**

#### **TRAFFIC NOISE**

A proposed project would normally have a significant offsite traffic noise impact if both of the following criteria are met:

- Project traffic will cause a noise level increase of 3 dB or more on a roadway segment adjacent to a noise sensitive land use. Noise sensitive land uses include the following: residential (single-family, multi-family, mobile home); hotels; motels; nursing homes; hospitals; parks, playgrounds and recreation areas; and schools.
- The resulting "future with project" noise level exceeds the noise standard for sensitive land uses as identified in the City of Lake Forest General Plan (refer to Table 3-1 above, Interior and Exterior Noise Standards).

#### **STATIONARY NOISE**

The Noise Ordinance sets limits on the level and duration of time a stationary noise source may impact a residential area. Table 3-2 outlined these noise limits. The determination that a project has the potential to exceed the City's established noise limits is typically based on a noise technical report prepared by a qualified acoustical consultant. The project would normally have a significant noise impact if it would:

- Exceed the stationary source noise criteria for the City of Lake Forest as specified by the Exterior noise standards set fourth in the Noise Control Chapter of the Lake Forest Municipal Code.

### **3.5 POTENTIAL MITIGATION**

The mitigation measures suggested in this section are examples of the types of mitigation that could be applied to a project to reduce identified noise impacts. The actual mitigation recommended for a project will vary depending on the project itself, the specific impact, and other issues that may arise on a case-by-case basis. It is not intended that each mitigation measure identified in this section be applied to every project or that the mitigation be written exactly as presented herein. Similarly there may be mitigation required of a project that is not identified in this document.

#### **CONSTRUCTION NOISE**

Potential mitigation measures for short-term construction-related noise impacts may include:

- Ensure that construction activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday;
- Use noise control devices such as equipment mufflers, enclosures, and barriers. Natural and artificial barriers such as ground elevation changes and existing buildings can shield construction noise. Stage construction operations as far from noise sensitive uses as possible;
- Require a haul plan subject to approval by the City;
- Avoid residential areas when planning haul truck routes;

- Maintain all sound-reducing devices and restrictions throughout the construction period;
- Replace noise equipment with quieter equipment (for example, a vibratory pile driver instead of a conventional pile driver and rubber-tired equipment rather than track equipment);
- Change the timing and/or sequence of the noisiest construction operations to avoid sensitive times of day.

### **STATIONARY NOISE SOURCES**

The following mitigation measures may reduce noise generated from stationary sources:

- Redesign the source to radiate less noise (e.g., substitute a quieter equipment type/process or enclose the source with sound absorbent material);
- Use insulation or construct solid barriers between noise sources and noise receivers;
- Separate noise sources from noise receivers by distances sufficient to attenuate the noise to acceptable levels;
- Insulate structures;
- Limit the hours of use for the equipment;
- Prepare an acoustical analysis and adopt the resulting insulation and attenuation measures;
- Conduct inspections of the equipment prior to issuance of the occupancy permit to verify onsite containment of noise emissions.

### **MOBILE VEHICULAR SOURCES**

The following mitigation measures may reduce noise generated from mobile vehicular sources:

- Attenuate the sound by using barriers, or redirect sound transmission paths;
- Reduce vehicle trip generation or reduce speed limits on roadways;
- Locate any delivery, truck loading, or trash pickup areas as far from noise sensitive land uses as possible. Limit designated hours for deliveries.

### **REQUIREMENT FOR SUBSEQUENT NOISE ANALYSIS**

Under certain circumstances, specific design features or mitigation to reduce interior and exterior noise levels cannot be determined until later in the design phase of a project. The following requirements for future noise analysis could be applied to a project, acknowledging that recommendations from these studies need to be included in the final project design.

- Prepare an acoustical analysis report which describes in detail the exterior noise environment and identifies preliminary mitigation measures.
- Prepare an acoustical analysis report which describes the acoustical design features of the structures required to satisfy the interior noise standards established by the City.

### 3.6 **REFERENCES**

*City of Lake Forest General Plan, Revised Edition.* 2000 (May). Safety and Noise Element.  
Prepared by Cotton/Beland/Associates, Inc.

*City of Lake Forest Master Environmental Assessment.* 1994 (April). Prepared by  
Cotton/Beland/Associates, Inc.

*City of Lake Forest Municipal Code.* Chapter 11.16, Noise Control.

## SECTION 4 AIR QUALITY

### 4.1 BACKGROUND

Air quality impacts may occur during the construction and operation phases of a project, and may come from stationary, mobile, and area sources. Construction and operation emissions are addressed in this section.

#### REGIONAL SETTING

Air quality is dependent upon the regional topography, climate, and local pollutant sources. Topography in the region consists of a basin surrounded to the north and east by mountain ranges. A subtropical high pressure cell over the Pacific Ocean provides cool, moist marine air that is confined by the mountain slopes maintaining moderate temperatures and comfortable humidity and limiting precipitation to a few storms during the winter “wet” season. The average wind speed for the region is the lowest of the nation's ten largest urban areas. In addition, the summertime maximum mixing height (an index of how well pollutants can be dispersed vertically in the atmosphere) in Southern California averages the lowest in the U.S. This low mixing height increases the trapping effect of the surrounding mountain ranges which prevent airborne pollutants from dispersing horizontally. The Southern California area is also an area with abundant sunshine, which drives the photochemical reactions forming certain pollutants.

Given the highly urbanized nature of coastal Southern California, many mobile (e.g., motor vehicles) and non-mobile (e.g., refineries or power stations) sources of air pollution exist. The data indicate that on-road mobile sources (e.g., motor vehicles) contribute the most regional emissions. Therefore, the combination of ideal topography, climate, and pollutant sources has resulted in a severe air pollution problem in Southern California.

#### HEALTH EFFECTS OF AIR POLLUTANTS

It is generally recognized that the presence of elevated concentrations of certain air pollutants (either directly or in reaction to other pollutants) can cause both damage to the environment and health problems in people. Such pollutants have been identified and regulated as part of the overall effort to prevent further deterioration and to facilitate improvement in air quality.

The following pollutants are regulated by the U.S. Environmental Protection Agency (USEPA) and are therefore subject to emissions reduction measures adopted by federal, State, and other regulatory agencies.

**Ozone (O<sub>3</sub>):** Ozone is a secondary pollutant formed by the chemical reaction of volatile organic compounds and nitrogen oxides (NO<sub>x</sub>) under favorable meteorological conditions (such as high temperature and air stagnation). An elevated level of ozone irritates the lungs and breathing passages, thereby increasing susceptibility to respiratory infections and reducing the ability to exercise. Effects are more severe in people with asthma and other respiratory ailments. Long-term exposure may lead to lung tissue scarring and may lower lung efficiency.

**Carbon Monoxide (CO):** Carbon monoxide is primarily emitted from combustion processes and motor vehicles because of incomplete fuel combustion. Elevated concentrations of CO weaken the heart's contractions and lower the amount of oxygen carried by the blood. It is especially dangerous for people with chronic heart disease. Inhalation of moderate levels of carbon monoxide can cause nausea, dizziness and headaches, and can be fatal at high concentrations.

**Particulate Matter (PM10 and PM2.5):** The human body naturally prevents the entry of large airborne particles into the body. However, small particles, with an aerodynamic diameter equal to or less than 10 microns (PM10) and even smaller particles with an aerodynamic diameter equal to or less than 2.5 microns (PM2.5) can get trapped in the nose, throat, and upper respiratory tract. These small particulates enter the body and could potentially aggravate existing heart and lung diseases, change the body's defenses against inhaled materials, and damage lung tissue. The elderly, children, and those with chronic lung or heart disease are most sensitive to PM10 and PM2.5. Lung impairment can persist for two to three weeks after exposure to high levels of particulate matter. Some types of particulate matter could become toxic after inhalation due to the presence of certain chemicals and their reaction with internal bodily fluids.

**Nitrogen Oxides (NO<sub>x</sub>):** Major sources of NO<sub>x</sub> include power plants, large industrial facilities, and motor vehicles. Nitrogen oxides are emitted from combustion processes and irritate the nose and throat. They increase susceptibility to respiratory infections, especially in people with asthma. NO<sub>x</sub> is a precursor to the formation of ozone (O<sub>3</sub>), which is why it is of principal concern.

**Sulfur Dioxide (SO<sub>2</sub>):** Major sources of SO<sub>2</sub> include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Emissions of sulfur dioxide aggravate lung diseases, especially bronchitis. It also constricts the breathing passages, especially in asthmatics and people involved in moderate-to-heavy exercise. Sulfur dioxide potentially causes wheezing, shortness of breath, and coughing. High levels of particulate matter appear to worsen the effect of sulfur dioxide, and long-term exposures to both pollutants lead to higher rates of respiratory illness.

**Lead (Pb):** Lead is emitted from industrial facilities and from the sanding or removal of old lead-based paint. Smelting or processing metal is the primary source of lead emissions, which is primarily a regional pollutant. Lead affects the brain and other parts of the body's nervous system. Exposure to lead in very young children impairs development of the nervous system, kidneys, and blood-forming processes in the body.

**Volatile Organic Compounds (VOCs):** Although VOCs are not directly a health hazard and are not considered a criteria pollutant, they react with NO<sub>x</sub> in the presence of sunlight to produce ozone. As such, VOC emissions are regulated as a precursor of ozone. Some State and local agencies regulate VOCs as Reactive Organic Gases (ROGs), which possess similar characteristics as VOCs.

## 4.2 REGULATORY AND PLANNING SETTING

California is divided by the California Air Resources Board (CARB) into air basins determined by meteorological and topographical features. The City of Lake Forest is in the South Coast Air Basin (Basin), a 6,600 square-mile area comprised of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Basin is within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD adopts and enforces regulations for stationary sources in the air basin and, together with the Southern California Association of Governments (SCAG), local governments, and the private sector, develops the air basin's Air Quality Management Plan (AQMP). CARB must approve the AQMP for the Basin and all other air basins in the state that exceed California and National Ambient Air Quality Standards (CAAQS and NAAQS, respectively). The CAAQS and NAAQS are determined by the California Clean Air Act (CCAA) and the 1990 amendments to the federal Clean Air Act (CAA). The CARB-approved AQMPs are included in the State Implementation Plan (SIP) which is approved by the USEPA.

The AQMP is the most important air quality management document for the Basin because it provides the blueprint for meeting CAAQS and NAAQS. State law mandates the revision of the AQMP at least every three years, and federal law specifies certain dates for developing attainment plans for criteria pollutants. The 2003 AQMP was adopted locally on August 1, 2003 by the governing board of SCAQMD. The CARB adopted the AQMP as part of the SIP on October 23, 2003, and the SIP was adopted by the USEPA on April 9, 2004. The 2007 AQMP was adopted on June 1, 2007 by the governing board of the SCAQMD.

The SCAQMD is the main regulatory authority in the Basin with regard to the air quality impacts of projects. In 1993, the SCAQMD adopted the *CEQA Air Quality Handbook (1993 Handbook)* which provides guidance for CEQA analysis of potential air quality impacts resulting from the construction and operation of new projects. The *1993 Handbook* addresses screening criteria for stationary and mobile source emissions; the effects of certain pollutants (e.g., toxics, carbon monoxide) on sensitive receptors; and area sources (e.g., landfills, construction sites, etc.). It also provides recommended thresholds to assist in determining the significance of potential project impacts from these sources.

SCAQMD is currently preparing an *Air Quality Analysis Guidance Handbook (Handbook)* to replace the *1993 Handbook*. Several sections of the *1993 Handbook* providing guidance on impact analysis are considered obsolete and updated sections are presently available on the SCAQMD website<sup>1</sup>. These updated sections may be used to address project impacts until such time that the updated Handbook becomes available.

The SCAQMD recommends emission thresholds for all federally- regulated air pollutants. These thresholds were established by the SCAQMD, based on scientific and factual data contained in the federal and state Clean Air Acts and regulations of the federal and state Environmental Protection Agencies (EPAs). Construction and operational emissions are considered by the SCAQMD to be significant if they exceed the thresholds shown in Section 4.4.

The SCAQMD recommends that the thresholds outlined in the *1993 Handbook* be used by lead agencies in making a determination of significance related to air quality. The City of Lake Forest uses the SCAQMD thresholds in its determination of significance of air quality impacts.

Both the federal government, through USEPA authority under the federal CAA, and California, through CARB authority under the CCAA, set ambient air standards to protect public health and welfare. The federal and state standards for air pollutants are presented in Table 4-1.

---

1 <http://www.aqmd.gov/ceqa/hdbk.html>

**TABLE 4-1  
AMBIENT AIR QUALITY STANDARDS**

Air Pollutant	State	National	
	Standard	Primary	Secondary
Ozone (O <sub>3</sub> )	0.09 ppm, 1-hr avg. 0.07 ppm, 8-hour avg.	0.12 ppm, 1-hr avg. 0.08 ppm, 8-hour avg.	0.12 ppm, 1-hr avg. 0.08 ppm, 8-hour avg.
Carbon Monoxide (CO)	9.0 ppm, 8-hr. avg. 20 ppm, 1-hr. avg.	9.0 ppm, 8-hr. avg. 35 ppm, 1-hr. avg.	9.0 ppm, 8-hr. avg. 35 ppm, 1-hr. avg.
Nitrogen Dioxide (NO <sub>2</sub> )	0.18 ppm, 1-hr. avg. 0.03 ppm, AAM	0.0534 ppm, annual avg.	0.0534 ppm, annual avg.
Sulfur Dioxide (SO <sub>2</sub> )	0.25 ppm 1-hr 0.04 ppm, 24-hr avg.	0.03 ppm, annual avg. 0.14 ppm, 24-hr. avg.	0.50 ppm, 3-hr. avg.
Suspended Particulate Matter (PM <sub>10</sub> )	50 $\Phi$ g/m <sup>3</sup> , 24-hr. avg. 30 $\Phi$ g/m <sup>3</sup> AGM	150 $\Phi$ g/m <sup>3</sup> , 24-hr avg.	
Suspended Particulate Matter (PM <sub>2.5</sub> )	12 $\Phi$ g/m <sup>3</sup> AGM	35 $\Phi$ g/m <sup>3</sup> , 24-hr avg. 15 $\Phi$ g/m <sup>3</sup> AAM	35 $\Phi$ g/m <sup>3</sup> , 24-hr avg. 15 $\Phi$ g/m <sup>3</sup> AAM
Sulfates (SO <sub>4</sub> )	25 $\Phi$ g/m <sup>3</sup> , 24-hr avg.		
Lead (Pb)	1.5 $\Phi$ g/m <sup>3</sup> , monthly avg.	1.5 $\Phi$ g/m <sup>3</sup> , calendar quarter	1.5 $\Phi$ g/m <sup>3</sup> , calendar quarter
Hydrogen Sulfide (H <sub>2</sub> S)	0.03 ppm, 1-hr avg.		
Vinyl Chloride	0.010 ppm, 24-hr avg.		
Visibility-Reducing Particles	In sufficient amount to reduce prevailing visibility to less than 10 miles at relative humidity less than 70%, 1 observation		
Note: ppm = parts per million by volume $\Phi$ g/m <sup>3</sup> = micrograms per cubic meter AAM = annual arithmetic mean AGM = annual geometric mean			

## FEDERAL AND STATE ATTAINMENT STATUS

National ambient air standards set by the USEPA establish deadlines for attainment and consequent penalties for non-attainment. The Basin, the Nation's only "extreme" O<sub>3</sub> non-attainment area, has until 2010 to achieve the national 1-hour ozone standard. The Basin is serious non-attainment for PM<sub>10</sub> because it did not meet the 2005 attainment deadline. The basin was the only NO<sub>2</sub> non-attainment area regularly exceeding the standard in Los Angeles County until 1992, and was redesignated attainment in 1998 by the USEPA. Additionally, the Basin was recently redesignated as attainment for CO in 2006 by the USEPA.

In July 1997, the USEPA promulgated stricter standards for ozone and fine particulates (PM<sub>2.5</sub>), with up to 15 years allowed for attaining the PM<sub>2.5</sub> standard. Attainment of the new 8-hour ozone standard would not be required until after the 1-hour standard is achieved. The PM<sub>10</sub> standard was revised, but the existing PM<sub>10</sub> standard remains in effect until attainment is achieved. Although the USEPA has designated a standard for PM<sub>2.5</sub>, there has not been sufficient monitoring of this

pollutant to determine attainment status. Therefore, until there has been sufficient monitoring for the USEPA to designate the PM<sub>2.5</sub> attainment status for each region, the PM<sub>10</sub> standard will remain the particulate standard of reference.

California standards are generally stricter and are designed to ensure attainment of national standards, but have no penalty for non-attainment. California and national attainment status for the criteria pollutants are presented in Table 4-2.

**TABLE 4-2  
ATTAINMENT STATUS OF CRITERIA POLLUTANTS  
IN THE SOUTH COAST AIR BASIN**

<b>Pollutant</b>	<b>State</b>	<b>Federal</b>
Ozone (1-hour standard)	Nonattainment	Extreme Nonattainment*
Ozone (8-hour standard)	No State Standard	Severe 17 Nonattainment**
PM <sub>10</sub>	Nonattainment	Serious Nonattainment***
PM <sub>2.5</sub>	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO <sub>2</sub>	Attainment	Attainment
SO <sub>2</sub>	Attainment	Attainment
Lead	Attainment	Attainment

\* As described in CAA 188(b)(1), area has a design value of 0.187 ppm and above.  
 \*\* Area has a design value of 0.127 up to but not including 0.187 ppm  
 \*\*\* As designated by CAA 188(b)(1) for failure to meet standards by the 1993 deadline.

Source: Draft Final 2007 AQMP

**4.3 ESTABLISHED SCAQMD AIR POLLUTION EMISSION THRESHOLDS**

The SCAQMD has established air pollution emission thresholds to assist lead agencies in determining whether or not a project would result in significant local or regional air quality impacts during construction and operation. The SCAQMD emissions thresholds are described below. Methodologies recommended by SCAQMD for calculating pollutant emissions are provided on its website: [www.aqmd.gov/ceqahdbk.html](http://www.aqmd.gov/ceqahdbk.html).

**CONSTRUCTION EMISSIONS**

Construction of new projects has the potential to create air quality impacts through earth moving operations and the use of heavy duty equipment and trucks. Fugitive dust emission results from land clearing, demolition, ground excavation, cut and fill operations, and equipment traffic over temporary roads at construction sites. Mobile source emissions, primarily nitrogen oxides (NO<sub>x</sub>), result from the use of construction equipment such as bulldozers, trucks, and scrapers. The emissions are most significant when using heavy-duty, diesel-fueled equipment. Mobile source emission also results from vehicle trips by construction workers to and from the project site. The following significance thresholds for air quality have been established by the SCAQMD on a daily basis:

- 100 pounds per day for NO<sub>x</sub>
- 75 pounds per day for VOC
- 150 pounds per day for PM<sub>10</sub>
- 55 pounds per day for PM<sub>2.5</sub>
- 150 pounds per day for SO<sub>x</sub>

- 550 pounds per day for CO
- 3 pounds per day for Lead

## **OPERATIONAL EMISSIONS**

Operational emissions are those which occur after project construction activities have been completed, and the project becomes operational. Operational emissions are produced by the occupants of a facility or development, and by both mobile and stationary sources associated with the facility or development. Depending on the characteristics of the individual project, operational activities have the potential to generate emissions of criteria contaminants identified below.

Stationary source emissions include point source emissions that have an identifiable location. Mobile source emissions occur as a result of motor vehicle, train, ship, and airplane travel. Motor vehicle emissions result from passenger vehicles and truck travel through the Basin and are generally analyzed on a regional basis. Motor vehicle emissions can influence local air quality through changes in carbon monoxide (CO) concentrations, which are usually highest at busy intersections, parking garages, or other focused areas of vehicle activity. Changes in CO concentrations are generally analyzed only where they would occur in proximity to sensitive receptors.

The following significance thresholds for air quality have been established by the SCAQMD for project operations in the South Coast Air Basin. These thresholds are used to determine if individual projects would have significant impacts on the regional air quality.

- 55 pounds per day of NO<sub>x</sub>
- 55 pounds per day of VOC
- 150 pounds per day of PM10
- 55 pounds per day for PM2.5
- 150 pounds per day of SO<sub>x</sub>
- 550 pounds per day of CO
- 3 pounds per day of Lead
- California state 1-hour or 8-hour CO standard (refer to Table 4-1, Ambient Air Quality Standards)

## **LOCALIZED SIGNIFICANCE THRESHOLDS**

As part of the SCAQMD's environmental justice program, a methodology to analyze the localized impacts of air pollutant dispersion was prepared for inclusion in CEQA analyses. The Localized Significance Threshold (LST) methodology as approved by SCAQMD in June 2003 is available for viewing on their website at [http://www.aqmd.gov/ceqa/handbook/lst/Method\\_final.pdf](http://www.aqmd.gov/ceqa/handbook/lst/Method_final.pdf). The LST methodology was developed to determine whether or not a project may generate significant adverse localized air quality impacts from dispersion of NO<sub>x</sub>, CO, PM10, and PM2.5, the pollutants with the highest potential to affect human health. LST's represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards, and are developed based on the ambient concentrations of that pollutant and weather conditions in each Source Receptor Area (SRA). The City of Lake Forest is located within SRA 19, the Saddleback Valley Air Monitoring Subregion.

The LST methodology is applied by local jurisdictions on a voluntary basis to all projects less than 5 acres in size that are located within 500 meters of sensitive receptors (e.g., schools, hospitals, and residences). The LST mass rate look-up tables provide thresholds according to proposed project distance from sensitive receptors and the SRA. For the CEQA analysis, the threshold with the

lowest pounds per day emissions, either the LST or the construction/operational emissions thresholds described above, would be applied to the projected emissions. If the calculated on-site emissions for the proposed construction or operational activities are below the LST emission levels found on the LST mass rate look-up tables, and no other significance thresholds for air quality are exceeded, then the proposed construction or operation activity would not result in significant air quality impacts. However, a finding of significant impact is made if LST thresholds are exceeded.

### PM2.5 Significance Thresholds

In the last few years, both the California and federal governments have established ambient air quality standards for fine particulate matter (PM) less than or equal to 2.5 microns in diameter (PM2.5). Although a general threshold of 55 pounds per day was published by the SCAQMD, there currently isn't sufficient data as measured from air pollutant monitoring stations throughout the state to appropriately determine emissions thresholds for local projects. As a result, a methodology was established by SCAQMD for calculating PM2.5 and appropriate PM2.5 significance thresholds for the purpose of analyzing local and regional PM2.5 air quality impacts in CEQA and NEPA air quality analyses (PM2.5 Methodology). The PM2.5 Methodology was approved in October 2006 by SCAQMD and is available for viewing on their website at [http://www.aqmd.gov/ceqa/handbook/PM2\\_5/finalmeth.doc](http://www.aqmd.gov/ceqa/handbook/PM2_5/finalmeth.doc).

Because there are no currently approved PM2.5 emission factors for mechanical or combustion processes, and since PM2.5 is a subset of PM10, the current methodology for calculating PM10 from fugitive dust sources (grading, demolition, unpaved roads, open storage piles, etc.) and combustion sources (stationary combustion sources, vehicle exhaust) is used to derive the project-specific PM2.5 threshold and anticipated project emissions. If anticipated project emissions are found to exceed the threshold, as determined by the PM2.5 Methodology, a finding of significant impact is made.

#### 4.4 THRESHOLDS OF SIGNIFICANCE

Appendix G, Section III of the Environmental Checklist Form in the State CEQA Guidelines states that, where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make determinations regarding air quality impacts. A project would normally have a significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation. The SCAQMD construction and operational emission thresholds identified in Table 4-3 are used for this assessment.

**TABLE 4-3  
SCAQMD EMISSION EMISSION THRESHOLDS**

<b>Emission Thresholds of Significance</b>		
<b>Pollutant</b>	<b>Construction pounds/day</b>	<b>Operation pounds/day</b>
Nitrous Oxides (NO <sub>x</sub> )	100	55
Volatile Organic Compounds (VOC)	75	55
Particulate Matter <10µg (PM10)	150	150
Particulate Matter <2.5µg (PM2.5)	55	55
Sulfur Oxides (SO <sub>x</sub> )	150	150
Carbon Monoxide (CO)	550	550

Lead (Pb)	3	3
Source: SCAQMD CEQA Air Quality Handbook, 1993 (As amended at <a href="http://www.aqmd.gov/ceqa/handbook/signthres.pdf">http://www.aqmd.gov/ceqa/handbook/signthres.pdf</a> ) rev March 2009.		

- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release in emissions which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations. Methodologies established by SCAQMD for assessing local impacts, including but not limited to Local Significance Thresholds and thresholds for PM2.5 are used for this assessment.
- Create objectionable odors affecting a substantial number of people.
- A project will be considered to result in a cumulatively considerable net increase of any criteria pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors) where the incremental effect of the project emissions, considered together with past, present, and reasonably anticipated further project emissions, increase the level of any criteria pollutant above the existing ambient level.

#### 4.5 **SCAQMD ADDITIONAL INDICATORS FOR AIR QUALITY IMPACTS**

Within the *SCAQMD CEQA Air Quality Handbook*, the SCAQMD has provided additional indicators for air quality impacts. The SCAQMD suggests that these be used as screening criteria indicating the need for further analysis with respect to air quality, beyond that needed to address air quality impacts pursuant to the thresholds discussed above. If a project could result in any of the following conditions, the City may require more detailed analysis of the project to support the preparation of environmental documentation. These indicators are not intended to represent thresholds of significance.

- Project will have hazardous materials on site and could result in an accidental release of air toxic emissions or acutely hazardous materials posing a threat to public health and safety.
- Project could emit an air toxic contaminant regulated by SCAQMD rules or that is on a federal or state air toxic list.
- Project could involve burning of hazardous, medical, or municipal waste as waste-to-energy facilities.
- Project could be occupied by sensitive receptors within a quarter-mile of an existing facility that emits air toxics identified in District Rule 1401 (New Source Review of carcinogenic air contaminants) or near CO hot spots.
- Project could emit carcinogenic or toxic air contaminants that individually or cumulatively exceed the maximum individual cancer risk of 10 in 10 million.

#### 4.6 **POTENTIAL MITIGATION**

The mitigation measures suggested in this section are examples of the types of mitigation that could be applied to a project to reduce identified air quality impacts. The actual mitigation recommended for a project will vary depending on the project itself, the specific impact, and other issues that may arise on a case-by-case basis. It is not intended that each mitigation measure identified in this section be applied to every project or that the mitigation be written exactly as presented herein. Similarly there may be mitigation required of a project that is not identified in this document.

## **CONSTRUCTION-RELATED AIR QUALITY EMISSIONS**

The *SCAQMD CEQA Air Quality Handbook, as amended*, identifies potential mitigation for air quality impacts associated with construction activities. These mitigation measures should be consulted when developing mitigation requirements for individual projects. In addition, potential mitigation measures for short-term construction-related air quality impacts may include:

- A requirement for compliance with SCAQMD regulations shall be included in the contractor plans and specifications. All construction contractors shall comply with SCAQMD regulations, including Rule 402, the Nuisance Rule, and Rule 403, Fugitive Dust.

## **OPERATIONAL EMISSIONS**

The *SCAQMD CEQA Air Quality Handbook, as amended*, identifies potential mitigation for air quality impacts associated with operation of various land uses. These mitigation measures should be consulted when developing mitigation requirements for individual projects.

### **4.7 REFERENCES**

*Air Quality Analysis Guidance Handbook (on-line supplemental information)*. 2008.  
<http://www.aqmd.gov/ceqa/hdbk.html>

*CEQA Air Quality Handbook*. 1993. South Coast Air Quality Management District.

*Air Quality Management Plan*. 2007. South Coast Air Quality Management District.

*Final Localized Significance Threshold Methodology*. 2003. South Coast Air Quality Management District.

*Final Methodology to Calculate PM<sub>2.5</sub> and PM<sub>2.5</sub> Significance Thresholds*. 2006. South Coast Air Quality Management District.

## SECTION 5 LAND USE

### 5.1 BACKGROUND

The City of Lake Forest encompasses approximately 17 square miles in southern Orange County. The Land Use Policy Map in the Land Use Element of the General Plan illustrates the various types and distribution of land uses planned for the City.

Land use issues can be divided into two categories: land use consistency, and land use compatibility. Land use consistency addresses the consistency or compliance of proposed projects with the goals and policies of the General Plan, the Municipal Code, and any other relevant planning programs (such as specific plans) that contain environmental policies. It should be noted that a project determined to be inconsistent with the General Plan or Zoning Code will require a general plan amendment or zone change as a requested discretionary action.

Land use compatibility issues deal with the potential for projects or programs to create incompatible situations between land uses or activities. Such incompatibilities may result from environmental impacts associated with the proposed land use. Examples of incompatibility include land uses which create noise, odor, safety hazards, visual, or other environmental impacts which conflict with surrounding land uses and their occupants and the activities and conditions typically associated with those land uses. Incompatibilities may also result from differences in the physical scale of development, noise levels, and hours of operation. It should be noted that although the City may conclude that a land use compatibility issue(s) occurs internal or external to a site, this would not always represent a significant land use impact. Typically, a significant impact may occur if there are multiple areas of incompatibility or indirect effects identified that are considered significant and unavoidable.

A project may also disrupt the physical arrangement of an established community by introducing new infrastructure such as roads that would isolate land uses that could interrupt the typical activities or change the land use conditions in a community.

### 5.2 LAND USE GOALS, POLICIES, AND REGULATIONS

The City of Lake Forest General Plan Land Use Element identifies six goals and associated policies which have been developed to address land use issues facing the City of Lake Forest. These goals and policies serve as guides for reviewing development proposals, planning facilities to accommodate anticipated growth, and accomplishing community development strategies. These goals must be taken into consideration when addressing land use issues for proposed projects.

**Goal 1** - A balanced land use pattern that meets existing and future needs for residential, commercial, industrial, and community uses.

**Goal 2** - A distinct image and identity for Lake Forest.

**Goal 3** - New development that is compatible with the community.

**Goal 4** - New development conforming to the established planned community development plans and agreements.

**Goal 5** - Diversification and expansion of economic activities, and retention of existing businesses and revenues in support of public services.

**Goal 6** - Revitalization of older residential, commercial, and industrial development.

The City Zoning Ordinance, Planned Community Texts, and Area Plan Regulations are the primary regulatory documents used to ensure land use compatibility. The Zoning Ordinance and Planned Community Texts contain standards for development, such as minimum lot sizes, building setback and maximum height limitations, parking and landscaping requirements, and other standards that are designed to promote compatibility.

**5.3 THRESHOLDS OF SIGNIFICANCE**

A project would normally have a significant land use impact if it would:

- Physically divide an established community.
- Substantially conflict with existing on-site or adjacent land use due to project-related significant unavoidable indirect effects (i.e. noise, aesthetics, etc) that preclude use of the land as it was intended by the General Plan.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, planned community, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- Conflict with the Central and Coastal Natural Communities Conservation Program/Habitat Conservation Plan (NCCP/HCP) of which the City of Lake Forest is a participant.

**5.4 POTENTIAL MITIGATION**

The mitigation measures suggested in this section are examples of the types of mitigation that could be applied to a project to reduce identified land use impacts. The actual mitigation recommended for a project will vary depending on the project itself, the specific impact, and other issues that may arise on a case-by-case basis. It is not intended that each mitigation measure identified in this section be applied to every project or that the mitigation be written exactly as presented herein. Similarly, there may be mitigation required of a project that is not identified in this document.

**LAND USE COMPATIBILITY**

Mitigation measures to reduce secondary impacts are found in the individual sections (noise, traffic, aesthetics, etc.). Following are potential mitigation measures that may reduce land use compatibility impacts:

**Short-term Construction-Related Impacts**

- Develop haul routes which would avoid sensitive uses to the extent feasible.

**Long-term Impacts**

- Change the project design, configuration, visual screening, setbacks, building heights, lighting, etc. to be compatible with surrounding existing and planned uses;

- Restrict certain operational characteristics of the proposed use to reduce or eliminate impacts, such as limiting hours of operation or placing restrictions on specific types of uses or activities proposed for the project;
- Provide enclosed structures around certain activities that normally occur outdoors;
- Provide pedestrian and bicycle routes or crossings to increase mobility;
- Provide a buffer (such as a decorative wall or landscaping) where residential uses are adjacent to non-residential uses and where the potential for the land use incompatibilities exist.

## 5.5 **REFERENCES**

*City of Lake Forest General Plan, Land Use Element, revised July, 2008.*

Lake Forest, City of, Redevelopment Agency. 2004. The Arbor on El Toro: Project Area. Lake Forest, CA. [http://thearbor.info/project\\_area.php](http://thearbor.info/project_area.php)

Lake Forest, City of. 2005. 2005 Economic Profile. Lake Forest, CA.

## SECTION 6 AESTHETICS

### 6.1 BACKGROUND

An aesthetic resource is any element, or group of elements, that embodies a sense of beauty. The aesthetic resources of a city include its natural setting, the architectural quality of its buildings, the vitality of its landscaping, the spatial relationships they create, and the views afforded by each.

Aesthetics, views, and nighttime illumination are related elements in the visual environment for the City of Lake Forest. Visual features of the City were previously described in Section 1, Introduction, of this document. Aesthetics generally refers to the identification of visual resources (natural and man-made), and the overall judgment (visual perception) of the quality of the visual environment. Views refer to visual access and obstruction, or whether it is possible to see a focal point or panoramic view from an area. Nighttime illumination addresses the effects of a proposed project's exterior lighting upon surrounding uses.

The visual impacts of a project include both the objective visual resource changes created by the project and the subjective viewer response to that change. Distance from the project, frequency of view, length of view, viewer activity, viewer perception, and viewing conditions contribute to the assessment of a visual impact. The physical limits and changes of the views and the quantity of the viewers are objective. Viewer perception is subjective.

The perception of different viewer groups to the visual environment and its elements varies based on viewer activity and awareness. Activities such as commuting in heavy traffic can distract an observer from many aspects of the visual environment. Conversely, pleasure driving or relaxing in a scenic environment can encourage an observer to look at the view more closely and at greater length, thereby increasing the observer's attention to detail. Sensitivity is also determined by how much the viewer has at stake in the viewshed. Typically, people who reside or work in an area are more sensitive to change than those just passing through.

The City of Lake Forest has not designated any scenic vistas or corridors within its jurisdiction. However, within the City of Lake Forest, the County of Orange Scenic Highway Plan identifies El Toro Road as a scenic highway. El Toro Road is a designated "landscape corridor" from I-5 to Santa Margarita/Portola Parkway and a "viewscape corridor" from Santa Margarita Parkway to the northern city limits. A "landscape corridor" traverses developed or developing areas and has been designated for special treatment to provide a pleasant driving environment as well as community enhancement. A "viewscape corridor" is a route which traverses a corridor within which unique or unusual scenic resources and aesthetic values are found. This designation is intended to minimize the impact of the highway and land development upon the significant scenic resource along the route.

### 6.2 AESTHETIC/DESIGN GUIDELINES AND STANDARDS

The aesthetic character of much of the City of Lake Forest is, or will be, regulated by design guidelines for Planned Communities, and the El Toro Redevelopment Project Area. Design Guidelines are prepared, or can be prepared, to ensure visual order and continuity as a project or designated area is built out over time. They provide planning, architectural, and landscape design themes for various land uses and facilities within a specific area or community. Additionally, the City's Municipal Code includes development standards that also serve to reduce potential aesthetic impacts (set backs, height limitations, signage, etc.).

### 6.3 ASSESSMENT OF VISUAL CHANGES

As previously noted, the perception of a view or the visual quality of a site is subjective and can vary with each individual. However, it is possible to qualify certain resources as having aesthetic characteristics, and establish general guidelines for assessing the aesthetic impacts of projects.

Within the City of Lake Forest, aesthetic resources as well as architectural character must be taken into consideration. The determination as to whether a site qualifies as an aesthetic resource includes, but is not limited to, its physical attributes, visibility, and uniqueness. With respect to architectural character, it is important that buildings and other visual landmarks are properly fitted into the built environment, and take into consideration potential aesthetic impacts on the natural environment. Factors used in determining the suitability of new development in a given location include scale (height and mass), pattern (separation from other buildings), and architectural design.

Typically, a visual impact assessment for a specific project is initiated with an identification of the natural or built features that gives the subject area its aesthetic character or image. The visual quality of the area should be identified. The visual quality of natural and man-made landscapes can be measured using three criteria defined below: vividness, intactness and unity. None of these is itself equivalent to visual quality, all three must be high to indicate high quality.

**Vividness** is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.

**Intactness** is the visual integrity of the natural and man-made landscape and its freedom from encroaching elements; this factor can be present in well-kept urban and rural landscapes, as well as in natural settings.

**Unity** is the visual coherence and compositional harmony of the landscape considered as a whole; it frequently attests to the careful design of individual components in the landscape.

The description of the aesthetic character of a site should also take into consideration views from various vantage points, as appropriate. Vantage points typically considered include public views from roadways, bikeways, trails, recreation areas, etc. The view of a site can vary with location. For example, views of larger sites with diverse aesthetic character will vary with location of the viewer. Views from distant vantage points should also be addressed. Views can be demonstrated with photographs.

Adverse visual effects can include the loss of natural features or areas, the removal of urban features with aesthetic value, or the introduction of contrasting urban features into natural areas of urban settings. The analysis of potential visual effects of a project requires the identification of features of the project that would be added to the site, including building heights, bulk, setbacks, architectural style, or any proposed zone changes or variances. The degree to which the introduction of new features or the loss of existing aesthetic elements would alter, degrade, or contrast with the existing valued aesthetic character of the area needs to be evaluated. Examples of contrast in areas where there is a consistent architectural theme, style or other aesthetic character could include, but are not limited to, the following:

- The project's architectural style, building materials, massing, or size would contrast with adjacent development, such that the aesthetic value or quality of the area is diminished.
- The project would cause or contribute to a change in the overall character of the area (e.g., from residential to commercial, single-family to multi-family, etc.) and/or new development would contrast with existing architectural styles or themes.

- The project would grade or remove open space or natural lands and introduce contrasting built features.

The analysis should also determine to what degree the project could impact views from specific vantage points, as discussed previously.

#### **6.4 THRESHOLDS OF SIGNIFICANCE**

A project would normally have a significant visual impact if any of the following occurs:

- A project will substantially damage scenic resources, including scenic vistas from public parks and views from designated scenic highways or arterial roadways.
- A project will create a new source of substantial night lighting that would result in “sky glow” (i.e. illumination of the night sky in urban areas) or “spill light” (i.e. light that falls outside of the area intended to be lighted) onto adjacent sensitive land uses.
- A project will create a new source of substantial glare which would adversely affect daytime visibility and/or views in the area.
- A project will substantially degrade the existing visual character or quality of the site and its surroundings where:
  - The project exceeds the allowed height or bulk regulations, or exceeds the prevailing height and bulk of existing structures.
  - The project is proposed to have an architectural style or to use building materials that will be in vivid contrast to an adjacent development where that development had been constructed adhering to a common architectural style or theme;
  - The project is located on a visually prominent site and, due to its height, bulk, architecture or signage, will be in vivid contrast to the surrounding development or environment degrading the visual unity of the area.
  - A project would include unscreened outdoor uses or materials.
  - A project would result in the introduction of an architectural feature or building mass that conflicts with the character of the surrounding development.

#### **6.5 POTENTIAL MITIGATION**

The mitigation measures suggested in this section are examples of the types of mitigation that could be applied to a project to reduce identified aesthetic impacts. The actual mitigation recommended for a project will vary depending on the project itself, the specific impact, and other issues that may arise on a case-by-case basis. It is not intended that each mitigation measure identified in this section be applied to every project or that the mitigation be written exactly as presented herein. Similarly there may be mitigation required of a project that is not identified in this document.

### **AESTHETICS**

- Preparation and implementation of additional landscape and irrigation plans prepared by a licensed landscape architect, subject to the review and approval of the City.
- Preparation of comprehensive sign plans to provide consistent signage throughout an area and to limit the size and number of signs.
- Minimize grading of natural and semi-natural open space.
- Modify structure design to eliminate or screen contrasting/detracting features.
- Place new or existing utilities underground.
- Incorporate policies and/or design which effectively integrates natural aesthetics into the project (i.e., cluster development, greenbelts, landscaping, etc.).
- Utilize architectural styles, materials, scale, massing, setbacks, signage, circulation patterns, pedestrian orientation, streetscape amenities, and landscaping common to and/or consistent with the character of existing surrounding uses, as appropriate.
- Consolidate compatible street furniture elements (benches, bus shelters, newspaper racks, trash receptacles, kiosks, etc.) whenever possible.
- Consolidate street graphics and individual signs into single-support structures where appropriate and compatible with the purpose and function of such informational, directional, and traffic control graphics.
- Mechanical equipment placed on any roof such as, but not limited to, air conditioning, heating ventilation ducts, and exhaust shall be screened from view through the use of approved roof screens, recessed roof wells, and/or the use of the building parapets.
- Screen garbage dumpsters and equipment from public view.
- Incorporate provisions outlined in applicable Design Guidelines into proposed developments.
- Facades should be interrupted by regular vertical expressions of columns, fenestration, changes in texture or color, or setbacks to minimize the impression of a large, uninterrupted expanse.
- Where appropriate to minimize the adverse visual impact of what would otherwise be blank or uninteresting facades, building surfaces shall be shielded and softened by landscaping using trees and vines, planter boxes, and other devices as appropriate.

## **NIGHTTIME ILLUMINATION**

- Preparation and implementation of a lighting plan prepared by a qualified lighting engineer/consultant, subject to the review and approval of the City.
- Use high-pressure sodium, energy-efficient luminaries, and/or cut-off fixtures instead of typical mercury vapor fixtures for outdoor lighting.

- Direct exterior light downward and away from adjacent streets and adjoining land uses in a manner to minimize off-site spillage.
- Provide structural and/or vegetative screening from sensitive uses.
- Design exterior lighting to confine illumination to the project site, and/or to areas which do not include light-sensitive uses.
- Restrict the operation of outdoor lighting for recreational activities to no later than 10:00 p.m.

## **OBSTRUCTION OF VIEWS**

- Reduce the width and/or height of new structures to reduce the extent of obstruction.
- Locate new structures on portions of the site that do not interfere with existing views.

## **6.6 REFERENCES**

Lake Forest, City of, Redevelopment Agency. The Arbor on El Toro: Project Area. Lake Forest, CA. <http://thearbor.info>

*City of Lake Forest General Plan, Recreation and Resources Element*, Revised July 2008.

*City of Lake Forest Master Environmental Assessment*. 1994 (April). Prepared by Cotton/Beland/Associates, Inc.

*County of Orange General Plan*. 2000 (February). Transportation Element.

*El Toro Redevelopment Project Area Design Guidelines*. 2000 (May).

## SECTION 7 WATER RESOURCES

### 7.1 BACKGROUND

Water resource issues addressed in this section include surface water and flooding, groundwater, and water quality. Flooding and water quality are two of the concerns associated with stormwater runoff. Stormwater runoff is precipitation that does not percolate into the ground, but flows overland or through the City's storm drain system where it is discharged to local creeks.

#### **SURFACE WATER**

Surface waters typically include, but are not limited to: lakes, rivers, streams/drainage courses, reservoirs, and the ocean. Five surface water drainages traverse the City of Lake Forest: Aliso Creek, Serrano Creek, Borrego Canyon Wash, and two smaller unnamed creeks (refer to exhibit RR-4 of the General Plan Recreation and Resources Element). Portions of the creeks have been channelized for flood control purposes. The largest drainage course is Aliso Creek which runs along the City's eastern boundary. Aliso Creek flows from the Cleveland National Forest to the Pacific Ocean. Surface water resources in the City also include four man-made lakes.

#### **GROUNDWATER**

Groundwater resources in the City of Lake Forest are limited. The Irvine Ranch Water District pumps some groundwater, but solely for agricultural purposes. The Orange County Water District (OCWD) has found that a high level of trichloroethylene (TCE) is present within local groundwater and identified El Toro Marine Corps Air Station as the source of the TCE. The OCWD has implemented programs to contain the contamination including construction of an extraction well system which would treat the water and inject it into a reclaimed water system.

#### **FLOODING**

Occasional floods along any water course are inevitable, including those within the City. The semi-arid environment in southern California increases the potential for flooding due to the variation and unpredictability in the amount and intensity of rainfall. There are several areas within the City identified as being within the 100-year flood zone (meaning there is a one percent chance that such a flood will occur in any one year). There are also areas within the City that are identified as being within the 500-year flood zone (0.2 percent chance of occurring in one year). The inundation areas for the 100-year and 500-year floods within the City are identified on Exhibit SN-1 of the Safety and Noise Element of the General Plan. The existing flood control storm drain system alleviates most flooding potential in the City, although there has been some erosion along the natural creeks.

Orange County Flood Control District (OCFCD) is responsible for regional flood control planning within the County. Lake Forest participates in the National Flood Insurance Administration (NFIA) program administered by the Federal Emergency Management Agency (FEMA). The NFIA program provides federal flood insurance subsidies and federally-financed loans for property owners in flood-prone areas.

#### **WATER QUALITY**

Urban runoff includes dry and wet weather flows that are transported from urbanized areas through storm water conveyance systems. As water flows over streets, parking lots, construction sites, and industrial, commercial, residential, and municipal areas, it intercepts pollutants from these areas

and transports them to receiving waters, typically drainage courses/rivers, and ultimately, the Pacific Ocean. If appropriate pollution control measures are not implemented, urban runoff may transport pathogens (bacteria, protozoa, viruses), sediment, trash, fertilizers (nutrients, mostly nitrogen and phosphorous compounds), oxygen demanding substances, pesticides, heavy metals, and petroleum products. If not properly managed and controlled, urbanization can change the local hydrology and increase pollutant loadings to receiving waters. As a watershed undergoes urbanization, permeable surface area decreases, runoff volume and velocity increase, riparian and wetland habitat decrease, the frequency and severity of flooding may increase, and pollutant loadings increase.

The regulatory setting relative to water quality is discussed below. The main receiving waters for runoff from most of the City of Lake Forest are San Diego Creek, Aliso Creek, and the Pacific Ocean. As identified in the Clean Water Act Section 303(d) list of impaired waters, San Diego Creek and the Pacific Ocean have been designated as “impaired” with respect to beneficial uses, primarily because of polluted urban runoff. These impaired waters do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. A portion of Aliso Creek is also identified as impaired primarily because of polluted urban runoff.

## **7.2 WATER QUALITY REGULATORY SETTING**

The California Water Code establishes nine administrative areas in the State which are administered by the Regional Water Quality Control Board (RWQCB). The City of Lake Forest is within the jurisdiction of the RWQCBs for the Santa Ana Region (8) and the San Diego Region (9). Aliso Creek is within the San Diego Region and San Diego Creek (one of the main receiving waters from the City) is within the Santa Ana Region. Therefore, the City is subject to the regulations of both the Santa Ana RWQCB and the San Diego RWQCB.

Each of the nine regional boards is required to adopt a Water Quality Control Plan, or Basin Plan, for its respective region. The Basin Plans recognize and reflect regional differences in existing water quality, the beneficial uses of the Region’s ground and surface waters, and local water quality conditions and problems. As required, the Basin Plans also specify water quality objectives intended to protect the identified beneficial uses.

Under the authority of the Clean Water Act, the Environmental Protection Agency (EPA) published regulations establishing the National Pollutant Discharge Elimination System (NPDES) permit application requirements for storm water discharges. The Clean Water Act prohibits the discharge of any pollutant to navigable waters from a point source unless an NPDES permit authorizes the discharge. The RWQCBs are authorized to implement a municipal stormwater permitting program as part of their NPDES authority, as an agent of the State Water Resources Control Board (SWRCB). The SWRCB has issued two general stormwater discharge permits to cover industrial and construction activities, which are required for specific industry types based on standard industrial classification and construction activities on five acres or more. The general permits include: the “Statewide General Industrial Storm Water Permit” (addresses waste discharge requirements for discharges of stormwater associated with industrial activities excluding construction activities); and, the “Statewide General Construction Stormwater Permit” (addresses waste discharge requirements for discharges of stormwater runoff associated with construction activities).

The RWQCBs oversee implementation and enforcement of the general permits. The Public Works and Development Services Departments of the City of Lake Forest are responsible for overseeing the implementation of permit responsibilities for the City.

The City of Lake Forest is a co-permittee with the County of Orange for local NPDES permits. Municipal permits typically require permittees to develop an area-wide stormwater management plan, implement best management practices (BMPs) and perform stormwater monitoring. BMPs for the County of Orange are identified in the documents supporting the NPDES permits.

It should be noted that on February 13, 2002, the San Diego RWQCB adopted *Order No. R9-2002-0001 (NPDES No. CA S0108740), Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of Orange, the Incorporated Cities of Orange County, and the Orange County Flood Control District within the San Diego Region*. This order outlines waste discharge requirements that would serve to renew an NPDES permit for the existing discharge of urban runoff. As noted previously, the City of Lake Forest is a co-permittee and is required to comply with the provisions of the order.

The Santa Ana RWQCB which has jurisdiction over the Santa Ana River, adopted *Order No. R8-2002-0010 (NPDES No. CAS618030), Waste Discharge Requirements for the County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County within the Santa Ana Region, Areawide Urban Storm Water Runoff, Orange County* on January 18, 2002.

To implement the requirements of the NPDES permit, the Co-Permittees have developed a 2003 Drainage Area Management Plan (“DAMP”) which has been redesigned to serve as the foundation for a series of model programs, local implementation plans, and watershed implementation plans rather than a single document as in the past. The 2003 DAMP was developed through a process that involved public and private sector input and public review through the California Environmental Quality Act (CEQA) process.

### **7.3 THRESHOLDS OF SIGNIFICANCE**

#### **SURFACE WATER AND FLOODING**

A project would normally have a significant impact if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff above pre-development condition in a manner which would result in flooding on- or off-site.
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems.
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Cause inundation by seiche, tsunami, or mudflow.
- Deposit sediment and debris materials within existing channels obstructing flows.
- Exceed the capacity of a channel and cause overflow during design storm conditions.

## **GROUNDWATER**

A project would normally have a significant impact if it would:

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- Adversely change the rate, direction or flow of groundwater.
- Have an impact on groundwater that is inconsistent with a groundwater management plan prepared by the water agencies with the responsibility for groundwater management.

## **WATER QUALITY**

A project would normally have a significant impact if it would:

- Violate any water quality standards or waste discharge requirements.
- Cause a significant alteration of receiving water quality during or following construction.
- Substantially degrade groundwater quality.
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- Create or contribute runoff water which would generate substantial additional sources of polluted runoff.
- Substantially degrade water quality by discharge which affects the beneficial uses (i.e. swimming, fishing, etc.) of the receiving or downstream waters.
- Increase in any pollutant for which the receiving water body is already impaired as listed on the Clean Water Act Section 303(d) list.

## **7.4 POTENTIAL MITIGATION**

The mitigation measures suggested in this section are examples of the types of mitigation that could be applied to a project to reduce identified water resource impacts. The actual mitigation recommended for a project will vary depending on the nature of the project, the specific impact, and other issues that may arise on a case-by-case basis. It is not intended that each mitigation measure identified in this section be applied to every project or that the mitigation be written exactly as presented herein. Similarly, there may be mitigation required of a project that is not identified in this document.

## **SURFACE WATER AND FLOODING**

- Develop new or improve existing drainage facilities to reduce or retain the amount of peak runoff from the project site. Such measures may include the construction of detention

basins or other structures that will slow down or delay the peak flow of stormwater runoff from the site.

- Reduce impervious surfaces and materials to reduce increases in stormwater runoff.
- Maximize landscaped and natural areas.
- Raise the building pad or ground floor of proposed structures to an elevation at least one foot above the applicable flood surface elevation in flood prone areas.

## **GROUNDWATER**

- Reduce proposed impermeable areas that would result in loss of recharge capacity.
- Avoid areas of shallow groundwater when locating roadways, underground trenches, and buildings to eliminate the need for subsurface foundations.

## **WATER QUALITY**

### **Short-term Construction Related**

- Provide evidence of existing coverage under the General NPDES Permit for Storm Water Discharges Associated with Construction Activities.
- Prepare a stormwater pollution prevention plan (SWPPP) for construction activities, including development of an erosion control plan, slope stabilization requirements, phased grading, revegetation as early as feasible, preservation of natural hydrologic features, preservation of riparian buffers, maintenance of all source control and structural treatment BMPs, and retention and proper management of sediment and other construction pollutants onsite.

### **Long-term Operational**

- Prepare a Water Quality Management Plan (WQMP) which identifies Best Management Practices (BMPs) that will be used on a project site to control predictable pollutant runoff. The WQMP should identify, at a minimum, the routine structural and non-structural measures specified in the Countywide NPDES supporting documents. Structural controls may include, but are not limited to:

- filtration
- common area efficient irrigation
- common area runoff-minimizing landscape design
- velocity dissipation devices
- oil/grease separators
- inlet trash tracks
- catch basin stenciling

Non-structural BMP include:

- education for property owners, tenants and occupants
- activity restrictions
- common area landscape management, litter control, and catch basin inspection
- BMP maintenance

- street sweeping private streets

- Minimize use of directly connected impervious surfaces.
- Use erosion control measures along slopes and channels.
- Provide properly designed outdoor materials and trash storage areas.

## 7.5 **REFERENCES**

*City of Lake Forest General Plan Recreation and Resources Element* revised July 2008.

*City of Lake Forest General Plan Safety and Noise Element*, June 2001, Prepared by Cotton/Bridges/Associates.

*City of Lake Forest Master Environmental Assessment*. 1994 (April). Prepared by Cotton/Beland/Associates, Inc.

Orange, County of. Watershed and Coastal Resources Division, Stormwater Program. Orange County, CA: the County. [http://www.ocwatersheds.com/StormWater/documents\\_damp.asp](http://www.ocwatersheds.com/StormWater/documents_damp.asp)

*Order No. R9-2002-0001, NPDES No. CAS0108740, Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of Orange, the Incorporated Cities of Orange County, and the Orange County Flood Control District Within the San Diego Region*. 22002 (February 13). California Regional Water Quality Control Board, San Diego Region.

*Order No. R8-2002-0010, NPDES No. CAS618030, Waste Discharge Requirements for the County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County within the Santa Ana Region, Areawide Urban Storm Water Runoff, Orange County*. 22002 (January 18). California Regional Water Quality Control Board, Santa Ana Region.

Memorandum from Ted Simon, P.E., Engineering Services Manager to Stephanie Eklund, AICP, Community Planner. 2001 (July 11).

Santa Ana Regional Water Quality Control Board. *2002 CWA Section 303(d) List of Water Quality Limited Segments*. 2003 (July).

San Diego Regional Water Quality Control Board. *2002 CWA Section 303(d) List of Water Quality Limited Segments*. 2003 (July).

**SECTION 8  
LIST OF PREPARERS**

**8.1 CITY OF LAKE FOREST**

**DEVELOPMENT SERVICES DEPARTMENT**

Gayle Ackerman, AICP ..... Director of Development Services  
Cheryl Kuta, AICP ..... Planning Manager  
Ted Simon ..... Engineering Services Manager  
City Attorney Staff, Best Best & Krieger

**8.2 CONSULTANT**

**BONTERRA CONSULTING**

Christina L. Andersen ..... Principal-in-Charge  
Julie Cho ..... Project Manager  
Jennifer Marks ..... Environmental Analyst