SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Program Environmental Assessment for:

Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System

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Executive Officer
Barry R. Wallerstein, D.Env.

Deputy Executive Officer
Planning, Rule Development and Area Sources
Elaine Chang, DrPH

Assistant Deputy Executive Officer
Planning, Rule Development and Area Sources
Laki Tisopulos, Ph.D., P.E.

Planning and Rules Manager
Susan Nakamura

Author:	Michael Krause	Program Supervisor
	Steve Smith, Ph.D.	Program Supervisor
	ICF Jones & Stokes	
Technical Assistance:	Jillian Baker	Air Quality Specialist
	Joe Cassmassi	Planning and Rules Manager
	Ali Ghasemi	Program Supervisor
	Mitch Haimov	Air Quality Analysis and Compliance Supervisor
	George Illes	Senior Air Quality Engineer
	Jeffrey Inabinet	Air Quality Specialist
	Bong-Mann Kim	Air Quality Specialist
	Xinqiu Zhang	Air Quality Specialist

PREFACE

This document constitutes the Final Program Environmental Assessment (PEA) for proposed Rule 1315 – Federal New Source Review Tracking System. The Draft PEA was released and made available to the public on September 9, 2010 for a 45-day public review and comment period (the review and comment period was actually 48 days). At the request of the public, a 14-day extension of the comment period was granted resulting in a total comment period of 62 days. Six comment letters were received on the Draft PEA. Comment letters received and responses to all comments were prepared and are included in Appendix J of the Final PEA

To facilitate identifying modifications to the document, added text is included as underlined text and text removed from the document is indicated by ~~strikethrough~~ text. Only minor modifications were made to the Final PEA. Further, no public comments were received that resulted in modifications to the Final PEA that alter any conclusions reached in the Draft EA or provide significant new information such as: a new significant environmental impact that would result from the project or from a new mitigation measure proposed to be implemented; or a substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance relative to the draft PEA. On December 8, 2010, a revised version of proposed Rule 1315 was made available for a 30-day review period. Revisions to proposed Rule 1315 were made to clarify the rule's requirements to ensure that the rule would operate as intended. SCAQMD staff's evaluation of these revisions concluded that the revisions would not result in any changes to the analysis in the PEA. Therefore, no provisions are triggered that would require recirculation of the document pursuant to CEQA Guidelines §15088.5. Therefore, this document constitutes the Final EA for Proposed Rule 1315 – Federal New Source Review Tracking System.

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INTRODUCTION AND SUMMARY

INTRODUCTION

The South Coast Air Quality Management District (SCAQMD) has prepared this Program Environmental Assessment (PEA) for the re-adoption of proposed Rule 1315 – Federal New Source Review Tracking System, with modifications. Proposed Rule 1315 would codify SCAQMD procedures for establishing equivalency under federal New Source Review requirements. Equivalency means that the SCAQMD provides sufficient offsets from its internal offset accounts to cover the emission increases from new or modified sources that are exempt from offsets under SCAQMD rules or that obtain credits from the Priority Reserve, but are subject to offset requirements under federal law. The USEPA has asked that the SCAQMD adopt a tracking rule to demonstrate equivalency with federal offset requirements. Proposed Rule 1315 would ensure that exempt sources under Rule 1304 and essential public services and other projects that qualify for Priority Reserve offsets under Rule 1309.1 are fully offset to the extent required by federal law, using valid emission reductions from the SCAQMD's internal offset accounts.

Proposed Rule 1315 would also specify what types of emissions reductions are eligible to be deposited into the SCAQMD's internal offset accounts, including newly-tracked reductions. "Newly tracked" emissions reductions are reductions that had not been historically tracked until the adoption of a prior version of Rule 1315 in 2006.

PROJECT OBJECTIVES

The objectives of the proposed project include the following:

First, to maintain the SCAQMD's ability to continue to administer its new source review program for major and minor sources for facility modernization and to accommodate population growth through implementation of Rule 1304 and Rule 1309.1. SCAQMD's policy objectives include allowing the permitting system to operate in order to: 1) allow facility modernization which will increase efficiency and reduce air pollution, 2) allow facilities to install pollution control equipment, 3) allow emergency equipment to be installed, 4) allow permitting of equipment necessary for essential public services and small emitters, 5) allow operation of portable equipment and other sources determined as a policy matter to be exempt from offsets or eligible for Priority Reserve credits, and 6) take into account environmental and socioeconomic benefits as well as environmental and socioeconomic impacts.

Second, to memorialize in rule form the accounting procedures the SCAQMD uses to establish equivalency of SCAQMD's New Source Review program with federal offset requirements, and ensure that valid offsets are projected to be available in SCAQMD internal offset accounts before a major source relying on such offsets is permitted thus assuring that increases in emissions resulting from such sources are fully offset.

Third, to recognize sufficient previously-unused emission reductions that are beyond those required by applicable regulatory requirements in order to demonstrate federal equivalency for major sources that are exempt under Rule 1304 or that are allocated credits from the Priority Reserve under Rule 1309.1.

LEGISLATIVE AUTHORITY

The California Legislature created the SCAQMD in 1977[1] as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin) and portions of the Salton Sea Air Basin and Mojave Desert Air Basin, (this geographic area is referred to hereinafter as the district). The political and geographical boundaries of the district are described in greater detail in the discussion of the project location (below). By statute, the SCAQMD is required to adopt an air quality management plan (AQMP) to achieve and maintain compliance with all federal and state ambient air quality standards for the district[2]. Furthermore, the SCAQMD must adopt rules and regulations that carry out the AQMP[3]. As part of the strategy to achieve ambient air quality standards, federal and state laws require the development and implementation of air quality permitting programs, commonly known as New Source Review (NSR) programs for nonattainment pollutants. Local NSR programs must, at a minimum, comply with the requirements established pursuant to federal and state law. The general requirements of NSR programs include: (1) pre-construction review; (2) installing best available control technology (BACT)[4]; and (3) mitigating emission increases by providing emission offsets, where required.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Proposed Rule 1315 comprises a "project" as defined by CEQA (Cal. Public Resources Code §21000, *et. seq*.). The SCAQMD is the lead agency for the proposed project and has prepared an appropriate environmental analysis pursuant to its certified regulatory program under California Public Resources Code §21080.5. That statute allows public agencies with certified regulatory programs to prepare a plan or other written document that is the functional equivalent of an environmental impact report once the Secretary of the Resources Agency has certified the regulatory program. The SCAQMD's regulatory program was certified by the Secretary of the Resources Agency on March 1, 1989, and is codified as SCAQMD Rule 110.

SCAQMD staff previously prepared an initial study (IS) and concluded that an EIR or EIR-equivalent CEQA document was warranted. The IS, along with a Notice of Preparation (NOP), was circulated for a 30-day public review period to solicit comments from public

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[1] The Lewis-Presley Air Quality Management Act, 1976 Cal. Stats., Ch 324 (codified at Cal. Health & Safety Code, §§ 40400-40540).
[2] Cal. Health & Safety Code, § 40460 (a).
[3] Cal. Health & Safety Code, § 40440 (a).
[4] California BACT is comparable to federal lowest achievable emission rate (LAER; Health and Safety Code §40405).

agencies and the public in general, on potential impacts from the proposed project. Two comment letters were received by the SCAQMD during the public comment period on the NOP/IS. Responses to comments received during the public comment period on the NOP/IS are included in Appendix B of this PEA.

CEQA requires that potential adverse environmental impacts of proposed projects be evaluated and that feasible methods to reduce or avoid significant adverse environmental impacts of these projects be identified. To fulfill the purpose and intent of CEQA, the SCAQMD has prepared this PEA, which identifies potentially significant adverse direct and indirect environmental impacts associated with adopting and implementing proposed Rule 1315. Proposed Rule 1315 would not authorize any particular sources to be permitted and operated. However, adoption of proposed Rule 1315 would enable the SCAQMD to continue issuing permits for exempt sources under Rule 1304 and for essential public services and other projects that qualify for priority reserve offsets under Rule 1309.1. Rule 1315 will remain in effect through 2030. This PEA accordingly provides an overall analysis of the direct and indirect impacts of sources expected to receive permits under Rule 1304 and Rule 1309.1 through 2030.

It is expected that individual future projects that apply for permits from the SCAQMD under Rule 1304 or 1309.1 will undergo a project-specific CEQA review in connection with their permit applications.

INTENDED USES OF THIS DOCUMENT

In general, a CEQA document is an informational document that informs a public agency's decision-makers and the public generally of potentially significant environmental effects of a project, identifies possible ways to avoid or minimize the significant effects, and describes reasonable alternatives to the project (CEQA Guidelines §15121). A public agency's decision-makers must consider the information in a CEQA document prior to making a decision on the project. Accordingly, this ~~Draft PEA~~Final PEA is intended to: (a) provide the SCAQMD Governing Board and the public with information on the environmental effects of the proposed project; and, (b) be used as a tool by the SCAQMD Governing Board to facilitate decision making on the proposed project.

AREAS OF CONTROVERSY

In accordance with CEQA Guidelines §15123(b)(2), the areas of controversy known to the lead agency, including issues raised by agencies and the public, shall be identified in the CEQA document. The following discussion identifies the areas of controversy that have been raised relating to proposed Rule 1315.

The SCAQMD is proposing to readopt proposed Rule 1315, with modifications, as a result of a court ruling that set aside a former version of Rule 1315 and an amendment to Rule 1309.1 (which would have allowed electric generating facilities temporary access to the SCAQMD's internal offset accounts) based on a determination by the court that the CEQA review SCAQMD had prepared was legally inadequate in several respects. In that ruling, the Los Angeles County Superior Court issued a writ of mandate ordering the SCAQMD to, *inter alia*, set aside its August 2007 adoption of Rule 1315 and the amendment to Rule 1309.1 ("the 2007 Project"). The Court also issued an order that enjoined the SCAQMD from undertaking any actions to implement the 2007 Project pending CEQA compliance. In response to the Court's decision, on January 8, 2010, the SCAQMD repealed the 2007 amendments to Rule 1309.1, as well as the 2007 adopted version of Rule 1315.

A key area of controversy in the litigation was the amendment to Rule 1309.1, which gave electric generating facilities temporary access to offsets in SCAQMD's internal accounts. The SCAQMD does not intend to pursue re-adopting amendments to Rule 1309.1 that would allow electric generating facilities access to internal offsets in the SCAQMD's internal offset accounts. Other areas of controversy raised in the litigation related to the overall effect of Rule 1315 on air emissions and the impacts of those emissions, including impacts on health, visibility and greenhouse gas emissions. These issues are addressed in detail in this PEA.

EXECUTIVE SUMMARY

The following sections provide summaries of the contents of this PEA.

Executive Summary – Chapter 2: Project Description

The proposed project would occur within the SCAQMD's area of jurisdiction, which covers an area of 10,473 square miles, consisting of the four-county South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin and the Mojave Desert Air Basin. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties.

Proposed Rule 1315 would ensure that exempt sources under Rule 1304 and essential public services and other projects that qualify for Priority Reserve offsets under Rule 1309.1 are fully offset to the extent required by federal law by valid emission reductions from the SCAQMD's internal offset accounts. The proposed rule would achieve this by specifying what types of reductions are eligible to be credited as offsets to SCAQMD's internal accounts and how those reductions are tracked. The proposed rule would provide for the use of certain types of offsets that, prior to the initial adoption of Rule 1315 in 2006, had not been accounted for in the SCAQMD's federal tracking system. In addition, the proposed rule provides for annual demonstrations of equivalency with federal offset requirements. The proposed rule would require debits from the SCAQMD's internal accounts for emissions offsets allocated from the Priority Reserve under Rule 1309.1 and for increased emissions from sources permitted under exemptions from the offset requirements under Rule 1304.

Proposed Rule 1315 provides for offsets to be credited to the SCAQMD's internal accounts for: (1) orphan shutdowns and orphan reductions, including from minor federal sources as defined under federal law; (2) ERCs provided as emissions offsets for sources located at federal minor facilities; (3) the difference between the quantity of ERCs provided for a source located at a major polluting facility at a 1.2-to-1.0 ratio and quantity of ERCs required to offset emissions at a 1:0-to-1:0 ratio; (4) return of offsets originally obtained from the SCAQMD, including Community Bank allocations; and (5) the difference between the reduction in daily emissions that is actually achieved and the reduction in daily emissions as calculated with the BACT adjustment when a facility reduces emissions and applies for an ERC. For offsets resulting from orphan shutdowns or reductions, credit is taken for eighty percent of the permitted emission levels.

Proposed Rule 1315 provides for an overall cumulative annual cap, for each pollutant, on the amount of offsets that are available to be used from the SCAQMD's internal offset accounts. If the cap is exceeded for any pollutant in a given year, proposed Rule 1315 would bar the issuance of permits for individual projects that require offsets from the SCAQMD's internal offset accounts until consistency with the cap is restored. The cumulative annual caps are established based upon the growth assumptions in the approved 2007 Air Quality Management Plan through December of 2010 and each subsequent year through 2030 for industries that potentially would obtain permits under Rules 1304 (exemptions) and 1309.1 (Priority Reserve).

Executive Summary – Chapter 3: Environmental Settings

The Subchapters in Chapter 3 describe the existing setting for each environmental topic area evaluated in the PEA to determine whether or not the proposed project could generate significant adverse impacts. Each Subchapter in Chapter 3 is devoted to a description of the setting relevant to each environmental topic area.

Executive Summary – Chapter 4: Direct Environmental Impacts and Mitigation Measures

Subchapter 4.0 - Methodology

This subchapter describes the methodology used to quantify the potential adverse air quality, visibility and greenhouse gas impacts resulting from the proposed project.

- *Baseline*

Because the project will be carried out over the next twenty years, a "future" baseline is appropriate for assessing the project's emissions-related effects. Sources relying on the SCAQMD's internal offset accounts make up a portion of the regional growth analyzed in the 2007 AQMP. During this twenty-year time frame, the 2007 AQMP forecasts that the total amount of regional emissions of all pollutants will be dropping substantially, due to the effect of pollution control rules and regulations adopted by SCAQMD, EPA, and CARB. The overall reduction in emissions from these regulatory controls will be greater than the increase in emissions associated with regional growth. The PEA therefore compares forecasts of future emissions with the proposed project in place to forecasts of future emissions without the proposed project. The analysis assumes that if the project were not approved, a portion of the regional growth projected in the AQMP would not occur and future regional emissions without the project would be lower than they would be with the project.

- *Analysis Years*

The air quality analysis is presented for the years in which emission reductions are required to be in place in order for the Basin to attain the NAAQS, as well as for the project end year of 2030. The years modeled are 2014 for a 2015 PM2.5 attainment date, 2023 for a 2024 ozone attainment date, and 2030 for the project end date.

- *Mass Emissions of Criteria Pollutants –Project*

For criteria pollutants, the analysis of project impacts was performed by first determining the total quantities of future emissions of each criteria pollutant that are expected to occur under the proposed project. Next, staff determined the future emissions of each criteria pollutant under future conditions without the project. The incremental difference between emissions under project conditions and emissions without the project was used to quantify and assess project impacts in terms of mass emissions of criteria pollutants.

- *Mass Emissions of Criteria Pollutants – Cumulative*

For this analysis, cumulative impacts associated with emissions of criteria pollutants are assessed in two ways. First, emissions from other sources approved pursuant to permits that have relied or foreseeably may rely on SCAQMD internal account offsets are quantified and added to the incremental project emissions to assess the combined effect of all sources relying on the SCAQMD internal account offsets. This analysis includes emissions from sources approved under prior versions of Rule 1315, SB 827 and the emissions from power plants approved pursuant to state legislation requiring use of the SCAQMD internal offset accounts. Second, the analysis of cumulative impacts also assesses the impacts under the proposed project in the context of all emissions forecasted in the 2007 AQMP.

- *Modeled Concentrations of Regional Criteria Pollutant Emissions - Project*

After quantifying the incremental difference in mass emissions of each criteria pollutant under the project and without project conditions, SCAQMD staff then used air quality modeling to determine the resulting changes in concentration levels (micrograms per cubic meter for PM2.5 and PM10, and parts per billion (ppb) for ozone) for the three primary criteria pollutants: ozone, PM2.5 and PM10 in both the Basin and Coachella Valley. The modeling used the same methods as were used in the 2007 AQMP. SO2, NO2 and CO concentrations were estimated using an emissions weighted approach that linearly relates changes in emissions to expected changes in ambient air quality. Lead emissions were projected based on reported data and growth projected in the 2007 AQMP.

- *Modeled Concentrations of Regional Criteria Pollutant Emissions- Cumulative*

The emissions associated with the cumulative conditions are modeled to determine the concentrations of pollutants resulting from the combination of sources obtaining permits in reliance on offsets in the SCAQMD internal offset accounts.

- *Modeled Concentrations of Localized Criteria Pollutant Emissions*

Because the specific attributes of sources that may be permitted under the project are not known, the evaluation of localized concentrations is made on the basis of air dispersion modeling of emissions from recently permitted sources. This analysis is intended to provide an estimate of the potential impacts on localized concentrations of criteria pollutants in the vicinity of individual facilities as a result of future permits issued under the proposed project. This approach treats previously-permitted sources as representative of the types of individual sources and air pollutants emitted by sources that would be permitted in the future under the proposed project.

- *Health Effects of Criteria Pollutant Emissions - Project*

The analysis of criteria pollutant health effects compares the forecasted health benefits under the proposed project to the greater health benefits anticipated if the project were not approved, in order to quantify the incremental difference. The differences between regional health benefits under the proposed project and under without project conditions are calculated for PM2.5 and ozone using the methodology developed for the Final Socioeconomic Report for the 2007 AQMP. Even with the proposed project, health impacts will be reduced greatly in the future, as projected in the Socioeconomic Report for the 2007 AQMP.

- *Health Effects of Criteria Pollutant Emissions - Cumulative*

Similar to the health effects analysis for the proposed project, the cumulative impacts analysis relies on the methodology used in the Final Socioeconomic Report for the 2007 AQMP. In this case, the incremental health effects of the proposed project together with the other permits issued in reliance upon the SCAQMD internal account offsets are quantified.

- *Health Effects of Toxic Air Contaminants - Project*

Due to future control measures, air pollutants are expected to decrease, resulting in decreased health effects from toxic air contaminants. However, the impacts of the project are compared to conditions without the project. The proposed project's incremental contribution to future regional health risks from toxic air contaminants are estimated using the MATES-III modeling methodology and the methodology developed for the 2010 Draft Clean Communities Plan.

The metric used to estimate the cancer risk impacts in the PEA is the change in overall population-weighted inhalation cancer risks between the conditions with and without the project. The total inhalation cancer risk is the summation of the products of the population-weighted average pollutant concentrations and their corresponding inhalation unit risk factors. In addition, regional changes in cancer burden (projected number of cancer cases) are evaluated.

The population weighted non-cancer chronic hazard index is calculated similarly. The total population-weighted non-cancer chronic hazard index is the summation of the ratios of population-weighted average pollutant concentrations to its chronic reference exposure level (REL). The acute hazard index is the summation of the ratios of peak hourly pollutant concentrations to its acute reference exposure level. The metric used to estimate the non-cancer chronic and acute impacts in the PEA is the change in overall population-weighted chronic hazard index between the conditions with and without the project.

- *Health Effects of Toxic Air Contaminants - Cumulative*

The same methodology used to assess health effects of Toxic Air Contaminants associated with the project is used to assess the toxic air contaminant emissions from the other sources with permits issued in reliance on Rules 1304 and 1309.1.

- *Localized Concentrations of Toxic Air Contaminants*

In addition to contributing to region-wide health risk, sources emitting toxic air contaminants have the potential to result in localized concentrations of toxic air contaminants that exceed the SCAQMD significance thresholds. A qualitative discussion of localized concentrations of toxic air contaminants is included in the analysis.

- *Odors*

The potential for the proposed project to result in significant odors is assessed qualitatively based upon the attributes of sources permitted under Rules 1304 and 1309.1 and applicable SCAQMD rules.

- *Visibility – Project and Cumulative*

To evaluate the visibility effects of the proposed project, air pollution modeling results are used to calculate the potential for visual range reduction, measured in light extinction and miles, and also translated into "deciviews." While the deciview calculation does not directly measure changes in color, such as the brown sky that can be caused by photochemical smog, it captures these effects by incorporating reductions of light absorbing particulates and gases (elemental carbon and NO2) and the scattering effects of particulate mass into the evaluation. The cumulative impacts analysis relies on the same methodology as is used to evaluate project effects -- in this case, the incremental effects on visibility of the proposed project, plus the emissions from the other permits issued in reliance upon the SCAQMD internal account offsets.

- *Climate Change - Project*

For greenhouse gas emissions, the analysis in this PEA uses one methodology to calculate CO2, CH4, and N2O emissions, and a second methodology to calculate HFCs, PFC, and SF6. First, an analysis of emissions data from the 2007 AQMP focuses on directly emitted CO2, N2O, and CH4 emissions because these are the primary GHG pollutants emitted during combustion processes. SOx emissions were selected as a surrogate to prorate the GHG emissions because SOx emissions result primarily from sulfur contained in fossil fuels and this correlates to GHGs emitted from combustion of fossil fuels. Second, an analysis of the statewide GHG inventory is conducted to determine the quantities of the remaining GHG pollutants attributed to the project — HFCs, PFCs and SF6.

- *Climate Change - Cumulative*

Cumulative impacts are determined by combining GHGs attributed to the proposed project with other permits relying on the SCAQMD internal offset accounts.

Subchapter 4.1 - Environmental Impacts and Mitigation Measures

Based on the methodology in subchapter 4.0, subchapter 4.1 evaluates the air quality impacts resulting from the proposed project. This subchapter first describes the significance criteria used to assess whether the air quality impacts from the proposed project are significant. It then provides an impact assessment based on those criteria. This assessment includes direct and indirect, as well as cumulative, impacts. The subchapter concludes with a discussion of mitigation measures.

- *Conflict with AQMP*

Emissions from regional growth in the industry sectors that are eligible for permits issued in reliance upon SCAQMD internal account offsets are a component of the emissions forecasted in the 2007 AQMP and are accounted for in the 2007 AQMP. For that reason, the proposed project would not conflict with or obstruct the implementation of the AQMP.

- *Mass Emissions of Criteria Pollutants –Project*

Emissions attributed to the proposed project are based on the projections in the 2007 AQMP for the industry sectors that could be eligible for permits under Rules 1304 and 1309.1, with a 15 percent factor added to ensure reasonable worst case emissions are captured. In addition, emissions attributed to the project include emissions represented by shutdowns of stationary sources that have obtained offsets from SCAQMD internal offset accounts, which would be replaced under the proposed project but not under the without project scenario.

The stationary source emissions attributable to the proposed project are considered to result in a significant air quality impact because the emissions will exceed the applicable operational significance threshold for each of the following criteria pollutants: VOC, NOx, SOx, CO, PM10 and PM2.5. Table 1-2, located at the end of this chapter, identifies the mass emissions of each of these pollutants from the proposed project.

The net increase of lead emissions attributed to the project would be less than the CEQA significance threshold of three pounds per day so project lead impacts are not significant.

- *Mass Emissions of Criteria Pollutants –Cumulative*

The cumulative emissions from permitted sources receiving offsets from SCAQMD internal offsets accounts include the emissions from the proposed project, plus emissions from sources permitted since 2006 under the prior version of Rule 1315 and under state legislation, SB 827, through May 1, 2012. The cumulative impact analysis also includes emissions from three power plant projects. As explained in Chapter 2, these three power plants are considered probable foreseeable future projects that could contribute to cumulative impacts. The three projects have been evaluated by the California Energy Commission (CEC), the CEQA lead agency for the projects. Because the cumulative emissions of VOC, NOx, SOx, CO, PM2.5 and PM10 exceed the SCAQMD's significance thresholds, the cumulative impact is significant and the project's contribution is cumulatively considerable. Cumulative lead emissions do not exceed the applicable significance threshold.

In the larger context of all emissions forecasted in the 2007 AQMP from all sources, project VOC emissions would be less than ten percent of the total regional VOC emissions, about 6/10ths of one percent of the total regional NO_x emissions, one percent of the total regional SOx emissions, and slightly over one percent of the total regional PM10 emissions. The impacts under the proposed project are considered cumulatively considerable, and therefore significant, even though emissions attributed to the project represent a fraction of the cumulative future regional emissions projected in the 2007 AQMP.

- *Modeled Concentrations of Regional Criteria Pollutant Emissions – Project*

The PEA supplements the analysis of mass emissions of criteria pollutants by identifying the project's contributions to regional concentrations of these same pollutants. No new threshold is applied to assess the regional concentrations of pollutants.

<u>Ozone and Particulate Matter.</u> The estimates in the 2007 AQMP include emissions from future projected cumulative growth throughout the region. As a result, it is not anticipated that the emissions attributed to the proposed project would interfere with attainment of the 80 ppb federal ozone standard as demonstrated in the 2007 AQMP.

In the future, additional emissions reduction measures will be needed beyond the control measures identified in the 2007 AQMP in order to reduce ambient ozone levels to achieve attainment of the 75 ppb federal ozone standard adopted in 2008 and the California 1-hour and 8-hour ozone standards (90 ppb and 70 ppb, respectively). It cannot be ascertained precisely when these standards will be attained. The 2007 AQMP projects attainment in the Basin and Coachella Valley will not occur until after 2024.

The proposed project also would not interfere with the attainment demonstrations made in connection with the 2007 AQMP and the 2010 PM10 maintenance plans– specifically, the continued attainment of the NAAQS for PM_{10}; continued attainment of the 24-hour NAAQS for $PM_{2.5}$ of 65 $\mu g/m^3$, and the Basin's attainment by 2015 of the annual NAAQS for $PM_{2.5}$ of 15 $\mu g/m^3$.

It is possible that, without the project, attainment of the ozone and particulate matter NAAQS and CAAQS could occur at an earlier date than under the conditions with the proposed project. However, for several reasons, it cannot be determined whether the without project scenario would in fact achieve attainment at an earlier date than under the proposed project, and if so when. These reasons include the long-term nature of the control measures needed to reduce ozone and PM levels; and the relatively small amount that the project would contribute to ozone concentrations (from 0.5 to 2.9 ppb), PM2.5 concentrations (from 0.01 to 1.6 μg/m^3) and PM10 (from 0.01 to 2.5 μg/m^3).

SO2 and NO2. The reductions in SO2 concentrations under the without project scenario likely would not make any difference in the attainment designation for this pollutant, as compared to future conditions with the proposed project.

With respect to NO_2, the Basin is in compliance with the annual NAAQS of 53 ppb, but has recently been classified by CARB as a nonattainment region for the new annual CAAQS of 30 ppb. The current estimate is that the Basin and Coachella Valley are in attainment with the federal 1-hour standard. The maximum potential incremental increased contribution to Basin NO2 from the project would be less than 1 ppb in 2014 and 1 ppb in 2023 and 2030, for 1-hour or annual averages. In all cases, the NO2 contribution from the project represents only a small fraction of the California and federal standards, and is not expected to result in exceedance of the existing standards or delay in attaining the new state standard.

Lead. Facilities that use or process lead are only rarely permitted by the SCAQMD and very few sources emit sufficient levels of lead to cause or contribute to a nonattainment problem. There are two such sources in Los Angeles County, both battery recycling facilities. It is not anticipated that any facilities would be permitted under the proposed project that would cause or contribute to a violation of a federal or state ambient standard for lead.

CO. The Basin is in attainment of both the California and federal 1–hour and 8-hour carbon monoxide standards. The proposed project is estimated to contribute to ambient CO concentrations in an amount less than 0.1 part per million, for all years simulated. The project would have no impact on the Basin's attainment status (either California or federal standards).

- *Modeled Concentrations of Regional Criteria Pollutant Emissions – Cumulative*

Ozone and Particulate Matter. The contribution to ozone, PM2.5 and PM10 concentrations from the cumulative projects (including the three power plants) relying on offsets from the SCAQMD internal offset accounts would be greater than the project contribution.

SO2 and NO2. The cumulative projects' contributions to regional SO2 concentrations reflect only a minor fraction of the California SO2 standards at 250 ppb for 1-hour average and 40 ppb for 24-hour average, and the federal SO2 standards at 75 ppb for 1-hour average and 30 ppb for annual average. The cumulative projects' contribution to regional NO2 concentrations range from 0.0 to 2.0 ppb for the Basin and Coachella Valley. Overall, the cumulative projects' contributions to SO2 and NO2 concentrations are not projected to result in an exceedance of the existing and newly adopted NO2 and SO2 state and federal standards.

CO. The cumulative projects' contribution to regional CO concentrations, are less than 0.1 part per million, for all years simulated. Thus, the cumulative projects would have no effect on the Basin's attainment status (either California or federal standards).

- *Modeled Concentrations of Localized Criteria Pollutant Emissions*

The analysis of localized concentrations of particulate matter evaluates concentrations of pollutants that may result from individual sources based on modeling for representative categories of facilities that receive permits from the district. The actual permitted sources may result in lower concentrations of pollutants than the modeled concentrations shown in the analysis. The results include estimated concentrations for both the 50^{th} and 95^{th} percentile emission rates for both short- and long-term exposure periods. These concentrations are then compared to the SCAQMD's significance thresholds

The impact resulting from the proposed project would be significant in terms of localized criteria pollutant concentrations based on the data collected, which in some cases results in modeled exceedances of SCAQMD's localized significance thresholds. It should be noted that the modeling reflects worst-case meteorological conditions and incorporates conservative assumptions regarding hours of operation.

- *Health Effects of Criteria Pollutant Emissions – Project*

Health effects can be evaluated by modeling criteria pollutant concentrations, which can provide information on mortality, hospital admissions, emergency room visits, minor restricted activity days, school absence days, loss of work days, and cases of acute/chronic bronchitis, nonfatal heart attacks and adverse upper/lower respiratory conditions.

The current population in the SCAQMD is approximately 17 million, and is expected to grow to approximately 20 million by 2030. CARB has estimated that there are approximately 6,500 premature deaths each year in the Basin resulting from exposure to ozone and $PM_{2.5}$ concentrations. There are approximately 100,000 cases of asthma and other respiratory symptoms each year in the Basin due to these exposures.

The Final Socioeconomic Report for the 2007 AQMP explained the health benefits (or, conversely, the reductions in adverse health impacts) resulting from the emissions controls to be implemented under the AQMP. In comparison with the with-project scenario, the without project scenario would result in additional health benefits beyond those identified in the Final Socioeconomic Report for the 2007 AQMP. As compared to future conditions under the proposed project, the ozone reductions without the project conditions would result in the additional avoidance of approximately 12 premature deaths in 2023. In the year 2030, the ozone reductions from the without project scenario would result in the avoidance of approximately 20 premature deaths. These impacts show additional benefits which could occur if the project were not implemented. The avoidance of 12 premature deaths in 2023 under the without project scenario would represent an increase of six percent in the health benefits described in the 2007 AQMP, which projects that future emissions controls would avoid 200 premature deaths from ozone emissions in the year 2023.

The 2007 AQMP projects that PM2.5 emissions controls will avoid 1,500 premature deaths in the year 2015. The particulate matter reductions under the without project scenario would avoid an additional 33 premature deaths during the same timeframe (in 2014). Thus, the health benefits in terms of premature deaths avoided by not implementing the proposed project represent an additional 2.2 percent increase in benefits beyond what the AQMP projects.

The additional premature deaths avoided under the without project scenario increases to 86 and 125 in 2023 and 2030, respectively. The total premature deaths due to $PM_{2.5}$ avoided under the AQMP also would continue to increase well beyond 1,500, as a result of additional emission reductions in 2023 and 2030, although the totals for these years have not been calculated.

Given the magnitude of the health benefits under the without project scenario, the health impacts of the proposed project from criteria pollutant emissions (ozone and PM2.5) would be significant.

- *Health Effects of Criteria Pollutant Emissions – Cumulative*

As noted above, the proposed project is determined to have a significant health impact resulting from emissions of criteria pollutants. The cumulative impact is similarly significant, taking into account other stationary sources receiving permits in reliance on offsets in the internal offset accounts including the three power plants. The PEA concludes that the proposed project would make a cumulatively considerable contribution to this significant impact. In addition, the potential health impacts of the three power plants are evaluated.

- *Health Effects of Regionwide Emissions of Toxic Air Contaminants – Project and Cumulative*

Currently, about one in three female and one in two male Californians contracts cancer at some time in their lives[5]. This represents an overall cancer risk of 330,000 to 500,000 in a million. According to the MATES-III study completed by SCAQMD in 2008, total Basin population-weighted cancer risk from air pollution is 853 in a million, which is based on the modeling exposures over the entire basin. Approximately 94 percent of this risk is caused by mobile source emissions, primarily diesel particulates (84 percent) and six percent from industrial sources. Total risk from industrial sources is approximately 51 in a million. Total Basin population-weighted exposure is expected to be reduced to below 400 in a million by 2030, even with the proposed project.

This PEA analyzes the potential additional benefit of not implementing the proposed project. The difference in cancer risk between implementing the proposed project and not implementing it in 2014 would be approximately 1 in a million, or about 2 tenths of one percent of the projected 2014 total of 556 in a million. This difference increases to as much as 4.4 in a million by the year 2030.

5 American Cancer Society, California Department of Public Health, California Cancer Registry. California Cancer Facts and Figures 2010. Oakland, CA: American Cancer Society, California Division, September 2009. http://www.ccrcal.org/PDF/ACS2010-9-29-09.pdf (page 6)

The maximum cancer risk reduction attributable to the cumulative project scenario would be less than seven additional cases of cancer in a population of one million individuals that are exposed over a 70-year lifetime. The change in cancer risk per million does not exceed SCAQMD's significance threshold of 10 in one million. However, project and cumulative cancer burden does exceed the SCAQMD's significance threshold of 0.5, so the project and cumulative cancer burden impacts are considered significant.

A hazard index is a summation of the hazard (non-cancer) quotients for all chemicals to which an individual is exposed. A hazard index can be measured as a result of chronic (long-term) exposure or acute (short-term) exposure. The change in hazard index from project emissions does not exceed SCAQMD's significance threshold for acute or chronic exposure, considering either project-specific or cumulative impacts.

- *Localized Concentrations of TACs*

SCAQMD Rule 1401 (New Source Review of Toxic Air Contaminants) prohibits the issuance of a permit for a stationary source that emits a listed TAC (or for a modification to or relocation of such a source), unless the applicant demonstrates, among other things, all of the following:

- The cumulative increase in the maximum individual cancer risk (MICR),[6] which is the sum of the calculated MICR values for all TACs emitted from the new, relocated or modified permit unit, will not result in a cancer burden[7] of greater than 0.5, and will not result in an increased MICR greater than 1 in 1 million at any receptor location, if the permit unit is constructed without T-BACT,[8] or an increased MICR greater than 10 in 1 million, if the permit unit is constructed with T-BACT.

- The cumulative increase in the total chronic Hazard Index for any target organ system due to the total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.

- The cumulative increase in the total acute Hazard Index for any target organ system due to the total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.

See SCAQMD Rule 1401(d). These thresholds in Rule 1401 are the same as the SCAQMD's CEQA significance thresholds for toxics.

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[6] MICR is the estimated probability of a potentially maximally exposed individual contracting cancer as a result of exposure to TACs over a period of 70 years for residential receptor locations, or as calculated by established Risk Assessment Procedures for worker receptor locations. SCAQMD Rule 1401(c)(8).
[7] "Cancer burden" means the estimated increase in the occurrence of cancer cases in a population subject to an MICR of greater than or equal to 1 in 1 million resulting from exposure to TACs. SCAQMD Rule 1401(c)(3).
[8] T-BACT means the most stringent emissions limitation or control technique for TACs that (a) has been achieved in practice for the category or class of source at issue; or (b) is any other emissions limitation or control technique, including process and equipment changes of basic and control equipment, found by the Executive Officer to be technologically feasible for the class or category of source, or for a specific source. SCAQMD Rule 1401(c)(2).

As a result of these regulatory prohibitions, the issuance of a permit by the SCAQMD to a stationary source of TACs would not result in stationary source emissions that exceed the CEQA significance thresholds for localized health impacts. However, the thresholds above contained in Rule 1401 are applied on a permit-unit basis; as a result, a facility with multiple permitted sources could still exceed the Hazard Index limits in Rule 1401. Such facilities would instead be subject to Rule 1402; under that rule, the allowable cancer burden is the same as under Rule 1401, but the allowable cancer risk (25 in a million) and Hazard Index limits for acute and chronic non-cancer toxic impacts are higher (3.0) than the limits under Rule 1401 and thus higher than the applicable CEQA significance thresholds. Therefore, the localized air toxic impacts are considered significant.

- *Odors*

Equipment at a permitted stationary source could create objectionable odors. However, SCAQMD evaluation of permit applications would include the imposition of conditions to minimize such odors. Such conditions would range from limiting the release of the odor emitting source to installation and operation of control equipment that provides odor abatement. Such control equipment includes thermal oxidizers, scrubbers, afterburners, carbon absorbers and paint spray booths. Despite these permitting controls, some facilities may result in significant odor effects, so odor impacts resulting from the proposed project are considered significant.

- *Visibility – Project and Cumulative*

Pollution can cause the absorption and scattering of light, which reduces the clarity and color of what we see.[9] Poor air quality can therefore result in adverse impacts on visibility. Emissions that substantially contribute to a violation of the statewide standard for visibility are considered significant, and emissions that cause or substantially contribute to a violation of the Regional Haze Rule for federal Class I areas (National Parks and wilderness areas), exceed a change of 0.5 deciviews, are also considered significant.

The maximum predicted impact on the light extinction coefficient (.001 km-1) attributable to the proposed project would not cause or contribute to a violation of the state standard, and is not significant. The maximum project impact measured in deciviews would be less than 0.06 in all cases, which is not significant. The maximum impact from the cumulative projects, measured in both extinction coefficient and deciviews, would be less than the significance criteria in all cases.

- *Climate Change - Project*

The estimated increase in greenhouse gas emissions attributable to the proposed project (22.26 million metric tons/year) is substantially greater than the SCAQMD's GHG significance threshold for lead agency projects (10,000 MTCO2e/yr). As such, GHG

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[9] EPA, How Air Pollution Affects the View, available at http://www.epa.gov/visibility/pdfs/haze_brochure_20060426.pdf.

emissions attributable to the proposed project, taken as a whole, are therefore cumulatively considerable.

- *Climate Change - Cumulative*

GHG emissions from the cumulative projects obtaining permits in reliance on offsets in the SCAQMD internal accounts are quantified using the same methodology as project emissions. The total GHG emissions in year 2030 from the cumulative projects (29.13 million metric tons/year) exceed the SCAQMD's Tier 3 GHG significance threshold of 0.01 million MT CO2e/year (or 10,000 MT CO2e/year), so GHG emissions from the cumulative scenario are cumulatively considerable.

- *Indirect Air Quality Impacts*

Because construction emissions would add to the project-related emissions, they will increase each of the significant operational impacts that are identified to some degree. The extent of that increase cannot be characterized, however, because the amount of construction emissions associated with the project cannot be estimated. Similarly, it is concluded that the significant impacts of the project will be increased by the additional mobile source emissions that will occur as an indirect result of the project.

There is no correlation between the amount of stationary source emissions at a facility receiving a permit under Rule 1304 or Rule 1309.1 and the amount of mobile source emissions that may be associated with that facility. Nor is there any correlation between the number of permits that may be issued under Rule 1304 and 1309.1 and mobile source emissions, since the relationship will depend on variables that will differ from facility to facility.

Because the difference in construction and mobile source emissions that will occur under the with project scenario in comparison to the without project scenario cannot be measured or estimated, the environmental analysis in this PEA assumes that construction and mobile sources emissions associated with stationary sources permitted under Rule 1304 or Rule 1309.1 will, in the aggregate, comprise a substantial increment of emissions in addition to the emissions attributed to the project. In addition, because construction and mobile source emissions are presumed to be substantial, combined impacts from sources permitted under Rules 1304 and 1309.1 plus construction and mobile source emissions from facilities containing such sources could result in significant impacts relating to visibility. On the other hand, given that the direct visibility impacts are so small, it is possible that associated indirect visibility impacts are not significant. SCAQMD staff therefore concludes that the visibility impacts from construction and mobile service emissions are "presumed" significant.

The combined stationary and mobile source emissions would not result in a significant impact with regard to conflicts with the AQMP because mobile source emissions are included in the AQMP. Table 1-1 provides an overview of all air quality, visibility, and greenhouse gas significance determinations.

Table 1-1
Significance Determination of Direct and Indirect Air Quality Impacts

Air Quality Impact Area	Direct Impacts	Indirect Impacts	Overall Significance Determination
Consistency with AQMP	Not significant	Not significant	Not significant
Regional Emissions from Criteria Pollutants - Project	Significant	Significant	Significant
Regional Emissions from Criteria Pollutants - Cumulative	Significant	Significant	Significant
Regional Emissions from Lead – Project	Not significant	Not significant	Not significant
Regional Emissions from Lead - Cumulative	Not significant	Not significant	Not significant
Localized Concentrations	Significant	Significant	Significant
Health Effects (Ozone, PM) - Project	Significant	Significant	Significant
Health Effects (Ozone, PM) - Cumulative	Significant	Significant	Significant
Regional Health Impacts (TACs) - Project	Significant	Significant	Significant
Regional Health Impacts (TACs)-Cumulative	Significant	Significant	Significant
Localized Toxic Air Contaminants	Significant	Significant	Significant
Odors	Significant	Significant	Significant
Visibility – Project	Not significant	Presumed significant	Presumed significant
Visibility - Cumulative	Not significant	Presumed significant	Presumed significant
Greenhouse Gases	Significant	Significant	Significant

- *Mitigation Measures*

Chapter 4 also discusses the following measures that will have the effect of limiting the total quantity of emissions by new or modified sources.

Limitations on Total Quantity of Emissions Associated with Rule 1315. The regional emissions expected to result from Proposed Rule 1315 equal the quantity of the Rule 1315 offsets that are used pursuant to Rules 1304 and 1309.1. As a result, any limitation on the use of the offsets will directly reduce the quantity of regional air pollutant emissions. The proposed project includes a cap on total emissions offsets to be provided from the SCAQMD internal accounts for each pollutant in order to ensure that the net emissions increase attributable to both federal major and non-major sources do not exceed the emissions analyzed in this PEA.

Other Limitations on Emissions by New or Modified Sources. The following briefly summarizes requirements that apply to new or modified sources receiving emissions offsets that will ensure those projects reduce their emissions to the extent feasible.

SCAQMD rules require "best available control technology" (BACT) for any new or modified source resulting in an emissions increase of nonattainment pollutants and their precursors.

SCAQMD rules require best available control technology for toxic air pollutants (T-BACT) for any permit which would result in a maximum individual cancer risk exceeding 1 in a million at any receptor location. In addition, no permit may be issued if it exceeds a maximum individual cancer risk of 10 in a million, even with T-BACT.

The SCAQMD significance thresholds for localized impacts for criteria pollutants are based on the changes to ambient air quality caused by a project. Under SCAQMD Rule 1303, NO2 and PM10 for new or modified source must be modeled. If an individual source would exceed the District's thresholds for localized concentrations of criteria pollutants, the permit would be denied. The SCAQMD will also begin implementing BACT for GHGs as soon as its rules can be adopted to require this.

Executive Summary – Chapter 5: Indirect Environmental Impacts

- *Methodology*

Because providing offsets can be a necessary step in obtaining approval for a facility that is an emissions source, the proposed offset accounting system has the potential to create indirect adverse environmental impacts in the future from siting, constructing, and operating individual facilities containing stationary pollutant sources that qualify to receive emissions offsets available from the SCAQMD's internal offset accounts under Rules 1304 and 1309.1. Depending upon the nature of the specific project and its setting, future affected facilities could require constructing new or modified structures resulting in adverse impacts in a number of different environmental topic areas.

Given the large number and variety of facilities and geographic extremes within the 10,473 square-mile area under SCAQMD jurisdiction and the fact that the project extends over the next 20 years, it is infeasible to analyze, in detail, the environmental impacts of potential future permitted facilities. Therefore, general facility categories are identified based on the available historical data from facilities that have been permitted or with permits pending during a five-year period (2003 through 2008). Based upon these facility categories, a wide selection of corresponding CEQA documentation was examined for projects that would generally fit within each of these facility categories. These selected sample CEQA documents capture a range of reasonably foreseeable significant impacts that could occur as a result of siting, constructing, and operating facilities that could receive future emission offsets under the proposed rule.

The steps for identifying primary facility categories, review of past CEQA environmental documentation, and potential future environmental impacts include the following:

- Review of available existing data of past and pending permits (years 2003 through 2008)
- Identification of primary facility categories

- Review of CEQA documents relevant to each of the facility categories
- Disclosure of potentially significant environmental impacts found in the analysis of past CEQA documents within each facility category, and the identification of general and specific significant impacts that could potentially occur for similar future projects.

The facilities were grouped according to the following general categories:

- Agriculture facilities
- Retail and service facilities
- large commercial facilities,
- Entertainment and recreational facilities
- Institutional facilities
- Transportation facilities
- utilities, including power plant facilities
- Light industrial and warehousing facilities
- Heavy industrial facilities

- *Environmental Impacts*

The proposed project has the potential to result in indirect adverse impacts in the future from siting, constructing, and operating individual facilities containing stationary pollutant sources that qualify to receive emissions offsets available from the SCAQMD's internal offset accounts. Construction and operation of future new facilities or of new or modified structures at existing new facilities obtaining emissions offsets from the SCAQMD's internal offset accounts have the potential to generate adverse impacts depending upon the nature of the project, its location, and its setting.

Environmental impacts found to be potentially significant include indirect impacts to: aesthetics, agricultural resources, air quality, biological resources, culture resources, energy, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, solid/hazardous waste, and transportation/traffic.

Indirect impacts from the proposed project were concluded to be significant for all topic areas either because one or more CEQA documents for representative projects concluded there would be significant impacts or because there could be unique circumstances or unique locations for facilities containing permitted sources that could result in significant impacts.

Executive Summary – Chapter 6: Alternatives – Direct and Indirect Air Quality, Visibility and Greenhouse Gas Impacts

- *Introduction*

This PEA provides a discussion of alternatives to the proposed project as required by CEQA. An EIR must describe a range of reasonable alternatives to the proposed project that would feasibly attain most of the project objectives and provide a means for evaluating the comparative merits of each alternative. A "No Project" alternative must also be evaluated. The range of alternatives must be sufficient to permit a reasoned choice.

The discussion of alternatives in the PEA is presented in two chapters, mirroring the presentation of project impacts. Chapter 6 presents the air quality, visibility and greenhouse gas effects of each of the alternatives. Chapter 7 presents the indirect effects of the alternatives. Both chapters compare the effects of the alternatives to the effects of the proposed project.

- *Alternatives Rejected as Infeasible*

A CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines §15126.6(c)). The following alternatives have been considered but eliminated from further detailed consideration in the PEA for the following reasons: 1) they fail to meet most of the basic project objectives, 2) they are infeasible as defined by CEQA (CEQA Guidelines §15364), or 3) they are unable to avoid significant impacts (CEQA Guidelines §15126.6(c)). The reasons for eliminating these alternatives are described in more detail in Chapter 6.

- Prohibit the Use of Offsets from Shutdowns or Reductions at Minor Sources to Demonstrate Equivalency with Federal Offset Requirements
- Prohibit the Use of Any Credits Not Previously Recognized Prior to Adoption of Rule
- Fossil Fueled Power Plant Project Alternative
- Other Project Alternatives Suggested by the Superior Court
- Issue Offsets to Priority Projects First

- *Description of Project Alternatives*

The following subsections briefly describe each project alternative analyzed in this PEA. For a more complete description of each alternative, the reader is referred to Chapter 6 of this PEA.

<u>Alternative A - No Project Alternative.</u> CEQA Guidelines §15126.6 requires evaluation of a no project alternative to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. Consistent with

CEQA Guidelines §15126.6, Alternative A, the No Project Alternative, means the SCAQMD Governing Board would not re-adopt Rule 1315. The SCAQMD would no longer provide offsets to eligible facilities pursuant to Rules 1309.1 or 1304 from the SCAQMD's internal accounts. After expiration of SB 827, the only new or modified stationary sources that could be approved under the SCAQMD's New Source Review program would be those facilities obtaining ERCs on the open market or those with no increases in emissions.

Alternative B – Offset User Fees for Large Businesses. Alternative B is similar to the proposed project in all aspects except that Alternative B includes "offset user fees" for large businesses that seek an exemption from offset requirements pursuant to Rule 1304. The intent of this Alternative would be to charge fees for large businesses using the "small facility" exemption (Rule 1304(d)), but not for equipment replacement or air pollution control projects. Fees collected from large businesses would be used to fund emission reduction projects. For purposes of analysis, the PEA assumes fees charged to large businesses would be higher than the cost of purchasing ERCs in order to ensure that offsets from the internal accounts are used only as a last resort. Further, for purposes of analysis, the PEA assumes that the same amount of growth in the large business sector as has been anticipated to occur under the proposed project would occur if the user fee were charged. This is a conservative assumption to show the maximum impacts of growth and the maximum potential benefits of use of the user fees for emissions reduction projections. It is expected that any emission reductions resulting from emission reduction projects may benefit both the local area in which the emission reduction project is located and the region depending on the type and amount of air pollutants reduced. Emission reductions obtained from offset user fees, however, would be prohibited from generating future emission offsets, but would be retired for the benefit of the environment. The PEA assumes that the emissions reductions obtained from emissions reductions fees would be equal to current BACT incremental cost effectiveness, adjusted to 2010 dollars. It should be noted that if the future emission reduction projects have higher costs than the current BACT increment cost, this alternative will yield less emissions reduction benefits than analyzed. Recent mobile source reduction projects for PM10 have shown to have higher costs than the BACT incremental cost.

Alternative C - Large Businesses Prohibited from Accessing Rule 1304 Exemptions. Alternative C would prohibit access by large businesses to the Rule 1304 Exemption. In all other aspects Alternative C would be identical to the proposed project. For purposes of analysis, the PEA assumes that none of the growth in emissions from large businesses that is projected to occur under the proposed project would occur under Alternative C. (Under Alternative C, large businesses could still implement modifications that do not increase emissions from stationary sources.) This assumption ensures that the analysis of Alternatives B and C bracket the range of potential outcomes resulting from increased costs to large businesses, whether in the form of user fees under Alternative B or the restrictions on use of offsets from the district's internal accounts under Alternative C.

Alternative D - Use of Credits Generated in 2009 and Beyond Only. Alternative D would only allow the use of credits generated in 2009 and beyond to be used to offset emissions from facilities that qualify for permits under Rules 1304 and 1309.1 in order to demonstrate equivalency with federal offset requirements. Specifically, under Alternative D, offsets in the SCAQMD's existing offset accounts would be eliminated. Instead, only new credits generated starting in 2009 and succeeding years could be used as offsets for demonstrating equivalency with federal offset requirements. Any unused credits in a given year would rollover to the next year. Because SCAQMD's previous offset accounts would be eliminated under Alternative D, use of offsets could not exceed the number of credits generated each year plus any credits rolled over from previous years, thus, effectively capping the number of offsets that can be used per year. In all other respects Alternative D is similar to the proposed project.

Alternative E – Limited Offset Availability. Alternative E would limit the cumulative net emissions increases from sources permitted under Rules 1304 and 1309.1 to levels set at 50 percent of the AQMP-based growth in emissions from the industry categories potentially eligible for offsets under these rules ("50 percent cap"). That is, staff would track the total net increases of each nonattainment air contaminant from the offset accounts from the start of implementation through the end of each reporting period and compare the results with the 50 percent caps included in the adopted rule for the corresponding period. If the cumulative net emission increase of any contaminant exceeded the cap, no further offsets of that contaminant would be available from the offset accounts until sufficient additional credits are tracked to bring the cumulative net emission increase to a level below the applicable 50 percent cap. In other respects, Alternative E would be the same as the proposed project.

- *Evaluation of the Comparative Effects of the Project Alternatives*

Table 1-2 summarizes the mass emissions of criteria pollutants that may be generated by each project alternative. Evaluations of the other air quality effects of the project alternatives compared to the proposed project are presented in Chapter 6.

Least Toxic Alternative. In accordance with SCAQMD's policy document, Environmental Justice Program Enhancements for FY 2002-03, Enhancement II-1 recommends that all EIR equivalent CEQA documents for SCAQMD regulatory projects include an analysis of a potentially feasible project alternative with the lowest air toxics emissions.

With regard to the evaluation of cancer and non-cancer effects of the alternatives evaluated in Chapter 6, Alternative A, the No Project Alternative is the least toxic alternative. Some toxic emissions from existing facilities as they age would likely occur, but such air toxics emissions would be less than the proposed project and remaining project alternatives. Of the remaining alternatives, Alternative D is concluded to be the least toxic alternative for the following reasons. Alternative D is projected to generate the lowest regional cancer risk and cancer burden for the most number of milestone years. Similarly, Alternative D has lower or equivalent regional chronic hazard impacts for more milestone years than the other alternatives.

Environmentally Superior Alternative. A CEQA document should identify an environmentally superior alternative. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. Here, Alternative A, the no project alternative, would result in the fewest air quality, visibility and greenhouse gas effects. Alternative A would also avoid most indirect effects of the proposed project. However, as discussed further in Chapter 7, Alternative A would result in greater cumulative effects on water supply, wastewater treatment capacity, and public services than the proposed project because Alternative A would hinder construction of new and expanded essential public services to accommodate anticipated population growth. Other than the no-project alternative, Alternative D is concluded to be the environmentally superior alternative. The emissions reductions achieved by limited use of offsets to those generated starting in the year 2009 would result in substantially lower emissions of criteria pollutants, TACs and greenhouse gases than any of the other project alternatives, and lesser health effects than the other project alternatives. However, Alternative D would hinder construction of new or expanded essential public services needed to accommodate population growth. Other indirect impacts associated with Alternative D would be less than those resulting from the proposed project because fewer new facilities would be constructed.

TABLE 1-2
Comparison of the Proposed Project and the Alternatives' Stationary Source Emissions (Tons per Day)

	Pollutant					
Milestone Years	**VOC**	**NOx**	**SOx**	**CO**	**PM10**	**PM2.5**
Proposed Project						
2014	16.99	1.29	0.16	1.14	0.85	0.54
2023	34.52	2.38	0.49	4.16	2.84	1.8
2030	44.59	3.31	0.74	6.26	4.44	2.82
Alternative A						
2014	0	0	0	0	0	0
2023	0	0	0	0	0	0
2030	0	0	0	0	0	0
Alternative B						
2014	16.78	1.16	0.11	1.14	0.10	0.06
2023	33.83	2.06	0.35	4.16	0.28	0.28
2030	43.52	2.77	0.51	6.26	0.48	0.30
Alternative C						
2014	15.61	1.17	0.13	1.1	0.76	0.48
2023	29.98	2.07	0.4	3.77	2.53	1.61
2030	37.63	2.79	0.59	5.57	3.96	2.51
Alternative D - Tons per Day						
2014	11.21	0.77	0.03	0.87	0.03	0.02
2023	15.56	1.05	0.04	1.37	0.04	0.03
2030	15.56	1.05	0.04	1.37	0.04	0.03
Alternative E - Tons per Day						
2014	14.1	1.03	0.1	1	0.44	0.28
2023	25.04	1.71	0.27	2.77	1.44	0.91
2030	30.08	2.18	0.39	3.81	2.24	1.42

Executive Summary – Chapter 7: Alternatives –Indirect Impacts

- *Introduction*

Chapter 7 of the PEA presents the analysis of indirect impacts from the project alternatives. In general, Alternatives A (no project alternative), C (large businesses prevented from using offset accounts), D (prospective credit use only) and E (limited availability of offsets) would hinder growth in the industry categories potentially eligible for use of offsets, as compared to the growth projected under the 2007 AQMP. Because each of these alternatives would result in fewer new or expanded facilities, they would result in lesser indirect effects associated with facility construction, siting and operation than the proposed project. However, by restricting future use of offsets, these alternatives also could hinder equipment replacement, which could in turn increase hazards. In addition, Alternatives A, D and E would hinder construction of new and expanded essential public services needed to accommodate expected population growth. As a result, these alternatives could result in greater cumulative effects on water supply, wastewater treatment capacity, and public services than the proposed project.

Alternative B would result in the same indirect effects from construction and operation of new and modified sources as the proposed project. If, however, fewer large businesses undertake projects to construct new or modified facilities because of the user fee associated with accessing offsets from the district's internal accounts, then the indirect effects of Alternative B could be more similar to the indirect effects of Alternative C (large businesses prevented from using offset accounts). Alternative B also would result in indirect effects associated with constructing and operating the emissions reductions projects funded by the user fees charged to large businesses. While the emissions reduction projects would reduce the air quality, visibility and greenhouse gas effects analyzed in Chapter 6 of the PEA, the projects would be expected to increase the indirect effects analyzed in Chapter 7, in comparison with the proposed project. For example, construction of alternative energy facilities could result in significant effects to aesthetic resources, depending upon where the facilities are located.

- *Evaluation of the Comparative Effects of the Project Alternatives*

Indirect impacts from the proposed project (Chapter 5) were concluded to be significant for all topic areas either because one or more CEQA documents for representative projects concluded there would be significant impacts or because there could be unique circumstances or unique locations for facilities containing permitted sources that could result in significant impacts. For the same reasons, indirect impacts of all project alternatives could also be significant. Therefore, the analysis and comparison of alternatives in this PEA presents a qualitative conclusion as to whether the impacts of each alternative in each topic area would be more or less significant than the proposed project. For a detailed discussion of environmental effects of the project alternatives compared to the proposed project, the reader is referred to Chapter 7.

Executive Summary – Chapter 8: Responses to the Court's Decision on Amended Rule 1309.1 and Rule 1315

In the July, 2008 Decision on Ruling on Respondent's Motion for Summary Judgment, the Superior Court found the District's CEQA analysis for its adoption of Rule 1315 (in its previous form) and amendment of Rule 1309.1 to be inadequate regarding its description of the proposed project, and the analyses of impacts from air emissions on health, aesthetics and climate change.

- *Project Description*

The rule changes that were the subject of the Court's decision included an amendment to SCAQMD Rule 1309.1 that would have allowed new power plants to qualify for offsets from the SCAQMD's Priority Reserve for a limited period of time. That rule amendment is no longer proposed. Therefore, the project description for the proposed project is limited to the readoption of Rule 1315, which (as modified) has been revised.

- *Health Effects*

The emissions resulting from facilities with sources to be issued permits under Rules 1304 and 1309.1 are included in the 2007 AQMP growth projections. As a result of control measures identified in the AQMP, adverse health effects from particulate matter and ozone will be reduced over time. The PEA includes an analysis of the health effects of the incremental change in particulate and ozone pollution on a regional basis resulting from the emissions of these pollutants and their precursors attributed to the proposed project and cumulative projects. The PEA also analyzes cancer and non-cancer health risk from region-wide and localized emissions of toxic air contaminants (TACs) attributed to the proposed project and cumulative projects. The PEA also analyzes the health effects from the operation of the three power plants that were or could have been authorized by state legislation to rely on the SCAQMD's internal offset accounts.

- *Aesthetics*

Visibility will improve in the future due to the control measures described in the 2007 AQMP. The PEA analyzes the impacts on region-wide visibility resulting from the operation of the sources potentially eligible to be issued permits under Rules 1304 and 1309.1 in reliance on the SCAQMD's internal accounts. In addition, the PEA analyzes the cumulative impacts on visibility from the proposed project plus the other reasonably foreseeable sources that may be issued permits in reliance on the SCAQMD's internal accounts, including the sources permitted under SB 827 and the three potential power plants.

- *Climate Change*

The PEA quantifies the six greenhouse gases identified under AB 32 expected to be emitted by sources potentially eligible to be issued permits under Rules 1309.1 and 1304. The PEA also includes an analysis of cumulative greenhouse gas emissions attributed to the proposed project plus the greenhouse gas emissions from the other reasonably foreseeable sources that may be issued permits in reliance on the SCAQMD's internal accounts, including the projects permitted under SB 827 and the three potential power plants

- *Impact Analysis Assuming Full Use of Credits (Maximum Use Scenario)*

The proposed project has been designed so that it is not possible for all offsets in the beginning balance plus those deposited in future years to be used. The proposed project now includes a cap on the amount of offsets that can be used.

Nevertheless, mass emissions of criteria pollutants and modeled concentrations of ozone and particulate matter emissions were calculated assuming full use of the credits. From the modeled concentration, health effects from ozone and particulate matter impacts were determined. Finally, toxic impacts, visibility and greenhouse gases from the maximum use of the credits were calculated and presented in Chapter 8.

DOCUMENT FORMAT

State CEQA Guidelines outline the information required in an EIR, but allow the format of the document to vary [CEQA Guidelines §15120(a)]. The information in this PEA complies with CEQA Guidelines §15122 through §15131 and consists of the following:

Chapter 1: Introduction and Executive Summary

Chapter 2: Project Description

Chapter 3: Environmental Setting

Chapter 4: Direct Environmental Impacts and Mitigation Measures

Chapter 5: Indirect Environmental Impacts and Mitigation Measures

Chapter 6: Alternatives – Direct Impacts

Chapter 7: Alternatives – Indirect Impacts

Chapter 8: Responses to the Court's Decision on Amended Rule 1309.1 and Rule 1315

Chapter 9: Acronyms

Chapter 10: References

Chapter 11: Contributors

Appendix A: Proposed Rule 1315

Appendix B: Notice of Preparation/Initial Study ; Comment Letters Received on the NOP/IS and Responses to Comments

Appendix C: Air Quality Analysis for SCAQMD Proposed Rule 1315

Appendix D: Greenhouse Gas Emissions Analysis

Appendix E: Historic Permit Data and NAICS Code Categorization

Appendix F: Primary Facility Categories Location Maps

Appendix G: [withdrawn]

Appendix H: Facilities Affected by Permit Moratorium

Appendix I: Modeling Files (available at SCAQMD)

CHAPTER 2

PROJECT DESCRIPTION

PROJECT LOCATION

The proposed project consists of readopting Proposed Rule 1315 with specific modifications in response to a judgment in litigation which invalidated a prior version of the rule. If adopted by the SCAQMD's Governing Board, proposed Rule 1315 would become part of the SCAQMD's Regulation XIII – New Source Review rules, which regulate new and modified stationary sources of air pollution located within the SCAQMD's jurisdiction (i.e., the entire district).

The SCAQMD has jurisdiction over an area of 10,473 square miles, consisting of the four-county South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB). The Basin, which is a sub area of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745 square-mile Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside County portions of the SSAB and MDAB are bounded by the San Jacinto Mountains to the west and span eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a sub region of both Riverside County and the SSAB and is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east. The SCAQMD's jurisdictional area is depicted in Figure 2-1. The proposed project would be in effect in the entire area of the SCAQMD's jurisdiction.

BACKGROUND

Overview of the Federal Clean Air Act and the Requirement for a State Implementation Plan

The federal Clean Air Act (CAA), 42 U.S.C. §§ 7401 *et seq.*, establishes a comprehensive national regulatory scheme for controlling air pollution. The CAA requires the U.S. Environmental Protection Agency (USEPA) to set National Ambient Air Quality Standards (NAAQS) for certain pollutants. The USEPA has set NAAQS for six "criteria pollutants": ozone (O_3), particulate matter,[1] carbon monoxide (CO), sulfur dioxide (SO_2), oxides of nitrogen (NO_x), and lead (Pb). The USEPA has made several recent amendments to the NAAQSs, including the adoption of: a new 24-hour standard for PM2.5 in 2006, a new 8-hour ozone standard, a new standard for lead in 2008, and new standards for nitrogen dioxide (NO2) and sulfur dioxide (SO2) in 2010.

[1] The USEPA has established NAAQSs for two types of particulate matter: PM10 (inhalable coarse particulate matter, which ranges from 2.5 to 10 micrometers in diameter) and PM2.5 (fine particulate matter, which is less than 2.5 micrometers in diameter).

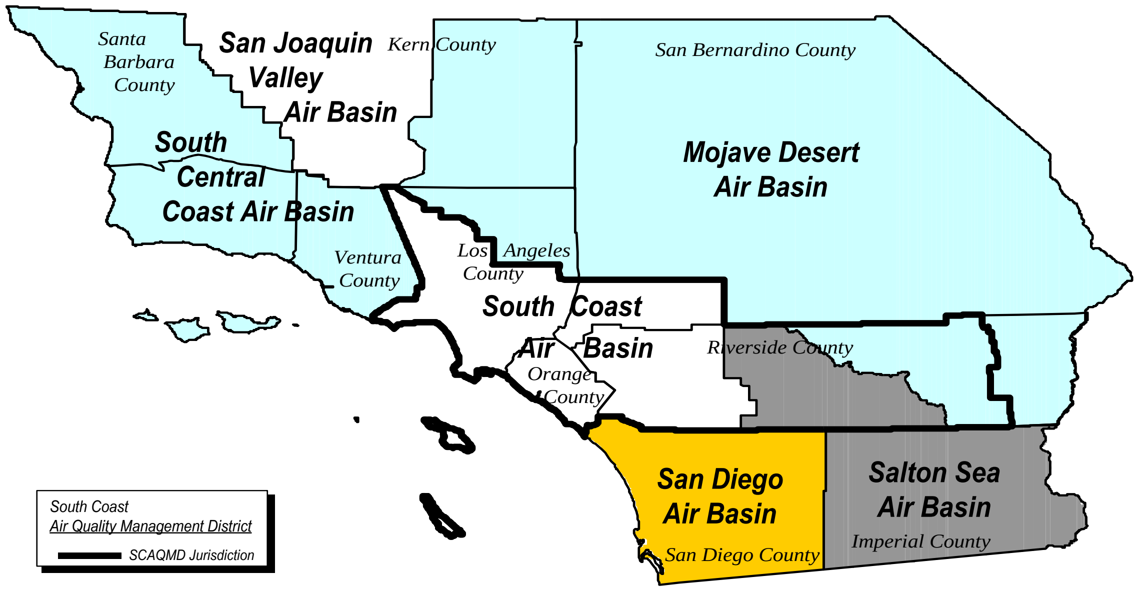

FIGURE 2-1

South Coast Air Quality Management District Boundaries

For planning purposes, the USEPA divides each state into air quality control regions and then designates those regions that do not meet the NAAQS for a particular air pollutant as a "nonattainment" region for that pollutant. There are two federal nonattainment regions within the SCAQMD's jurisdiction. First, the Basin is currently designated as a federal nonattainment region for ozone, PM10, and PM2.5. In addition, the California Air Resources Board (CARB) has recently recommended that the USEPA designate the portion of the Basin that is located within Los Angeles County as a federal nonattainment area for the new NAAQS for lead[2]. Second, the Coachella Valley Planning Area, which is the portion of Riverside County that is located within the SSAB, is designated as a federal nonattainment region for ozone and PM10. Based on monitoring data, the SCAQMD and CARB have submitted a request to the USEPA to redesignate both the Basin and Coachella Valley as federal attainment areas for PM10.

Each state has the primary responsibility under the CAA for assuring air quality within its jurisdiction through the preparation and implementation of a "State Implementation Plan" (SIP), which identifies control measures to achieve and maintain compliance with the

[2] USEPA released a preliminary designation of nonattainment with the new 2008 lead National Ambient Air Quality Standard on June 1, 2010, which starts a 120-day public comment period. USEPA has indicated it will make a final designation of nonattainment with the 2008 lead standard by October 15, 2010.

NAAQS. The SCAQMD is responsible together with CARB and Southern California Association of Governments (SCAG) for preparing and implementing the component of the California SIP that covers the SCAQMD's jurisdictional area.

As part of this effort, the SCAQMD has adopted numerous rules and regulations to implement the CAA's requirements, as well as a series of air quality management plans (AQMPs) that set forth policies, strategies and control measures for reducing emissions. The SCAQMD adopted a comprehensive AQMP update in 2007. The 2007 AQMP builds on prior plans and is specifically designed to achieve attainment with the NAAQS for ozone and PM2.5 in effect at the time of its adoption. The 2007 AQMP takes into account the growth that is projected in the region and is based on a comprehensive strategy aimed at controlling air pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources. The AQMP incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes and new air quality modeling tools.

New Source Review and the Requirement for Offsets

Under the federal CAA, a SIP for a nonattainment area must include a "New Source Review" (NSR) permitting program for the construction and operation of new and modified "major" stationary sources of air emissions.[3] These requirements do not apply to mobile sources such as cars, trucks and ships. The definition of what constitutes a "major" stationary source under the CAA depends on the extent to which the region in question is in nonattainment for a particular pollutant. The Basin is classified as an "extreme" nonattainment region for ozone and therefore the threshold for triggering the NSR requirements for ozone is lower than in the Coachella Valley, which is classified as a "severe" nonattainment area for ozone. It should be noted that the SCAQMD's permitting requirements are broader than the federal NSR requirements in that the SCAQMD's requirements apply to ***all*** stationary sources that would result in a net increase in emissions of any nonattainment pollutant, even if the source does not qualify as a "major" source under the CAA.

The CAA's NSR permitting requirements are designed to ensure that the operation of new, modified, or relocated major stationary emission sources in nonattainment areas does not impede the attainment and maintenance of the NAAQS. Under the CAA, all local major NSR permitting programs for nonattainment areas must require the implementation of the lowest achievable emissions rate (LAER). LAER is the most stringent emissions limitation derived from either of the following: (1) the most stringent emissions limitation contained in any state's SIP for the class or category of source at issue, unless it is demonstrated that such a limitation is not achievable; or (2) the most stringent emissions limitation achieved in practice by that class or source category.

In addition, all local NSR permitting programs for nonattainment areas must require that emissions increases from permitted major sources are "offset" by corresponding emissions

[3] The CAA also establishes permitting requirements for major sources of emissions located in attainment regions, in order to prevent a significant deterioration of air quality in those areas.

reductions.[4] An "offset" is a reduction of emissions in an amount equal to, or greater than, the emissions increase of the same pollutant from the permitted source. Offsets can be created when an operator reduces emissions by shutting down equipment or installing controls, or implementing permanent process changes resulting in emissions reductions that are not required. The specific quantity of the offset that is required under the CAA depends on the degree of nonattainment in the area in question. The SCAQMD's offset requirements are discussed in greater detail below.

Overview of California Law

Similar to the federal CAA, the California Health & Safety Code (§§ 39000 *et seq*) requires the promulgation of California Ambient Air Quality Standards (CAAQS) for certain pollutants. CARB has published CAAQS for the six criteria pollutants regulated under the federal CAA, and for three other pollutants (sulfates, hydrogen sulfide and vinyl sulfide). As with the federal CAA, an area that does not meet the CAAQS for a particular pollutant is designated as a state nonattainment area for that pollutant and the local air district must develop a plan to attain the relevant CAAQS. In general, the California standards are more protective than the corresponding federal standards.

CARB has published in its regulations the state law designations for attainment with the CAAQS. See 17 Cal. Code Regs. §§ 60200 *et seq*. The Basin, the SSAB and the MDAB have all been designated in their entirety as nonattainment areas for the CAAQS for ozone and PM10. See *id.* §§ 60201, 60205. The Basin also has been designated as a state nonattainment area for PM2.5. See *id*. § 60210. In addition, CARB has adopted new regulations that, if approved by the state Office of Administrative Law, would designate the Basin as a state nonattainment area for nitrogen dioxide and the Los Angeles County portion of the Basin as a state nonattainment area for lead. See CARB Resolution 10-17 (Mar. 25, 2010).

California law requires local air districts in nonattainment areas to implement a stationary source control program designed to achieve no net increase (NNI) in emissions of state nonattainment air pollutants from new or modified stationary sources exceeding specified emissions thresholds. As under the CAA, the applicable thresholds depend on the degree of nonattainment in the area in question.

Description of the SCAQMD's NSR Permitting Program

<u>Contents of Regulation XIII</u>

The SCAQMD's NSR program, which is codified in the SCAQMD's "Regulation XIII," is designed to meet the requirements of federal and state law.[5] Each of the existing rules in

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4 The NSR offset requirements are set forth in Section 173(c) of the CAA, 42 U.S.C. § 7503(c).

5 Separate New Source Review requirements for RECLAIM pollutants (NOx and SOx) at RECLAIM facilities are included in Rule 2005. RECLAIM (Regional Clean Air Incentives Market) is a cap and trade program consisting of the largest stationary sources of these pollutants, and Regulation XIII does not apply to these pollutants at RECLAIM sources.

Regulation XIII that collectively comprise the SCAQMD's NSR program is summarized in the following bulleted items:

- Rule 1301 – General (adopted October 5, 1979, last amended December 7, 1995): Rule 1301 describes the purpose and applicability of Regulation XIII. As stated in Rule 1301, the purpose of the SCAQMD's NSR program is to ensure that the operation of new, modified or relocated facilities does not interfere with progress in attaining the NAAQSs and the CAAQS, and that future economic growth within the district is not unnecessarily restricted. Rule 1301(a). A specific goal of the program "is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors." *Id*. The program applies to the installation of a new source, or the modification of an existing source, that may cause emissions of any federal or state nonattainment air contaminant, any constituent identified by the USEPA as an ozone depleting compound, or ammonia. Rule 1301(b)(1).

- Rule 1302 – Definitions (adopted October 5, 1979, last amended December 6, 2002): Rule 1302 provides definitions for 42 terms and phrases used throughout Regulation XIII.

- Rule 1303 – Requirements (adopted October 5, 1979, last amended December 6, 2002): Rule 1303 presents the pre-construction review requirements that make up the core of SCAQMD's NSR program.
  - The requirements include Best Available Control Technology (BACT) for new or modified sources that may cause an increase in emissions of any federal or state nonattainment air contaminant, any ozone depleting compound, or ammonia. Rule 1303(a). Under the SCAQMD regulations, BACT means the most stringent emissions limitation which: (1) has been achieved in practice for the category or class of source at issue; (2) is contained in any SIP approved by the USEPA for such category or class; or (3) is based on any other emissions limitation or technique that has been found by the SCAQMD to be technologically feasible and cost-effective. Rule 1302(h). For "major polluting facilities,"[6] the BACT requirements must be at least as stringent as the federal LAER requirements under the CAA. Rule 1303(a)(2). With respect to other facilities, when updating BACT requirements to make them more stringent, the SCAQMD must consider economic and technological feasibility for the class or category of sources at issue. *Id.*

[6] Under the SCAQMD's regulations, a "major polluting facility" is: (1) any facility in the Basin that has the potential to emit 10 tons per year or more of volatile organic compounds (VOCs) or NO_x, or 100 tons of per year of oxides of sulfur (SO_x); 70 tons per year or more of PM10; or 50 tons per year or more of CO; (2) any facility in the Riverside County portion of the SSAB that has the potential to emit 25 tons per year or more of VOCs or NO_x; 70 tons per year or more of PM10; or 100 tons per year or more of CO or SO_x; or (3) any facility in the Riverside County portion of the MDAB under the SCAQMD's jurisdiction that has the potential to emit 100 tons per year or more of any of these compounds. See Rule 1302(s).

- Rule 1303(b)(1) also requires modeling to show that the new or modified source will not cause a violation, or make significantly worse an existing violation, of any NAAQS or CAAQS at any receptor location in the district.
- Rule 1303(b)(2) further requires that, unless there is an exemption under Rule 1304 (see below), emissions increases from the new or modified permitted source must be offset by one of two methods.
  - First, under Rule 1309 (see below), for projects that meet specified eligibility requirements, the applicant can use Emissions Reductions Credits (ERCs), which are created when an operator reduces emissions from a permitted facility. Once ERCs are created, operators may bank ERCs for their own subsequent use or for sale to other permit applicants.
  - Second, under Rule 1309.1 (see below), the SCAQMD may allocate credits from its "Priority Reserve" to offset emissions from "essential public services" and other specified "priority sources." As described more fully below, the Priority Reserve is part of an internal "bank" or internal accounts of offsets that the SCAQMD accumulates primarily from "orphan" reductions and shutdowns which occur when an operator reduces emissions from a permitted facility but does not convert the emissions reduction into ERCs. This bank of offsets is referred to in the SCAQMD regulations, and this document, as the SCAQMD's "internal offset accounts."
- Rule 1303(b)(2)(A) specifies the required offset ratio in terms of the amount of emissions reductions that is needed to compensate for the increase in emissions from the permitted source. For facilities located in the Basin, the required offset ratios are 1.0-to-1.0 for allocations from the Priority Reserve[7] and 1.2-to-1.0 for the use of ERCs. For facilities not in the Basin, the required offset ratios are 1.0-to-1.0 for allocations from the Priority Reserve; 1.2-to-1.0 for ERCs for emissions of VOCs, NO_x, SO_x, and PM10; and 1.0-to-1.0 for ERCs for emissions of CO. (Note: the district has achieved the California Ambient Air Quality standards for CO and has been designated as in attainment for the federal standards, so CO emissions are no longer required to be offset.)
- Rule 1303 also includes additional permitting requirements for "major polluting facilities" (as defined above) and "major modifications"[8] at an existing major polluting facility. These requirements include an analysis of alternatives (this

[7] Although the offset ratio for credits allocated from the SCAQMD's Priority Reserve account is 1.0-to-1.0, this ratio is for accounting purposes of limiting the use of the Priority Reserve to the level authorized by Rule 1309.1 only and is not the offset ratio used for demonstrating equivalency with federal offset requirements. If the facility accessing the Priority Reserve is a major source then the actual ratio of credits allocated from the SCAQMD's federal offset accounts would be 1.2-to-1.0 for extreme nonattainment air contaminants and their precursors to comply with federal offset requirements.

[8] Under the SCAQMD's regulations, a "major modification" is a modification of a major polluting facility that will cause an increase of the facility's potential to emit according to the following criteria: (a) for facilities in the Basin, one pound per day of more of VOCs or NO_x; (b) for facilities under the SCAQMD's jurisdiction that are not in the Basin, 25 tons per year or more of VOCs or NO_x; or (c) for all facilities under the SCAQMD's jurisdiction, 40 tons per year or more of SO_x, 15 tons per year or more of PM10, or 50 tons per year or more of CO. Rule 1302(r).

requirement may be satisfied through CEQA compliance), a demonstration by the applicant that its facilities in California comply with applicable air quality requirements, and modeling of plume visibility for certain sources of PM10 or NO_x located near specified areas.

- Rule 1304 - Exemptions (adopted October 5, 1979, last amended June 14, 1996): Rule 1304 establishes exemptions from the offset requirements in Rule 1303 for the following categories of projects:
  - Replacement of a functionally identical source.
  - Replacement of electric utility steam boilers with specified types of equipment, as long as the new equipment has a maximum electric power rating that does not allow basinwide electricity generating capacity on a per-utility basis to increase.
  - Portable abrasive blasting equipment complying with all state laws.
  - Emergency standby equipment for nonutility electric power generation or any other emergency equipment as approved by the SCAQMD, provided the source does not operate more than 200 hours per year.
  - Air pollution control strategies (i.e., source modifications) for the sole purpose of reducing emissions.
  - Emergency operations performed under the jurisdiction of an authorized health office, fire protection officer, or other authorized public agency officer. Rule 1304 requires that a specific time limit be imposed for each emergency operation.
  - Portable equipment that is not located for more than 12 consecutive months at any one facility in the district. This exemption does not apply to portable internal combustion engines.
  - Portable internal combustion engines that are not located for more than 12 consecutive months at any one facility in the district. To qualify for this exemption, the emissions from the engine may not cause an exceedance of an ambient air quality standard and may not exceed specified limits for either VOCs, NO_x, SO_x, PM10 or CO.
  - Intra-facility portable equipment meeting specified criteria where emissions from the equipment do not exceed specified emissions thresholds for any of the constituents listed in the bulleted item above.
  - Relocation of existing equipment, under the same operator or ownership, and provided that the potential to emit any air contaminant will not be greater at the new location than at the previous location when the source is operated at the same conditions as if current BACT were applied.
  - Concurrent facility modifications, which are modifications to a facility after the submittal of an application for a permit to construct, but before the start of operation. The modifications must result in a net emissions decrease and other conditions must also be satisfied.
  - Resource recovery and energy conservation projects.

  - Regulatory compliance actions (i.e., modifications to comply with federal, state or SCAQMD pollution control requirements), provided there is no increase in the maximum rating of the equipment.
  - Regulatory compliance for essential public services.
  - Replacement of ozone depleting compounds (ODC), provided the replacement complies with the SCAQMD's "ODC Replacement Guidelines" and meets other specified criteria.
  - Methyl bromide fumigation.
  - New and modified facilities with only minimal potential to emit (less than four tons per year of VOCs, NO_x, SO_x, or PM10 and less than 29 tons per year of CO).

- Rule 1306 – Emissions Calculations (adopted October 5, 1979, last amended December 6, 2002): Rule 1306 codifies the methodology for quantifying emissions increases and emissions reductions for Regulation XIII purposes (e.g., determining applicability of BACT, quantifying the amount of emission offsets required or the amount of ERCs to be banked), but is not applicable to the SCAQMD's internal accounts.

- Rule 1309 – Emission Reduction Credits and Short Term Credits (adopted September 10, 1982, last amended December 6, 2002): Rule 1309 sets forth the requirements for eligibility, registration, use and transfer of ERCs for use as offsets under Rule 1303(b)(2), but is not applicable to the SCAQMD's internal accounts. Among other topics, the rule addresses the validation of past emissions decreases for use as ERCs; the application for an ERC for a new emissions reduction; interpollutant offsets; and inter-basin and inter-district offsets.

- Rule 1309.1 – Priority Reserve (adopted June 28, 1990, last amended May 3, 2002[9]): Rule 1309.1 establishes the Priority Reserve, which is part of the SCAQMD's internal accounts of emission offsets. The SCAQMD accumulates offsets in the Priority Reserve primarily from orphan shutdowns and reductions. The SCAQMD then allocates these offsets to meet offset requirements when issuing permits for "essential public services," which are defined to include publicly owned or operated sewage treatment plants, prisons, police and firefighting facilities, schools, hospitals, landfill gas control or processing facilities, water delivery facilities, and public transit facilities. The SCAQMD also allocates offsets from the Priority Reserve when issuing permits for other specified priority sources, such as innovative technologies that result in lower emissions rates and experimental research activities designed to advance the state of the art. The rule requires that, before an eligible facility may use offsets from the Priority Reserve for a particular pollutant, the facility must first use any ERCs that it holds for that pollutant.

9 As explained below, subsequent amendments to Rule 1309.1 in 2006 were replaced by the 2007 amendments, which were invalidated as a result of litigation.

- Rule 1310 – Analysis and Reporting (adopted October 5, 1979, last amended December 7, 1995): Rule 1310 addresses the Executive Officer's application completeness determinations, annual reports to the Governing Board regarding the effectiveness of Regulation XIII and public notice requirements for banking ERCs above specified threshold amounts.

- Rule 1313 – Permits to Operate (adopted October 5, 1979, last amended December 7, 1995): Rule 1313 exempts permit renewal, change of operator, or change in Rule 219 – Equipment Not Requiring a Written Permit Pursuant to Regulation II, from the SCAQMD's NSR program, specifies that an application for a permit to operate a source that was constructed without a prior permit to construct is considered an application for a permit to construct for purposes of the SCAQMD's NSR program, establishes a 90-day deadline for facility operators to provide emissions offsets requested by the Executive Officer for a permit to operate, provides a window of up to 90 days for a replacement source to operate concurrently with the source it is replacing, specifies the inclusion of NSR permit conditions on permits, and specifies that relaxing or removing a condition limiting mass emissions from a permit is subject to NSR if that condition limited the source's obligations under NSR.

- Rule 1316 – Federal Major Modifications (Adopted December 2, 2005) Rule 1316 establishes that if a permit applicant demonstrates that a proposed modification to an existing stationary source would not constitute a Federal Major Modification (as defined in the USEPA's regulations at 40 C.F.R. § 51.165) the proposed modification is exempt from the analysis of alternatives otherwise required by Rule 1303. Rule 1316 also allows applicants for major polluting facilities to apply for a plantwide applicability limit (PAL), which is a cap on facility-wide emissions of a particular pollutant that allows the operator to make modifications to the facility without triggering the alternatives requirement of Rule 1303, as long as the requirements for PALs are met and the cap is not exceeded.

The SCAQMD's System for Tracking Offsets

<u>1996 Tracking System</u>

In 1996, the SCAQMD submitted its NSR program to CARB for approval, and incorporation into the California SIP. CARB then forwarded the SCAQMD's NSR program to the USEPA for approval. The USEPA approved the SCAQMD's NSR program as part of California's SIP in December 1996. See 61 Fed. Reg. 64291 (December 4, 1996) ("Approval and Promulgation of Implementation Plan for South Coast Air Quality Management District"). The preamble to USEPA's December 1996 approval stated that SCAQMD would apply a tracking system to show in the aggregate that the SCAQMD (1) will provide for the necessary offsets to meet the CAA's requirements, and (2) will provide offsets for facilities that are exempt under Rule 1304, which are not exempt under the CAA from the federal offset requirements. The SCAQMD implemented a tracking system for demonstrating equivalence between the SCAQMD and federal NSR programs.

As explained by the USEPA in its October 1996 Technical Support Document (TSD), the purpose of the tracking system is to "continuously show that in the aggregate the SCAQMD is able to provide for the necessary offsets required to meet the appropriate statutory offset ratio" (TSD, page 16). In other words, the tracking system is designed to show that offsets are sufficient in the aggregate to compensate for aggregate increases of emissions of nonattainment pollutants from sources in the district that are regulated by the CAA's major source NSR requirements including a 1.2 to one offset ratio for VOC and NOx. The USEPA concluded in the TSD and in its December 1996 Federal Register Notice that the SCAQMD's NSR program was consistent with the provisions of the CAA, including the Act's requirements for offsets.

Although SCAQMD Rule 1304 exempts certain types of projects from offset requirements, if they are federal major sources their emission increases are still subject to federal offset requirements pursuant to the CAA's emission requirements. Additionally, specific essential public services and other high priority sources may obtain offsets from the SCAQMD's Priority Reserve pursuant to SCAQMD Rule 1309.1. The NSR Tracking System accounts for offsets provided from the SCAQMD's internal accounts to offset emissions increases from these types of sources.

Since 1996, as a part of the SCAQMD's effort to track emissions offsets in its internal offset accounts, SCAQMD staff has prepared a series of reports that track credits and debits from August 1990 through July 2002 and present the remaining balances of credits in the SCAQMD's federal and California offset accounts. These NSR tracking reports go back to the year 1990[10] because that was the year when fundamental amendments were made to the SCAQMD's Regulation XIII. A key source of credits in these tracking reports was orphan shutdowns of federal major sources (for purposes of demonstrating equivalency with federal offset requirements) and of sources with potential to emit above California's "no net increase" (NNI) applicability thresholds (for purposes of demonstrating equivalency with California NNI requirements). In other words, when a facility had previously reduced emissions by shutting down equipment or installing control equipment or implementing permanent process changes that were not required, but did not claim an ERC or had originally obtained its offset from SCAQMD, the SCAQMD allocated that reduction as a credit in its internal offset accounts. The USEPA's 1996 approval of the SCAQMD NSR program confirmed its use of emissions reductions from orphan shutdowns as a source of offset credits. The USEPA also indicated that other appropriate credit sources

[10] Prior to 1990 SCAQMD kept a running "NSR balance" for each facility with permitted stationary sources. The NSR balance included an entry for every increase and every decrease in emissions at a facility that resulted from a permit action since October, 1976, when the SCAQMD first implemented an NSR program. When the SCAQMD modified Regulation XIII in 1990, it discounted and carried forward into its internal accounts the pre-1990 NSR balance for facilities that had a "negative balance," i.e., the decreases in emissions exceeded the cumulative increases at the facility.

included, for example, the "BACT discount[11]" required by Regulation XIII (Rule 1306(c)) when a facility banks ERCs; and surplus emissions reductions, which occur when an offset is required under the SCAQMD regulations, but not under the CAA. In addition, USEPA confirmed that the internal bank would provide offsets for priority reserve sources under Rule 1309.1 and for facilities that are exempt under SCAQMD Rule 1304, but which are not exempt under the CAA from the federal offset requirements.

Changes to Tracking System

In 2002, the SCAQMD adopted a new Rule 1309.2 to provide for an "offset budget" for projects that do not qualify for Priority Reserve credits.[12] The rule was submitted to USEPA for approval as part of the California SIP, and during its review of that rule USEPA raised the issue of whether the SCAQMD had retained adequate documentation of certain emissions reductions that arose from shutdowns occurring before 1990. After an exhaustive internal review of its documentation, the SCAQMD established to USEPA's satisfaction that its records supported many of the pre-1990 offset credits, and agreed to remove from its internal accounts those pre-1990 offset credits for which the SCAQMD no longer possessed sufficient documentation.

Removing these offset credits reduced the balance of offsets in the SCAQMD's internal offset accounts. To counteract this reduction, the SCAQMD proposed in 2006 to revise its offset tracking system, to, among other things, account for a set of emissions reductions it had not previously tracked as part of its federal NSR program: offsets from orphan shutdowns and reductions from federal minor sources. The SCAQMD's federal NSR program had previously tracked offsets from orphan shutdowns and reductions of federal major sources. The USEPA approved the revised tracking system in April 2006, including the use by the SCAQMD of previously unclaimed orphan shutdown credits.[13]

During its review, the USEPA also requested that the SCAQMD describe its internal offset tracking system in a rule. The SCAQMD began developing new Rule 1315 for this purpose and in September 2006, adopted Rule 1315.

[11] The BACT discount serves to reduce the amount of the ERC that may be claimed when a facility curtails or reduces or ceases emissions. In particular, instead of obtaining an ERC for the amount of the actual reduction in emissions, the facility may claim an ERC under the SCAQMD's regulations only for the amount of the reduction that would have occurred if the facility was equipped with then-current BACT at the time the reduction occurred. The CAA does not require this discount, but USEPA later indicated that the BACT discount operated as a substitute for USEPA's requirement that ERCs be shown to be "surplus at the time of use" and therefore could not be used to generate offsets, unless the discount is demonstrated to exceed the reductions that would be required by SCAQMD rules in the SIP scheduled to be adopted in the following year.

[12] As indicated below, the SCAQMD rescinded Rule 1309.2 in February 2010. The amendments to Rule 1309.2 that were previously proposed for consideration in this EA have accordingly been withdrawn.

[13] The various changes that the SCAQMD proposed in 2006 to its pre-existing emissions offset tracking system are documented in a submittal to the USEPA in February 2006. See SCAQMD's Revised NSR Offset Tracking System, February 23, 2006. These changes were approved in a letter from Deborah Jordan, USEPA, to Dr. Barry Wallerstein, SCAQMD, April 11, 2006, re "Proposed NSR Offset Tracking System."

Litigation Challenging the Adoption of Rule 1315 and Amendment of 1309.1

The SCAQMD adopted Rule 1315 describing its internal offset trucking system on September 8, 2006. The SCAQMD also adopted amendments to Rule 1309.1 at the same time to allow new power plants applying for a permit to qualify for offsets from the SCAQMD's Priority Reserve upon payment of mitigation fees. These amendments to Rule 1309.1 were proposed to apply for a limited period of time in recognition of the potential for an energy crisis and of the extreme difficulty such facilities faced in attempting to find ERCs on the open market.

The SCAQMD initially determined that its actions in adopting Rule 1315 and amending Rule 1309.1 were exempt from the California Environmental Quality Act. But a suit was filed in state court to challenge these rules alleging that a CEQA review was required. [*Natural Resources Defense Council, et al. v. South Coast Air Quality Management District*, et al., Los Angeles Superior Court No. BS105728.] As a result of the lawsuit, the SCAQMD decided not to proceed on the basis of a CEQA exemption and instead to prepare a Program Environmental Assessment (PEA). After completing the PEA, in 2007 the SCAQMD readopted Rule 1315 and the amendments to Rule 1309.1 relating to power plants.

A second lawsuit was then filed to challenge the adequacy of the PEA under CEQA. [*Natural Resources Defense Council v. South Coast Air Quality Management District,* Los Angeles Superior Court Case No. BS 110792 (case filed Aug. 31, 2007)]. The court upheld the Petitioners' claims that the PEA was not adequate in certain respects. In July 2008, the court issued an order vacating the SCAQMD's approval of Rule 1315 and the amendments to Rule 1309.1, and "enjoined the SCAQMD from undertaking any action to further implement these rules pending CEQA compliance."

The SCAQMD is now undertaking environmental review under CEQA of its proposed adoption of a revised version of Rule 1315, as contemplated by the court's order.

The SCAQMD is not proposing to readopt any amendments to Rule 1309.1. As a result, the former amendments to Rule 1309.1 relating to power plants are not part of the proposed project. Instead, the SCAQMD will keep in place the current version of Rule 1309.1, as last amended in 2002.

PROJECT DESCRIPTION

The proposed project consists of adopting a revised version of Rule 1315. The major components of proposed Rule 1315 are briefly summarized in the following subsections. A complete copy of proposed Rule 1315 can be found in Appendix A.

Proposed Rule 1315

Proposed Rule 1315 would ensure that exempt sources under Rule 1304 and essential public services and other projects that qualify for Priority Reserve offsets under Rule 1309.1 are fully offset to the extent required by federal law by valid emission reductions from the SCAQMD's internal offset accounts. The proposed rule would achieve this by specifying what types of reductions are eligible to be credited as offsets to SCAQMD's internal accounts and how those reductions are tracked.

The proposed rule would provide for the use of certain types of offsets that previously had not been accounted for in the SCAQMD's federal tracking system.[14] In addition, the proposed rule provides for annual demonstrations of equivalency with federal offset requirements, as discussed below.

The proposed rule would require debits from the SCAQMD's internal accounts for emissions offsets allocated from the Priority Reserve under Rule 1309.1 and for increased emissions from sources permitted under exemptions from the offset requirements under Rule 1304.

Proposed Rule 1315 provides for offsets to be credited to the SCAQMD's internal accounts for the following:

- Orphan shutdowns and orphan reductions, including from minor federal sources. See Proposed Rule 1315(c)(3)(A)(i), (ii).
- ERCs provided as emissions offsets for sources located at federal minor facilities. See Proposed Rule 1315(c)(3)(A)(iii).
- The difference between the quantity of ERCs provided for a source located at a major polluting facility at a 1.2-to-1.0 ratio (see Rule 1303(b)(2)(A)), and the quantity of ERCs required to offset emissions at a 1:0-to-1:0 ratio pursuant to the CAA. See Proposed Rule 1315(c)(3)(A)(iv).
- The amount of emissions reductions associated with a facility's NSR balance[15] or Community Bank[16] allocations that are deducted from an emission reduction

[14] Proposed Rule 1315 provides for SCAQMD to recognize for federal NSR purposes: emission reductions from: federal minor source "orphan shutdowns" and "orphan reductions;" federal minor sources where the source provides an ERC under the SCAQMD regulations, but where no offset is required under the CAA; and, the difference between emissions reductions provided at an offset ratio of 1.2-to-1.0 and a ratio of 1.0 to 1.0 for pollutants where the CAA requires offsets of only 1.0-to-1.0. Many, but not all, of the sources of offset credits that had not previously been accounted for in federal tracking were previously tracked for purposes of demonstrating equivalency with California "No Net Increase" (NNI) requirements. Specifically, shutdowns and reductions from minor sources, regardless of how small, were tracked for state purposes for VOC and NO_x. Shutdowns and reductions from minor sources of CO, PM_{10} and SO_x were tracked for state purposes if emissions were 15 tons per year or more, the threshold for state NNI tracking.

[15] The SCAQMD's regulations define "NSR balance" as the sum of emissions increases, decreases, and offsets as listed in district records for a facility. Under no circumstances shall the NSR balance for a facility be greater than the facility's potential to emit or less than zero. See Rule 1302(y).

[16] The Community Bank previously provided a source of offsets from the SCAQMD's internal accounts, under a prior version of Rule 1309.1, to relatively low-emitting facilities (i.e., facilities with a total potential to emit of either less than two tons per year of each air contaminant or less than specified daily amounts for each air contaminant). The Community Bank provisions in the 1990 version of Rule 1309.1 also specified the amounts of credits available for each nonattainment or precursor pollutant required to be offset pursuant to federal regulations on a daily and monthly basis. These offsets became unavailable to applications deemed complete after adoption of the December 7, 1995 amendments to Rule 1309.1 – Priority Reserve, which eliminated the Community Bank.

quantified during the Executive Officer's evaluation of an ERC banking application. See Proposed Rule 1315(c)(3)(A)(v).

- The difference between the reduction in daily emissions that is actually achieved and the reduction in daily emissions as calculated with the BACT adjustment required by Rule 1306(c) when a facility reduces emissions and applies for an ERC.[17] See Proposed Rule 1315(c)(3)(A)(vi).

For offsets resulting from orphan shutdowns or reductions, credit is taken for eighty percent of the permitted emission levels. The reason for this procedure is that it is estimated that, on average, facilities operate at approximately 80 percent of permitted levels.

Proposed Rule 1315 would specify procedures to be followed by the Executive Officer to make annual demonstrations that the SCAQMD's NSR program, in the aggregate, satisfies federal offset requirements for major sources under Clean Air Act §173. Under proposed Rule 1315, SCAQMD will track annually all eligible offsets credited to the SCAQMD internal offset accounts. The amount of offsets needed for federal major sources relying on the SCAQMD internal offset accounts to meet the federal NSR requirements will be debited from the offset accounts.

In a significant change from the 2007 version of the Rule 1315, proposed Rule 1315 provides for an overall cumulative annual cap, for each pollutant, on the cumulative net emission increases that can be offset from the SCAQMD's internal offset accounts. This is referred to as a CEQA "backstop" measure and establishes pollutant-specific limits on cumulative net emissions increases, based on the growth projection in the SCAQMD's 2007 AQMP for stationary sources eligible to obtain offsets from the Priority Reserve or eligible for offset exemptions. If one of these limits is exceeded, the SCAQMD must cease issuing permits for sources that rely on the Rule 1309.1 Priority Reserve or the Rule 1304 exemption for the relevant pollutant. This will ensure that the net emission increase, if any, attributable to proposed Rule 1315 will not exceed the emissions forecasted in this PEA.

Specific components of proposed Rule 1315 are briefly summarized below.

<u>Purpose</u> (subdivision a)

The purpose of this rule is the following:

- Maintain the ability to continue to issue permits to major sources that obtain offset credits from the Priority Reserve under Rule 1309.1 and/or are exempt from offsets under Rule 1304 [paragraph (a)(1)];

[17] This emission reduction credit applies where the SCAQMD demonstrates, and the USEPA concurs, that the reduction as calculated with the BACT adjustment exceeds what would be required under approved SIP rules and rules scheduled for approval by the SCAQMD in the following year's rule cycle. See Proposed Rule 1315(c)(3)(A)(vi).

- Memorialize in rule form the procedures used to establish NSR program equivalency with federal NSR offset requirements for such major sources [subparagraph (a)(2)(A)]; and
- Demonstrate that sufficient emission reductions, including previously-untracked emission reductions, exist beyond federal regulatory requirements, and could be used as offsets to establish that the SCAQMD's NSR program is equivalent to federal NSR offset requirements for major sources exempt under Rules 1304 and/or eligible for offsets from the Priority Reserve under Rule 1309.1 [subparagraph (a)(2)(B)].

<u>Definitions</u> (subdivision b)

Key definitions in PR 1315 include the following:

- "Community Bank" [paragraph (b)(1)]: As indicated above, the Community Bank previously provided a source of offsets from the SCAQMD's internal accounts to relatively low-emitting facilities (i.e., facilities with a total potential to emit of either less than two tons per year of each air contaminant or less than specified daily amounts for each air contaminant);
- Net Emission Increase [paragraph (b)(2)]: For any given nonattainment air contaminant, the aggregate increase in potential to emit from permitted major and minor stationary sources, less the aggregate emissions reduction;
- Offset Ratio [paragraph (b)(3)]: A ratio of the quantity of offset credits provided to the increase of potential emissions requiring offsets;
- Orphan Reduction [paragraph (b)(4)]: Any reduction in actual emissions from a permitted source within SCAQMD resulting from a physical change to the source and/or a change to the method of operation of the source provided the change is reflected in a revised permit for the source and provided the reduction is not otherwise required by rule, regulation, law, approved AQMP control measure or the SIP, and does not result in issuance of an ERC;
- Orphan Shutdown [paragraph (b)(5)]: Any reduction in actual emissions from a permitted source within SCAQMD resulting from removal of the source from service and inactivation of the permit without subsequent reinstatement of the permit, provided the reduction is not otherwise required by rule, regulation, law, approved AQMP control measure or the SIP, and does not result in issuance of an ERC;
- Priority Reserve [paragraph (b)(6)]: A reserve of offsets available to specified priority sources; and
- Shortfall [paragraph (b)(7)]: A negative net balance in any offset account,

Offset Accounts for Federal NSR Equivalency (subdivision c)

- The Executive Officer shall maintain a separate offset account for each federal nonattainment air contaminant that is subject to federal NSR offset requirements (federal offset account). The initial offset account balances as of October 1, 1990 for each air contaminant are listed in Table A [paragraph (c)(1)], as set forth in Table 2-1.

TABLE 2-1

Initial SCAQMD Offset Account Balances

Air Contaminant	**Initial Account Balance** (tons per day)
Volatile Organic Compounds (VOC)	38.46
Nitrogen Oxides (NOx)	23.92
Sulfur Oxides (SOx)	8.04
Carbon Monoxide (CO)	8.45
Particulate Matter (PM10)	2.67

- The Executive Officer shall track and debit from the offset accounts the eligible types of offset allocations or exemptions (e.g. Priority Reserve, Community Bank, and Rule 1304 exemptions) located at major polluting facilities not exempt from federal offset requirements [paragraph (c)(2)];
- The Executive Officer shall track and credit the eligible types of emission reductions (e.g., orphan shutdowns, orphan reductions, ERCs provided for sources located at minor facilities, etc.) that have occurred since October 1, 1990 to the SCAQMD offset accounts [subparagraph (c)(3)(A)].
- The Executive Officer shall deposit emission reductions into the SCAQMD offset accounts according to procedures that make the credits real, quantifiable, permanent and enforceable. For orphan shutdowns and reductions as provided for in subparagraphs (c)(3)(A)(i) and (c)(3)(A)(ii), the entire amount of the emissions reduction is not credited to the SCAQMD's internal accounts; rather, the amount of the credit is 80 percent of the total change in the source's NSR permitted emission levels. For other types of credits as provided for in subparagraphs (c)(3)(A)(iii) through (vi) (e.g., ERCs provided for sources located at minor facilities; the difference between the quantity of ERCs provided for a source located at a major polluting facility at a 1.2-to-1.0 ratio, and the quantity of ERCs required to offset emissions at a 1:0-to-1:0 ratio pursuant to the CAA; etc.), the full amount of the credit is allocated to the SCAQMD's internal accounts [subparagraph (c)(3)(B)].

- The Executive Officer may choose not to track all potential sources of credits if it is determined that sufficient credits remain in the SCAQMD offset accounts to demonstrate equivalency for each reporting period [subparagraph (c)(3)(C)].
- All unused orphan shutdown and orphan reduction credits in the federal offset accounts shall be discounted annually, based on the percentage reduction in overall permitted emissions that are projected to be achieved as a result of the implementation of control requirements that became effective for that pollutant during the previous calendar year [paragraph (c)(4)]. This provision is designed to make sure that credits from orphan sources are adjusted each year to account for the most recent control measures and to assure that the offsets in the SCAQMD's internal accounts remain "surplus at the time of use" pursuant to USEPA policy.

<u>Net Emissions Increases</u> (subdivision d)

- All increases in potential to emit that occur at minor sources pursuant to Rule 1304 and Rule 1309.1 do not constitute debits from the SCAQMD offset accounts; however, these increases are tracked to ensure that the overall limits for cumulative net increases in emissions are not exceeded as specified in subdivision (h) for purposes of the CEQA backstop [paragraph (d)(1)].
- The cumulative net emission increase of each nonattainment air contaminant from use of offsets by major and minor sources shall be calculated and tracked through the end of the 2010 reporting period, and through the end of each subsequent tracking period, by no later than the Final Determination of Equivalency (FDE, which is described below) completion deadline for each period [paragraph (d)(2)].
- Cumulative net emission increases from use of offsets by major and minor sources shall be included in the Executive Officer's report to the Governing Board of each FDE commencing with the FDE for the 2010 reporting period. When the Executive Officer reports the credit accounting elements indentified in paragraph (c)(3) with the PDE for the subsequent reporting period, the Executive Officer shall report the cumulative net emission increases for the same air contaminant, with the PDE for the subsequent reporting period [paragraph (d)(3)]. Net emission increases are not an element of the FDE. Net emission increases include both major and minor emission sources. The determination of equivalency with federal offset requirements only applies to major sources. Therefore, the net emissions increases are not part of the determination of equivalency with federal requirements, but are part of the CEQA backstop.

<u>Federal NSR Equivalency Determination Reports</u> (subdivision e)

- In order to monitor equivalency, the Executive Officer shall aggregate and track offsets debited from and offsets provided to the SCAQMD offset accounts into specific reporting periods [paragraph (e)(1)].
- Commencing with the calendar year 2009 reporting period, the Executive Officer shall, no later than twelve months after the completion of the reporting period,

complete a PDE to show equivalence with federal nonattainment NSR offset requirements [paragraph (e)(2)].

- Commencing with the calendar year 2009 reporting period, the Executive Officer shall, no later than eighteen months after the completion of the reporting period, complete an FDE to show equivalence with federal nonattainment NSR offset requirements accounting for both debits and credits during the subject reporting period for any account(s) for which the PDE did not demonstrate equivalence [paragraph (e)(3)].
- In lieu of preparing both a PDE and FDE for a single reporting period, the Executive Officer may opt to include the PDE in the FDE for the same reporting period [paragraph (e)(4)].

<u>Projections of Offset Account Balances and Net Emission Increases (subdivision f)</u>

- Each PDE and FDE report the Executive Officer prepares and presents to the Governing Board and USEPA shall also include projections of the SCAQMD offset account balances at the end of each of the two subsequent reporting periods; projections of the SCAQMD offset accounts are based upon the average of the total annual debits and average of total annual credits for the five most recent reporting periods [paragraph (f)(1)].

- Projections of the cumulative net emission increases at the end of each of the two subsequent reporting periods shall be included in each PDE report and each FDE report commencing with the reports analyzing the 2010 reporting period [paragraph (f)(2)]. Although these projections are reported as part of the PDEs and FDEs, they are separate from the determination of equivalency.

<u>Equivalency Backstop Provisions</u> (subdivision g)

- The Executive Officer shall discontinue funding the Priority Reserve for any air contaminant that the most recent FDE has demonstrated does not have a positive balance in its SCAQMD offset account. The Executive Officer may resume funding the Priority Reserve upon completion of an FDE demonstrating that the shortfall no longer exists [subparagraph (g)(1)(A)].
- If an FDE shows a shortfall (i.e., negative balance) for any air contaminant, the Executive Officer shall discontinue issuing permits to construct or operate any major sources that rely on new offset account debits resulting from the use of Rule 1304 exemptions or Priority Reserve offsets from Rule 1309.1. The Executive Officer may resume issuance of such permits upon completion of an FDE demonstrating that the shortfall no longer exists [subparagraph (g)(1)(B)].
- If an FDE demonstrates that a shortfall exists in any of the SCAQMD offset accounts or a subdivision (f) projection predicts a shortfall, the Executive Officer shall prepare a report to the Governing Board recommending implementation of

one or more backstop provisions as needed to correct the shortfall or demonstrating that the backstop provisions are not necessary by demonstrating continued compliance with federal NSR offset requirements on an aggregate basis [paragraph (g)(2)].

California Environmental Quality Act Backstop Provisions (subdivision h)

- If the cumulative net emission increase of a nonattainment air contaminant exceeds the threshold for that air contaminant, as set forth in Table B, the Executive Officer shall discontinue issuing permits to construct and permits to operate that rely on new offset account debits resulting from the use of Rule 1304 exemptions or Priority Reserve offsets from Rule 1309.1 for that air contaminant [paragraph (h)(1)].

- The cumulative net emission increase thresholds are established based upon the growth assumptions in the approved 2007 Air Quality Management Plan through December of 2010 and each subsequent year through 2030 [paragraph (h)(2)].

State Implementation Plan Submittals (subdivision i)

- Subparagraphs (b)(2) and (f)(2), and subdivisions (d), (h), (i) and (j), as these provisions are described above, will not be submitted for inclusion in the California State Implementation Plan. The purpose of this subdivision is to assure that only the method for demonstrating equivalency with federal offset requirements is included in the federally-approved state implementation plan. The CEQA backstop is based on state law requirements and is not a part of the federal equivalency demonstration.

Sunset Date for Permit Issuance (subdivision j)

- This rule shall expire on January 1, 2031.

Please refer to Appendix A for the text of Proposed Rule 1315.

PROJECT OBJECTIVES

CEQA Guidelines §15124(b) requires the project description to include a statement of objectives sought by the proposed project, including the underlying purpose of the proposed project. Compatibility with project objectives is one criterion for selecting a range of reasonable project alternatives and provides a standard against which to measure project alternatives. The project objectives identified in the following bullet points have been developed: (1) in compliance with CEQA Guidelines §15124(b); (2)to be consistent with policy objectives of the SCAQMD's New Source Review program; and (3)to address the Los Angeles Superior Court's judgment in the litigation relating to the September 2007 adoption of Rule 1315 and amendments to Rule 1309.1. The project objectives are as follows:

- Maintain the SCAQMD's ability to continue to administer its new source review program for major and minor sources for facility modernization and to accommodate population growth through implementation of Rule 1304 and Rule 1309.1. SCAQMD's policy objectives include allowing the permitting system to operate in order to: 1) allow facility modernization which will increase efficiency and reduce air pollution, 2) allow facilities to install pollution control equipment, 3) allow emergency equipment to be installed, 4) allow permitting of equipment necessary for essential public services and small emitters, 5) allow operation of portable equipment and other sources determined as a policy matter to be exempt from offsets or eligible for Priority Reserve credits, and 6) take into account environmental and socioeconomic benefits as well as environmental and socioeconomic impacts;
- Memorialize in rule form the accounting procedures the SCAQMD uses to establish equivalency of SCAQMD's New Source Review program with federal offset requirements, and ensure that valid offsets are projected to be available in SCAQMD internal offset accounts before a major source relying on such offsets is permitted thus assuring that increases in emissions resulting from such sources are fully offset; and
- Recognize sufficient previously-unused emission reductions that are beyond those required by applicable regulatory requirements in order to demonstrate federal equivalency for major sources that are exempt under Rule 1304 or that are allocated credits from the Priority Reserve under Rule 1309.1.

PERMITS AND APPROVALS

If the SCAQMD Governing Board adopts proposed Rule 1315, CARB must then determine whether to approve the rule and submit it to the USEPA for federal approval under the CAA. This decision has been held not to be an action subject to CEQA. There are no other public agencies with discretionary approval over the proposed project, i.e., approval of proposed Rule 1315. Therefore, no other permits or approvals are required for the proposed project.

Specific future projects that may seek permits from the SCAQMD under a Rule 1304 exemption, or that may seek offsets from the Priority Reserve under Rule 1309.1, would be subject to discretionary approvals by those public agencies that have approval authority over such projects. The lead agency with the principal authority for approving each particular future project would be responsible for conducting CEQA review for the project which would be conducted at the time the project is proposed for that agency's approval.

OTHER ISSUES RELEVANT TO PROJECT DESCRIPTION

Legislative Requirements for Use of Credits in Internal Offset Accounts

Following the entry of the judgment in *Natural Resources Defense Council v. South Coast Air Quality Management District* (Los Angeles County Superior Court Case No. BS 110792) in November 2008, the SCAQMD declared a Permit Moratorium under which the SCAQMD suspended issuance of permits for sources that relied on Priority Reserve internal account offsets pursuant to Rule 1309.1, and permits using the exemptions from offset requirements found in Rule 1304, because both of these types of permits relied on offsets in the SCAQMD's internal accounts. The judgment had the effect of preventing the SCAQMD from using any of the newly-tracked types of offsets in the internal accounts, primarily minor source orphan shutdowns. As a result of the Permit Moratorium, many essential public service projects and projects seeking an exemption pursuant to Rule 1304, some of which are considered to be environmentally beneficial projects such as replacing equipment with new, cleaner equipment, could not go forward. In addition, the court decision invalidated the prior amendments to Rule 1309.1 which would have allowed qualified power plants access to internal account offsets, upon payment of a mitigation fee. Given the extreme difficulty of finding the necessary types and amounts of ERCs on the open market, new power plants also could not go forward as a result of the judgment.

In response to the court's decision, and its effect on the projects described above, in 2009 Sen. Rod Wright proposed legislation, SB 696, which in early versions would have allowed access to the internal accounts for essential public services, Rule 1304 exempt sources, and specified power plants. Through the legislative process, the bill was ultimately replaced by SB 827, which allowed access to internal offset accounts only for facilities exempt from offsets pursuant to Rule 1304 (as amended June 14, 1996) and essential public service Priority Reserve projects pursuant to Rule 1309.1 (as amended May 3, 2002). Under this legislation, the SCAQMD was required to use internal account offsets, including minor source shutdowns and reductions occurring since 1990, for these two categories of projects, notwithstanding the Superior Court decision. The bill was signed by Governor Schwarzenegger on October 11, 2009, and became effective on January 1, 2010 (Health & Safety Code §40440.13). The SCAQMD began implementing SB 827 on January 2, 2010, and issued over 1,300 permits that had been held up in the permit moratorium, some for over a year. SB 827 sunsets on May 1, 2012.

Also during the 2009 legislative session, Assemblymember V. Manuel Perez proposed legislation, AB 1318, requiring that qualified electrical generating facilities be provided with offsets from the SCAQMD's internal accounts (Health & Safety Code §40440.14). This bill also was signed by the Governor on October 11, 2009, and became effective January 1, 2010. Based on the eligibility criteria in the bill, the only power plant that foreseeably could qualify for offsets under the bill is the proposed CPV Sentinel Energy Project, proposed to be located in Desert Hot Springs, California, which is outside the South Coast Air Basin, but still within the district. AB 1318 sunsets on January 1, 2012.

Implementation of these statutes is not a part of the proposed project and does not depend on the proposed project. The SCAQMD may continue to issue permits to exempt sources under Rule 1304, and essential public services under Rule 1309.1, until SB 827 sunsets in May 2012. Similarly, the statutory provisions regarding transfer of internal account offsets to

CPV Sentinel pursuant to AB 1318 remain in effect until AB 1318 sunsets in January 2012.[18]

There is pending legislation, Senate Bill 388 (Calderon) that is a carbon copy of AB 1318, except that instead of providing offsets to CPV Sentinel, it would provide offsets to the Walnut Creek Mission Energy project. The bill was held on the Senate floor on the last day of the 2009 legislative session, making it a two-year bill, which can be considered for passage in the 2010 legislative session. The bill has not been adopted by either house of the California Legislature. SB 388 proposes to sunset on January 1, 2013.

In addition to these two power plants (CPV Sentinel and the Walnut Creek Mission Energy project), a third power plant – the NRG El Segundo Repowering project – was anticipated to be the subject of legislation mirroring AB 1318 and SB 388. More recently, the El Segundo plant applied for and received an exemption from the offset requirements under SCAQMD Rule 1304(a)(2), which covers electric utility steam boiler replacement. Because the El Segundo project meets the requirements of Rule 1304, it was one of the facilities allowed under SB 827.However, when preparation of the PEA commenced, it was possible that the El Segundo project would be permitted under legislation specific to that project, similar to the other two power plant projects discussed above. Thus, for purposes of analysis, this PEA discusses the impacts of the El Segundo project along with the impacts of the other two power plants. . All three of these power plant projects are considered foreseeable future projects that could contribute to cumulative impacts and, therefore, the cumulative impacts of the power plant projects are included in this PEA.

As provided in SB 827, the SCAQMD will continue to issue permits to exempt sources under Rule 1304 and essential public services under Rule 1309.1 in accordance with the provisions of SB 827, "until a new tracking system is approved by the United States Environmental Protection Agency." As noted above, permits issued pursuant to SB 827 are not part of, nor are they dependent upon, the proposed project (i.e., adoption of proposed Rule 1315). However, it is unknown exactly when USEPA will approve the Rule 1315 tracking system, assuming proposed Rule 1315 is adopted and this PEA is certified. For that reason, this PEA's impact analysis evaluates the impacts of using internal account offsets for sources approved under Rule 1304 and Rule 1309.1 as of July 2010. This approach will have the effect of applying the impact analysis to some permits that will be issued under SB 827 between July 2010 and the date the USEPA approves the tracking system in proposed Rule 1315. Although this approach will overstate the project related impacts to some degree, it will ensure that project impacts are fully accounted for from the date Rule 1315 takes effect.

[18] SB 827 and AB 1318 were the subject of litigation (*California Communities Against Toxics v. South Coast Air Quality Management District*, Los Angeles Superior Court Case No. BS 124264, action filed Dec. 30, 2009). On June 18, 2010 the court issued a ruling granting judgment on the pleadings in favor of SCAQMD on all claims in the case. However, plaintiffs have appealed that decision, although there is no order preventing implementation of the bills.

Rescission Of Former Rule 1309.2 And Deletion Of Proposed Amendments To Rule 1309.2 From The Proposed Project

The Notice of Preparation for this PEA indicated that the PEA would address proposed amendments to Rule 1309.2. Rule 1309.2, which was adopted on December 6, 2002, provided for creation of an Offset Budget. Upon approval by the USEPA, Rule 1309.2 would have allowed projects that did not qualify for Priority Reserve credits to use offsets from the SCAQMD's internal offset accounts under certain specified circumstances. The Rule has not been approved by the EPA, and was rescinded by the SCAQMD Governing Board on February 5, 2010. Accordingly, the amendments to Rule 1309.2 which were previously proposed have been withdrawn, and those previously-proposed amendments are not discussed further in this PEA.

CHAPTER 3

EXISTING SETTING

Introduction

Aesthetics

Agricultural Resources

Air Quality

Biological Resources

Cultural Resources

Energy

Geology and Soils

Hazards and Hazardous Materials

Hydrology and Water Quality

Land Use and Planning

Mineral Resources

Noise

Population and Housing

Public Services

Recreation

Solid/Hazardous Wastes

Transportation/Traffic

SUBCHAPTER 3.0

EXISTING SETTING - INTRODUCTION

Introduction

INTRODUCTION

CEQA Guidelines Section 15360 (Public Resources Code Section 21060.5) defines "environment" as "the physical conditions that exist within the area which will be affected by a proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance." According to CEQA Guidelines Section 15125, a CEQA document must include a description of the physical environment in the vicinity of the project, as it exists at the time the Notice of Preparation (NOP) is published from both a local and regional perspective. Since this is a programmatic document that covers the SCAQMD's entire jurisdiction, the existing setting for each category of impact is described on a regional level.

The following subchapters present the existing settings for the environmental topics of concern identified in the Initial Study for the proposed project. In addition, topic areas that were initially found to be less than significant or were found to have no impact, are now included for analysis and existing setting discussions have been prepared.

SUBCHAPTER 3.1

EXISTING SETTING - AESTHETICS

INTRODUCTION

In previous litigation on Rule 1315, the Los Angeles County Superior Court issued a writ of mandate ordering the SCAQMD to, *inter alia*, set aside its August 2007 adoption of Rule 1315 and amended Rule 1309.1 ("the 2007 Project"). The Court held that the SCAQMD violated CEQA in adopting the rules. In particular, the Court concluded that the 2007 PEA did not address the visual degradation of allowing new pollution into the air of the Basin. Visual character of the sky or visibility, is a manifestation of air quality, i.e., the worse the air quality the more visibility is adversely affected. Because of the direct relationship between visibility and air quality, this topic is addressed in detail in Subchapter 3.3, baseline; Subchapter 4.1, direct project-specific impacts; and Chapter 6, direct impacts from the project alternatives.

ENVIRONMENTAL SETTING

This environmental setting subchapter describes the aesthetics resources settings that may be adversely affected by the proposed project. Specifically, this environmental setting subchapter describes visual character and quality, visual resources, scenic highways, and coastal zones within the district.

Visual Character and Quality

Visual character and quality are defined by the built and natural environment. The ***visual character*** of a view is descriptive cataloguing of underlying landforms and landcover including the topography, general land use patterns, scale, form, and the presence of natural areas. Urban features, such as structures, roads, utility lines, and other development associated with human activities also help to define visual character. ***Visual quality*** is an evaluative appraisal of the aesthetics of a view and is established using a well-established approach to visual analysis adopted from the Federal Highway Administration (FHWA) based upon the relative degree of vividness, intactness, and unity found within the visual setting, as defined in the following bullet points.[1]

- Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive patterns.
- Intactness is the visual integrity of the 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 degree to which the visual resources of the landscape join together to form a coherent, harmonious visual pattern. Unity refers to the compositional harmony or inter-compatibility between landscape elements.

Each of the three criteria is independent and intended to evaluate one aspect of visual quality; however, no one criterion considered alone equates to visual quality.

[1]Federal Highway Administration, Visual Impact Assessment for Highway Projects, 1981.

The perception of visual quality can vary significantly among viewers depending on their level of visual sensitivity (interest). Among sensitive viewers perceptions can vary seasonally and even hourly as weather, light, shadow, and the elements that compose the viewshed change. Form, line, color, and texture are the basic components used to describe visual character and quality for most visual assessments.[2] Sensitivity depends upon the length of time the viewer has access to a particular view. Typically, residential viewers have extended viewing periods and are often concerned about changes in views from their homes. Visual sensitivity is, therefore, considered to be high for neighborhood residential areas. Visual sensitivity is considered to be less important for commuters and other people driving along surrounding streets. Views from vehicles are generally more fleeting and temporary, yet under certain circumstances are sometimes considered important (e.g., viewers who are driving for pleasure, views/vistas from scenic corridors).

As discussed in the Subchapter 3.1, Aesthetics, of the Southern California Association of Governments (SCAG) 2008 Regional Transportation Plan (RTP) Final Environmental Impact Report (FEIR), various jurisdictions within the SCAG region, which includes the jurisdiction of SCAQMD such as cities, counties, and federal or regional agencies, provide guidelines regarding the preservation and enhancement of visual quality in their plans or regulations.[3] An example of such guidance is the Caltrans Scenic Highway Visual Quality Program Intrusion Examples, which are presented in Table 3.1-1. As the table illustrates, a given visual element may be considered desirable or undesirable, depending on design, location, use, and other considerations. Because of the size and diversity of the area within the SCAQMD's jurisdiction, it is not possible to apply uniform standards to all areas within the district.

TABLE 3.1-1
Caltrans Scenic Highways Program – Examples of Visual Quality Intrusions

	Minor Intrusion	Moderate Intrusion	Major Intrusion
BUILDINGS: *Residential Development, Commercial Development, Industrial Development*			
	Widely Dispersed buildings. Natural Landscape dominates. Wide setbacks and buildings screened from roadway. Exterior colors and materials are compatible with environment. Buildings have cultural or historical significance.	Increased number of buildings, but these are complementary to the landscape. Smaller setbacks and lack of roadway screening. Buildings do not degrade or obstruct scenic view.	Dense and continuous development. Highly reflective surfaces. Buildings poorly maintained. Visible blight. Development along ridge lines. Buildings degrade or obstruct scenic view.

[2] *Ibid.*
[3] California cities and counties are not required to include visual quality elements in their General Plans although many do. However, the General Plans are required to include a Conservation Element, which includes resources such as waterways and forests that frequently are also scenic resources.

TABLE 3.1-1 (Continued)
Caltrans Scenic Highways Program – Examples of Visual Quality Intrusions

	Minor Intrusion	Moderate Intrusion	Major Intrusion
UNSIGHTLY LAND USES: *Dumps, Quarries, Concrete Plants, Tank Farms, Auto Dismantling*			
	Screened from view so that facility is not visible from the highway.	Not screened and visible but programmed/funded for removal and site restoration.	Not screened and visible by motorists. Will not be removed or modified. Scenic view is degraded.
STRIP MALLS			
	No examples.	Neat and well landscaped. Single story. Blend with surroundings.	Not harmonious with surroundings. Poorly maintained or vacant. Blighted. Development degrades or obstructs scenic view.
PARKING LOTS			
	Screened from view so that vehicles and pavement are not visible from the highway.	Neat and well landscaped. Blend with surroundings.	Not screened or landscaped. Scenic view is degraded.
OFF-SITE ADVERTISING STRUCTURES			
	No examples.	No examples.	Billboards degrade or obstruct scenic view.
NOISE BARRIERS			
	No examples.	Noise barriers are well landscaped and complement the natural landscape. Noise barriers do not degrade or obstruct scenic view.	Noise barriers obstruct scenic view.
POWER LINES			
	Not easily visible from road.	Visible, but compatible with surroundings.	Poles and lines dominate view. Scenic view is degraded.
AGRICULTURE: *Structures, Equipment, Crops*			
	Blends in and complements scenic view. Indicative of regional culture.	Not in harmony with surroundings. Competes with natural landscape for visual dominance.	Incompatible with and dominates natural landscape. Structures, equipment or crops degrade scenic view.

TABLE 3.1-1 (Concluded)
Caltrans Scenic Highways Program – Examples of Visual Quality Intrusions

	Minor Intrusion	Moderate Intrusion	Major Intrusion
EXOTIC VEGETATION			
	Used as screening and landscaping. Blends in and complements scenic view.	Competes with native vegetation for visual dominance.	Incompatible with and dominates natural landscape. Structures, equipment or crops degrade scenic view.
CLEARCUTTING			
	No examples.	Trees bordering highway remain so that clearcutting is not evident.	Clearcutting or deforestation is evident. Scenic view is degraded.
EROSION			
	Minor Soil Erosion	Slopes beginning to erode. Not stabilized.	Large slope failures and no vegetation. Scenic view is degraded.
GRADING			
	Grading blends with adjacent landforms and topography.	Some changes, but restoration is taking place.	Extensive cut and fill. Scarred hillsides and landscape. Canyons filled in. Scenic view is degraded.
ROAD DESIGN			
	Blends in and complements scenic view. Roadway structures are suitable for location and compatible with surroundings.	Cut and fill is visible but has vegetative cover.	No examples.

Source: SCAG 2008 RTP FEIR; California Department of Transportation. (1996, March). Scenic Highways Program. Sacramento, CA.

The ***viewshed*** can be defined as all of the surface area visible from a particular location or sequence of locations, and is described in terms of the dominance of landforms, landcover, and manmade development constituting visual character. Views of high visual quality in urban settings generally have several of the following additional characteristics:

- Harmony in scale with the surroundings;
- Context sensitive architectural design; and
- Impressive landscape design features.

Areas of medium visual quality have interesting forms but lack unique architectural design elements or landscape features. Areas of low visual quality have uninteresting features and/or undistinguished architectural design and /or other common elements.

Visual Resources

Visual resources include historic buildings that uniquely identify a setting, views identified as significant in local plans, and/or views from scenic highways. The importance of a view to viewers is related to the position of the viewers relative to the resource and the distinctiveness of a particular view. The visibility and visual dominance of landscape elements are usually described with respect to their placement in the viewshed.

Visual resources occur in a diverse array of environments within the boundaries of the district, ranging in character from urban centers to rural agricultural land, natural woodlands, and coastal views. The extraordinary range of visual features in the region is afforded by the mixture of climate, topography, flora and fauna found in the natural environment, and the diversity of style, composition, and distribution of the built environment. Views of the coast from locations in Los Angeles and Orange counties are considered valuable visual resources, while views of various mountain ranges are prevalent throughout the district. Other natural features that may be visually significant in the district include rivers, streams, creeks, lakes, and reservoirs.

The County of Los Angeles General Plan identifies regional open space and recognized scenic areas, generally including the Santa Monica Mountains, as well as the San Gabriel Mountains, Verdugo Hills, Santa Susana Mountains, Simi Hills, Santa Monica Mountains, and Puente Hills. In addition, ridgelines and hillsides are generally considered to be scenic resources, with specific measures for the protection of these areas.[4]

The County of Orange General Plan identifies the Santa Ana Mountains along with their distinctive twin peaks known as “Saddleback” as the county’s signature landmark. The Plan designates 10 scenic “viewscape corridors,” which include among others Pacific Coast Highway, Oso Parkway, Ortega Highway, Jamboree Road, Santiago Canyon Road, Laguna Canyon Road. These designated viewscape corridors provide scenic views of the Santa Ana Mountains, Lomas de Santiago and the San Joaquin Hills, as well as numerous canyons and valleys including the Santa Ana Canyon, Capistrano Valley, Laguna, Aliso, Wood, Moro, San Juan, Trabuco Santiago, Modjeska, Silverado, Limestone, and Black Star Canyons. Finally, the General Plan identifies nearly 42 miles of coastline and approximately 33 miles of sandy beaches as defining scenic resources[5].

The County of Riverside General Plan identifies regional scenic resources, including Santa Ana River basin, Lake Mathews, Lake Perris, Lake Elsinore, Lake Skinner, Vail Lake, the San Jacinto River, Murrieta Creek, the Santa Margarita River, the vineyard/citrus region near Temecula, the Diamond Valley Reservoir, Joshua Tree National Park, Whitewater River, the Santa Rosa Mountains, and a portion of the Salton Sea[6].

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[4] Scenic Resources Element, 2009. Los Angeles County Draft General Plan.
[5] Transportation and Resources Elements, 2004. Orange County General Plan.
[6] Multipurpose Open Space Element, 2003. County of Riverside General Plan.

The County of San Bernardino General Plan identifies several scenic areas, including the San Gabriel Mountains, the San Bernardino Mountains, La Loma Hills, Jurupa Hills, Chino Hills, Yucaipa Hills, Holcomb Valley, and the Mojave Desert. In addition, Big Bear Lake, Silverwood Lake, Lake Arrowhead, and Lake Gregory, along with associated waterways, serve as defining characteristics of the mountain regions within the County. San Bernardino County has a wide variety of scenic and wilderness areas respectively categorized as the Mountain, Valley, and Desert regions. Each region has its own defined measures for protecting the specific resources contained in this region. The County of San Bernardino also considers desert night-sky views to be scenic resources and has enacted measures to reflect this[7].

In addition to County plans, many of the cities within the district have general plan policies, and in some cases, ordinances, related to the protection of visual resources.

In addition to the visual resources related to natural areas, many features of the built environment that may also have visual significance include individual or groups of structures that are distinctive due to their aesthetic, historical, social, or cultural significance or characteristics, such as architecturally appealing buildings or groups of buildings, landscaped freeways, bridges or overpasses, and historic resources.

Scenic Highways

Within the district, there are numerous officially designated state and county scenic highways and one historic parkway, as listed in Table 3.1-2.

TABLE 3.1-2
Scenic Highways Within District Boundaries

Route	County	Location	Description	Miles	Designation
2	Los Angeles	From near La Cañada Flintridge north to the San Bernardino County line.	This U.S. Forest Service Scenic Byway and State Scenic Highway winds along the spine of the San Gabriel Mountains. It provides views of the mountain peaks, the Mojave Desert, and the Los Angeles Basin.	55	ODSSH
38	San Bernardino	From east of South Fork Campground to State Lane.	This U.S. Forest Service Scenic Byway and State Scenic Highway crosses the San Bernardino Mountains at Onyx Summit. It features forested mountainsides with far-off desert vistas near the summit.	16	ODSSH

[7] Conservation Element, 2007. County of San Bernardino General Plan.

TABLE 3.1-2 (Continued)
Scenic Highways Within District Boundaries

Route	County	Location	Description	Miles	Designation
62	Riverside	From I-10 north to the San Bernardino County line.	This highway features high desert country scenery and leads to or from Joshua Tree National Monument. Large "windmill farms," where wind power is used to generate electricity, can be seen along the way.	9	ODSSH
74	Riverside	From west boundary of the San Bernardino National Forest to SR-111 in Palm Desert.	This road goes from the southern Mojave Desert to oak and pine forests of San Bernardino National Forest. It offers views of the San Jacinto Valley and peaks of the San Jacinto Mountains.	48	ODSSH
91	Orange	From SR-55 to east of Anaheim city limit.	This freeway runs along the banks of the Santa Ana River. Views include residential and commercial development with intermittent riparian and chaparral vegetation.	4	ODSSH
243	Riverside	From SR-74 to the Banning city limit.	This U.S. Forest Service Scenic Byway and State Scenic Highway traverses forested mountain scenery along a ridge of the San Bernardino Mountains. It then drops in a series of switchbacks offering views of the San Bernardino Valley and the desert scenery.	28	ODSSH
N/A	Los Angeles	Mulholland Highway from SR-1 to Kanan Dume Road and from west of Cornell Road to east of Las Virgenes Road.	With the dramatic canyons, oak woodlands, open spaces and ocean views of the Santa Monica Mountains, Mulholland Highway offers travelers views of the mountains, the Pacific Ocean, and historic sites along its stretch.	19	ODCSH
N/A	Los Angeles	Malibu Canyon-Las Virgenes Highway from State Route 1 to Lost Hills Road	The rugged terrain and ancient rock formations along this route have been a backdrop of many early California settlers. The formations have known presence dating to the original De Anza expedition of Spanish colonists.	7.4	ODCSH

TABLE 3.1-2 (Concluded)
Scenic Highways Within District Boundaries

Route	County	Location	Description	Miles	Designation
110	Los Angeles	Between milepost 25.7 and 31.9 in Los Angeles.	This segment of the Pasadena Freeway traces the first freeway in California. All structural elements of the original parkway, opened to traffic in 1940, still remain.	6	HP

ODSSH = Officially Designated State Scenic Highway

OCCSH = Officially Designated County Scenic Highway

HP = Historic Parkway

Source: Caltrans, *California Scenic Highway Mapping System*, accessed April 2009.

There are also a number of roadways that have been determined eligible for state scenic highway designation, as listed in Table 3.1-3.

Coastal Zones

According to the California Coastal Act of 1976, a coastal zone is the land and water area of the State of California from the Oregon border to the border of Mexico, extending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas, the coastal zone extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the coastal zone generally extends inland less than 1,000 yards.

The coastal zone within the district generally extends from Leo Carrillo State Park in Malibu in the northwestern corner of Los Angeles County to San Clemente Beach in San Clemente near the southern tip of Orange County.

Local Coastal Plans (LCPs) typically contain policies on visual access and site development review. LCPs are basic planning tools used by local governments to guide development in the coastal zone, in partnership with the California Coastal Commission. LCPs contain the ground rules for future development and protection of coastal resources in the 75 coastal cities and counties. The LCPs specify appropriate location, type, and scale of new or changed uses of land and water. Each LCP includes a land use plan and measures to implement the plan (such as zoning ordinances). Prepared by local government, these programs govern decisions that determine the short- and long-term conservation and use of coastal resources. While each LCP reflects unique characteristics of individual local coastal communities, regional and statewide interests and concerns must also be addressed in conformity with Coastal Act goals and policies.

TABLE 3.1-3
Highways Within District Boundaries Eligible for State Scenic Highway Designation

Route	County	Location (From/To)	Postmiles
1	Orange/LA	I-5 south of San Juan Capistrano/SR-19 near Long Beach	0.0-3.6
1	LA/(Ventura)	SR-187 near Santa Monica/SR-101 near El Rio	32.2-21.1
2	LA/SB	SR-210 in La Cañada Flintridge/SR 138 via Wrightwood	22.9-6.36
5	SD/Orange	Opposite Coronado/SR-74 near San Juan Capistrano	R14.0-9.6
5	LA	I-210 near Tunnel Station/SR-136 near Castaic	R44.0-R55.5
10	SB/Riverside	SR-38 near Redlands/SR-62 near Whitewater	T0.0-R10.0
15	(SD)/Riverside	SR-76 near San Luis Rey River/SR-91 near Corona	R46.5-41.5
15	SB	SR-58 near Barstow/SR-127 near Baker	76.9-R136.6
18	SB	SR-138 near Mt. Anderson/SR-247 near Lucerne Valley	R17.7-73.8
27	LA	SR-1/Mulholland Drive	0.0-11.1
30	SB	SR-330 near Highland/I-10 near Redlands	T29.5-33.3
38	SB	I-10 near Redlands/SR-18 near Fawnskin	0.0-49.5
39	LA	SR-210 near Azusa/SR-2	14.1-44.4
40	SB	Barstow/Needles	0.0-154.6
57	Orange/LA	SR-90/SR-60 near City of Industry	19.9-R4.5
58	(Kern)/SB	SR-14 near Mojave/I-15 near Barstow	112.0-R4.5
62	Riverside/SB	I-10 near Whitewater/Arizona State Line	0.0-142.7
71	Riverside	SR-91 near Corona/SR-83 north of Corona	0.0-G3.0
74	Orange/Riverside	I-5 near San Juan Capistrano/I-111 (All)	0.0-R96.0
74	Riverside	Western boundary of the SB National Forest/SR-111	48.3-96.0
79	(SD)/Riverside	SR-78 near Santa Ysabel/SR-371 near Aguanga	20.2-2.3
91	Orange/Riverside	SR-55 near Santa Ana Canyon/I-15 near Corona	R9.2-7.5
101	LA/(Ventura)/(SBar)/(SLO)	SR-27 (Topanga Canyon Blvd)/SR-46 near Paso Robles	25.3-57.9
111	(Imperial)/Riverside	Bombay Beach-Salton Sea/SR-195 near Mecca	57.6-18.4
111	Riverside	SR-74 near Palm Desert/I-10 near Whitewater	39.6-R63.4

TABLE 3.1-3 (Concluded)
Highways Within District Boundaries Eligible for State Scenic Highway Designation

Route	County	Location (From/To)	Postmiles
118	(Ventura)/LA	SR-23/Desoto Avenue near Browns Canyon	17.4-R2.7
126	(Ventura)/LA	SR-150 near Santa Paula/I-5 near Castaic	R12.0-0R5.8
127	SB/(Inyo)	I-15 near Baker/Nevada State Line	L0.0-49.4
138	SB	SR-2 near Wrightwood/SR-18 near Mt. Anderson	6.6-R37.9
142	SB	Orange County Line/Peyton Dr.	0.0-4.4
173	SB	SR-138 near Silverwood Lake/SR-18 south of Lake Arrowhead	0.0-23.0
210	LA	I-5 near Tunnel Station/SR-134	R0.0-R25.0
215	Riverside	SR-74 near Romoland/SR-74 near Perris	23.5-26.3
243	Riverside	SR-74 near Mountain Center/I-10 near Banning	0.0-29.7
247	SB	SR-62 near Yucca Valley/I-15 near Barstow	0.0-78.1
330	SB	SR-30 near Highland/SR-18 near Running Springs	29.5-44.1

LA = Los Angeles SB = San Bernardino
SBar = Santa Barbara SD = San Diego
SLO = San Luis Obispo ( ) = County not within the District
Source: Caltrans, *California Scenic Highway Mapping System*, accessed April 2009.

REGULATORY SETTING

Federal

Aesthetic resources on federal lands are managed by the federal government using various visual resource management programs, depending on the type of federal land and/or the federal agency involved with a given project. Examples of federal visual resource management programs include the Visual Resource Management System utilized by the Federal Bureau of Land Management (BLM) and the Visual Management System utilized by the United States Forest Service (USFS).

State

California Coastal Act. The California Coastal Act of 1976 was enacted to regulate development projects within California's Coastal Zone. The act includes requirements that protect views and aesthetic resources through siting and design control measures, which are typically implemented at the local planning level through local coastal programs (LCPs) or land use plans (LUPs). According to the California Coastal Act:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*[8]

For local jurisdictions that do not have an approved LCP, regulation of development projects within the coastal zone remains under the jurisdiction of the California Coastal Commission (CCC).

State Scenic Highway Program. California's Scenic Highway Program was created by the California Legislature in 1963 to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of land adjacent to those highways. When a city or county nominates an eligible scenic highway for official designation, it must adopt ordinances to preserve the scenic quality of the corridor or document such regulations that already exist in various portions of local codes. These ordinances make up the scenic corridor protection program.

Scenic corridor protection programs include policies intended to preserve the scenic qualities of the highway corridor, including regulation of land use and density of development, detailed land and site planning, control of outdoor advertising (including a ban on billboards), careful attention to and control of earthmoving and landscaping, and careful attention to design and appearance of structures and equipment (California Streets and Highways Code § 260 et seq.).

Local

Counties and Cities. The geographic area encompassed by the district includes numerous cities and unincorporated communities in the counties of Los Angeles, Orange, San Bernardino, and Riverside. Each of these counties and incorporated cities has prepared a general plan, which is the primary document that establishes local land use policies and goals. Many of these general plans also establish local policies related to aesthetics and the preservation of scenic resources within their communities or sub-planning areas, and may include local scenic highway programs.

Local Coastal Programs. The CCC and the local governments along the coast share responsibility for managing the state's coastal resources. Through coordination with the CCC, coastal cities and counties develop LCPs. These programs are the primary means for carrying out the policies of the California Coastal Act at the local level. In general, these policies are intended to promote public access and enhance recreational use of the

[8]California Public Resources Code. California Coastal Act (Chapter 3 [Coastal Resources Planning and Management Policies] Article 6, Section 30251)

coast as well as protection of natural resources in the coastal zone. Examples of counties, cities and local jurisdictions within the district that do have an approved LCP or LUP include Los Angeles County and the County of Orange and the cities of Santa Monica, El Segundo, Manhattan Beach, Hermosa Beach, Redondo Beach, Palos Verdes Estates, Rancho Palos Verdes, Long Beach, Avalon, Huntington Beach, Newport Beach, Irvine, Laguna Beach, Laguna Niguel, Dana Point, and San Clemente.

Following approval by the CCC, an LCP is certified and the local governments implement the programs. LCPs include two main components, a Land Use Plan and an Implementation Plan. These components may include policies or regulations that apply to preservation of visual and scenic resources within the coastal zone. Typically, these policies relate to preservation of views of the coast.

SUBCHAPTER 3.2

EXISTING SETTING – AGRICULTURE AND FORESTRY RESOURCES

INTRODUCTION

This subchapter describes the environmental setting for agricultural resources in the Southern California Association of Governments (SCAG) region. The SCAQMD is encompassed within the SCAG region and includes Orange County and portions of Los Angeles, Riverside and San Bernardino Counties.

ENVIRONMENTAL SETTING

This environmental setting subchapter describes the agricultural settings that may be affected by the proposed project. The environmental setting addresses designated farmlands pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency and areas of conversion from agricultural uses to non-agricultural uses in the counties in which potential future facilities that require stationary source permits that could receive emissions offsets would be located or would take effect.

Agricultural Lands

Farmlands and rangelands are agricultural lands that are part of the region's open landscape and entail various types and degrees of modifications to natural lands. Farmlands include irrigated and non-irrigated crop production. Rangelands include any expanse of natural land that is not fertilized, irrigated, or cultivated and is predominately used for grazing by livestock and wildlife[1].

The California Department of Conservation classifies important farmland by four categories: prime farmland, unique farmland, farmland of statewide importance and farmland of local importance. Through this process, the state assists in the maintenance of these valuable resources.

Following are the definitions of these four farmland categories[2]:

- **Prime farmland** is land best suited for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops. Production should occur economically when the land is treated and managed (including water management) according to modern farming methods.

- **Unique farmland** is land other than prime farmland and farmland of statewide importance that is currently used for the production of specific high value food and fiber crops. It has the special combination of soil quality location, growing season, and moisture supply needed to produce sustained high yields and/or high quality yields of a specific crop when treated and managed according to modern farming methods. Examples of such crops are citrus, olives, strawberries, avocados, fruit, and vegetables.

[1] Southern California Association of Governments. *Draft 2008 RTP PEIR.* January 2008.
[2] http://www.ocplanning.net/docs/GeneralPlan2005/Chapter_VI_Resources.pdf. Accessed August 7, 2009.

- **Farmland of statewide importance** is land other than prime farmland that has a good combination of suitable physical terrain and soil for producing foods, feed, forage, fiber, and oilseed crops. The land must be available for use as cropland, pastureland, range land, and forest land.

- **Farmland of Local Importance:** In some local areas there is concern for certain additional farmlands for the production of food, feed, fiber, forage, and oilseed crops, even though these lands are not identified as having national or statewide importance. These lands are to be identified by a local committee made up of concerned agencies called together by the State Department of Conservation. The local committee reviews the lands under this category on a five-year basis.

The following discussion describes the distribution of farmlands and rangelands in the SCAG region and vicinity based primarily on data provided by the California Department of Conservation. It also provides a summary of existing plans and programs in the region to conserve agricultural lands, plus a summary of growth management plans in other states that include provisions for conserving agricultural lands[3]. The district is included within the SCAG region.

Based on 2005 estimates prepared by the California Department of Conservation (CDC), there are approximately 2.2 million acres of agricultural lands in the SCAG region, approximately 856,000 acres of farmland and 1.2 million acres of rangeland. This estimate is substantially higher that the estimate in the 2005 SCAG land use inventory because the latter includes substantial areas of rangeland under the “vacant” category. It also should be noted that the CDC estimate is based on a selective inventory of agricultural lands and the SCAG inventory is based on aerial imagery interpretation[4].

There is substantially more farmland than rangeland in Ventura, Riverside, and Imperial counties, while the reverse is true in Los Angeles, Orange, and San Bernardino counties. However, as stated in the Chapter 2, the district is comprised of portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange County. Therefore, the remainder of the discussion focuses on the above-mentioned four counties.

Table 3.2-1 below shows estimated farmlands and rangelands in Los Angeles, Orange, Riverside and San Bernardino counties.

[3] Southern California Association of Governments. *Draft 2008 RTP PEIR.* January 2008.
[4] *Ibid*.

TABLE 3.2-1
Farmlands and Rangelands in Los Angeles, Orange, Riverside and San Bernardino Counties (2005 acres)

Designation	Los Angeles County	Orange County	Riverside County	San Bernardino County
Farmland of Local Importance	8,684	0	244,848	2,928
Prime Farmland	33,218	7,260	134,429	20,316
Farmland of Statewide Importance	1,028	620	48,499	8,776
Unique Farmland	1,120	5,601	38,691	2,653
All Farmland	44,050	13,481	466,467	34,673
Grazing	228,826	35,872	116,029	915,549
Total	**272,876**	**49,353**	**582,496**	**950,222**

Source: California Department of Conservation, 2005 Estimates.

As shown in the table above, Riverside County contains the largest amount of designated farmland (466,467 acres), while San Bernardino County contains the largest amount of grazing land (915,549 acres.) Of the four counties, Orange County contains the least amount of farmland (13,481 acres) and the least amount of grazing land (35,872 acres). San Bernardino County contains the most acreage of combined farmland and rangeland (950,222 acres.)

Williamson Act Contract Lands

The California Land Conservation Act, better known as the Williamson Act, has been the state's primary agricultural land protection program since its enactment in 1965. Approximately 16.9 million of the state's 29 million acres of farm and ranch land are currently protected under the Williamson Act. A Williamson Act Contract is the legal document that obligates the property owner, and any successors of interest, to the contract's enforceable restrictions.

Los Angeles County

Williamson Act Lands are not discussed in the Land Use Element or the Conservation, Open Space and Recreation Element of the General Plan. According to the California

Department of Conservation, as of July 2005, Los Angeles County discontinued offering Williamson Act contracts[5].

Orange County

According to the Orange County General Plan, two major landowners, the Irvine Company and Rancho Mission Viejo, have historically held the majority of property within agricultural preserves under the Williamson Act[6]. In 1987, the Irvine Company filed a notice of non-renewal on all of their remaining properties (approximately 19,000 acres) from their contract[7]. Withdrawal of the Irvine Company properties from the agricultural preserve is a ten-year process, which was completed in 1999. Rancho Mission Viejo currently holds approximately 22,000 acres in agricultural preserves.

Riverside County

Specific information about Williamson Act lands located in Riverside County is not included in the Riverside County General Plan. The General Plan indicates that participation in the program is voluntary and requires 100 contiguous acres of agricultural land under one or more ownerships to file an application for agricultural preserve status with the Riverside County Planning Department[8].

San Bernardino County

Specific information about Williamson Act lands located in San Bernardino County is not included in the San Bernardino County General Plan. However, the General Plan does include policies and programs utilizing the provisions of the Williamson Act to further the preservation of agricultural lands[9].

Conversion of Agricultural Lands

Historically, development patterns in the SCAG region have been tied as much to the conversion of agricultural lands as to the consumption of natural lands for urban uses. A key issue in the region today is whether the high rate of farmland conversion in recent years can be slowed to prevent irreversible losses. An estimated 230,000 acres of farmland and grazing land were converted to non-agricultural uses and/or applied for development entitlements between 1996 and 2004. If this trend continues unabated, the existing inventory of agricultural lands could be reduced by 700,000 acres before 2030[10].

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[5] State of California Department of Conservation. http://www.consrv.ca.gov/dlrp/lca/basic_contract_provisions/Pages/index.aspx#does%20my%20county%20participate, accessed August 19, 2009.

[6] County of Orange General Plan. 2005. Planning Department. Available online at www.ocplanning.net/docs/GeneralPlan2005/Chapter_VI_Resources.pdf, accessed August 7, 2009.

[7] *Ibid*.

[8] County of Riverside, http://www.rctlma.org/genplan/content/gp/chapter05.html#TOC4_12, accessed August 7, 2009.

[9] County of San Bernardino. County of San Bernardino General Plan. April 2007.

[10] Southern California Association of Governments. *2008 Draft RTP PEIR.* January 2008.

The following is a county summary of agricultural land conversion for 2004-2006 based on data from the California Department of Conservation[11]. As previously discussed, the district is comprised of all or portions of Los Angeles, Orange, Riverside and San Bernardino counties; therefore, the following discussion includes the four counties.

Los Angeles County

Farmland. According to the California Department of Conservation, Division of Land Resource Protection the total acreage inventoried of Important Farmland (which includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance) was 44,050 acres in 2004. In 2006, the amount decreased slightly to 43,631 acres. Approximately 2,571 acres were lost and 2,152 acres were gained for a net loss of 419 acres.

Grazing Land. The total acreage inventoried of grazing land was 228,826 acres in 2004. In 2006, this amount declined slightly to 228,730 acres. Approximately 2,295 acres were lost and 2,199 acres were gained for a net loss of 96 acres.

Table 3.2-2 shows the conversion of Important Farmland and Grazing Land in Los Angeles County in 2004-2006.

TABLE 3.2-2
Conversion of Important Farmland and Grazing Land in Los Angeles County 2004-2006

Land Use Category	Total Acreage Inventoried		2004-06 Acreage Changes		
	2004	*2006*	*Acres Lost*	*Acres Gained*	*Net Acreage Changed*
Important Farmland	44,050	43,631	2,571	2,152	-419
Grazing Land	228,826	228,730	2,295	2,199	-96

Source: California Department of Conservation Division of Land Resource Protection http://redirect.conservation.ca.gov/dlrp/fmmp/product_page.asp. Accessed August 6, 2009.

Orange County

Farmland. According to the California Department of Conservation, Division of Land Resource Protection the total acreage inventoried of Important Farmland (which includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance) was 13,480 acres in 2004. In 2006, the amount decreased to 11,915

[11] California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program, available online at http://redirect.conservation.ca.gov/dlrp/fmmp/product_page.asp Accessed August 6, 2009.

acres. Approximately 1,764 acres were lost and 199 acres were gained for a net loss of 1,565 acres.

Grazing Land. The total acreage inventoried of grazing land was 35,872 acres in 2004. In 2006, the amount decreased slightly to 35,656 acres. Approximately 862 acres were lost and 646 acres were gained for a net loss of 216 acres.

Table 3.2-3 shows the conversion of Important Farmland and Grazing Land in Orange County in 2004-2006.

TABLE 3.2-3
Conversion of Important Farmland and Grazing Land in Orange County 2004-2006

Land Use Category	Total Acreage Inventoried		2004-06 Acreage Changes		
	2004	***2006***	***Acres Lost***	***Acres Gained***	***Net Acreage Changed***
Important Farmland	13,480	11,915	1,764	199	-1,565
Grazing Land	35,872	35,656	862	646	-216

Source: California Department of Conservation Division of Land Resource Protection. http://redirect.conservation.ca.gov/dlrp/fmmp/product_page.asp Accessed August 6, 2009.

Riverside County

Farmland. According to the California Department of Conservation, Division of Land Resource Protection the total acreage inventoried of Important Farmland (which includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance) was 466,467 acres in 2004. In 2006, the amount decreased to 444,455 acres. Approximately 36,018 acres were lost and 14,006 acres were gained for a net loss of 22,012 acres.

Grazing Land. The total acreage inventoried of grazing land was 116,028 acres in 2004. In 2006, the amount decreased slightly to 111,695 acres. Approximately 4,473 acres were lost and 140 acres were gained for a net loss of 4,333 acres.

Table 3.2-4 shows the conversion of Important Farmland and Grazing Land in Riverside County in 2004-2006.

TABLE 3.2-4
Conversion of Important Farmland and Grazing Land in Riverside County 2004-2006

Land Use Category	Total Acreage Inventoried		2004-06 Acreage Changes		
	2004	*2006*	*Acres Lost*	*Acres Gained*	*Net Acreage Changed*
Important Farmland	466,467	444,455	36,018	14,006	-22,012
Grazing Land	116,028	111,695	4,473	140	-4,333

Source: California Department of Conservation Division of Land Resource Protection. http://redirect.conservation.ca.gov/dlrp/fmmp/product_page.asp. Accessed August 6, 2009.

San Bernardino County

Farmland. According to the California Department of Conservation, Division of Land Resource Protection the total acreage inventoried of Important Farmland (which includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland and Farmland of Local Importance) was 34,675 acres in 2004. In 2006, the amount decreased to 30,920 acres. Approximately 5,770 acres were lost and 2,015 acres were gained for a net loss of 3,755 acres.

Grazing Land. The total acreage inventoried of grazing land was 915,549 acres in 2004. In 2006, the amount decreased slightly to 902,853 acres. Approximately 15,892 acres were lost and 3,196 acres were gained for a net loss of 12,696 acres.

Table 3.2-5 shows the conversion of Important Farmland and Grazing Land in San Bernardino County in 2004-2006.

TABLE 3.2-5
Conversion of Important Farmland and Grazing Land in San Bernardino County 2004-2006

Land Use Category	Total Acreage Inventoried		2004-06 Acreage Changes		
	2004	*2006*	*Acres Lost*	*Acres Gained*	*Net Acreage Changed*
Important Farmland	34,675	30,920	5,770	2,015	-3755
Grazing Land	915,549	902,853	15,892	3,196	-12696

Source: California Department of Conservation Division of Land Resource Protection, Farmland Mapping and Monitoring Program. Available online at http://redirect.conservation.ca.gov/dlrp/fmmp/product_page.asp. Accessed August 6, 2009.

Forest Resources

There are four national forests in the SCAQMD jurisdiction (Angeles, Cleveland, Los Padres and San Bernardino) that include over 3.5 million acres of federally managed public land extending from Big Sur to the north and the international border with Mexico to the south. The Angeles National Forest (662,983 acres) is located within Los Angeles, San Bernardino and Ventura Counties. The Cleveland National Forest (420,877 acres) is located within Orange, Riverside and San Diego Counties. The Los Padres National Forest (1,781,364 acres) is located within Kern, Los Angeles, Monterey, San Luis Obispo, Santa Barbara, and Ventura Counties. The San Bernardino National Forest (665,753 acres) is located within San Bernardino and Riverside Counties.

The forests provide a balanced and sustainable flow of goods and services for a growing diverse population while ensuring long-term ecosystem health, biological diversity, and species recovery. The forests also accommodate changing trends in visitor use through outreach efforts, facilities and education that meet the needs of emerging population demand.

Forest watersheds are managed to provide many benefits including flood protection and quality drinking water for downstream communities, as well as protection of Wildland/Urban Interface (WUI) areas from wildland fire. They also offer a haven for native plants and animals, and provide unique and irreplaceable habitat for threatened, endangered, and sensitive species.

Wildland fires are a fact of life in southern California. The timing and frequency of fires varies as well as how much damage will result from wildland fires. Under the right conditions, a fire started anywhere in the southern California forests may be a threat to adjacent communities. The southern California forests include millions of acres with thousands of structures in or around their borders that are threatened by wildland fire. The southern California forests are also located in one of the driest, most fire-prone areas in the United States. The situation is compounded by decades of fire suppression practices that have resulted in the development of unnaturally dense stands of trees and the accumulation of brush and other flammable fuels in many areas. Housing and other development adjacent to national forest boundaries is increasing at a rapid rate without adequate provision for the development of a 'defensible' space around them.

Oak woodlands and savannas[12] found in southern California forests are coast live oak and blue oak. Engelmann oak and valley oak are much less common and more restricted in their distributions. Habitat loss (due to urban expansion) has been the major threat to Engelmann oak woodlands and forests on private lands. In the case of valley oak woodlands, a combination of urbanization, agricultural conversion and poor-to-non-existent natural regeneration has threatened this habitat. Natural recruitment of valley oak appears to be inadequate to maintain its populations over time, and without

[12] United States Department of Agriculture, Forest Service, Land Management Plan – Southern California National Forests Vision http://www.fs.fed.us/r5/scfpr/projects/lmp/docs/part1.pdf

management intervention some areas now covered by these oaks may eventually convert to annual grasslands. Some areas of oak woodland and savannas (especially in Engelmann oak, valley oak and blue oak) that are dominated by large, old trees with little or no natural regeneration will begin to convert to annual grasslands as old oaks die without replacement. Losses of coast live oak woodlands could be accelerated by sudden oak death to which this species is particularly susceptible. The desired condition is to retain existing oak woodlands and savannas.

Southern California forests possess closed-cone conifers such as Sargent cypress, Tecate cypress, knobcone pine and Coulter pine. There are all fire-dependent tree species. According to the Forest Service, these forests typically burn in stand. Heat from a fire opens closed-cones triggering massive seed release, which is followed by seedling establishment the next spring season. All of these species depend on a well-developed aerial seed bank of closed-cones to perpetuate the stand after fire. Nevertheless, the rate at which this seed (cone) bank accumulates varies from species to species. If stands burn before they have a sufficient seed (cone) bank, they will not regenerate and will disappear from the landscape. The danger posed to the closed-cone conifers is that fires will occur too frequently, that is, before seed (cone) banks reach a sufficient size. For example, Tecate cypress is endangered because the interval between fires has shortened compared to the historic interval.

Forests located between elevations of 3,000 and 5,500 feet typically include bigcone Douglas-firs, canyon live oaks, black oaks and coastal live oaks as well as mixed evergreen forests. Alpine and subalpine forests are generally located above 8,000 feet in elevation. Subalpine conifer forests are more extensive than alpine forests and are composed of lodgepole pines, limber pines, white firs, and western junipers. Canopy cover in both vegetation types is generally sparse except where there are dense lodgepole stands in and around meadows and basins.

Timber production is negligible in southern California. The Timber Tax website[13] denotes a majority of timber production zones in California are located in northern California counties. Most timber activity in southern California is the result of the clearing of the forest of small trees and shrubbery that can be a hindrance to fire prevention. In addition, there is a downward trend in the demand for lumber due to a number of factors. Such factors include an unprecedented decline in home building (typically consumes 45 percent of the lumber used annually), competing cheaper Canadian lumber, and the increased interest in the use of renewable products, such as bamboo, that are replacing the need for traditional wood lumber.

[13] http://www.timbertax.org/statetaxes/states/proptax/california.asp

REGULATORY SETTING

Federal

Federal Farm and Ranchland Protection Program

The Farm and Ranchland Protection Program (FRPP), also referred to as the Farmland Protection Program (FPP), is a voluntary easement purchase program that helps farmers and ranchers keep their land in agriculture. Pursuant to Sections 1539-1549, the Farmland Protection Policy Act (FPPA) of 1981 aims to minimize ways in which Federal programs contribute to the conversion of farmland to non-agricultural land uses. It also addresses compatibility with state and local government, private programs and policies to protect farmland[14]. The program provides matching funds to state, tribal, or local governments and nongovernmental organizations with existing farmland protection programs to purchase conservation easements or other interests in land. FPP is reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill). The Natural Resources Conservation Service (NRCS) manages the program. A technical committee awards funds to qualified entities to conduct their farmland protection programs. Although a minimum of 30 years is required for conservation easements, priority is given to applications with perpetual easements.

Federal Environmental Quality Incentives Program

The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides assistance to farmers and ranchers who face threats to soil, water, air, and related natural resources on their land.

State

California Department of Conservation

In 1982, the State of California created the Farmland Mapping and Monitoring Program within the California Department of Conservation to carry on the mapping activity from the NRCS on a continuing basis. The California Department of Conservation administers the California Land Conservation Act of 1965 (Williamson Act) for the conservation of farmland and other resource-oriented laws.

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act (Williamson Act) has been the state's primary agricultural land protection program since its enactment in 1965. Approximately 16.9 million of the state's 29 million acres of farm and ranch land are currently protected under the Williamson Act. The California Legislature passed the Williamson Act in 1965

[14] Southern California Association of Governments. *Draft 2008 RTP PEIR.* January 2008.

to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. The Act creates an arrangement whereby private landowners contract with counties and cities to voluntarily restrict land to agricultural and open-space uses. The vehicle for these agreements is a rolling term 10-year contract (i.e. unless either party files a "notice of non-renewal" the contract is automatically renewed annually for an additional year). In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual use, rather than potential market value.[15]

Farmland Security Zone. In August of 1998, the Legislature enhanced the Williamson Act with the farmland security zone (FSZ) provisions. The FSZ provisions offer landowners greater property tax reduction in return for a minimum rolling contract term of 20 years.

California Farmland Conservancy Program

The California Farmland Conservancy Program (CFCP) seeks to encourage the long-term, private stewardship of agricultural lands through the voluntary use of agricultural conservation easements. The CFCP provides grant funding for projects which use and support agricultural conservation easements for protection of agricultural lands. As of April 2005, the CFCP has funded more than 50 easement projects in California, including nearly 25,000 acres in more than a dozen counties. CFCP has also funded a number of planning grants, including some with regional or statewide value[16].

Local Counties and Cities. The geographic area encompassed by the district includes numerous cities and unincorporated communities in the counties of Los Angeles, Orange, San Bernardino, and Riverside. Each of these counties and incorporated cities has prepared a general plan, which is the primary document that establishes local land use policies and goals. Many of these general plans also establish local policies related to conservation and open space including agricultural lands.

California Forest Practice Act

The California Forest Practice Act was enacted in 1973 to ensure that logging is done in a manner that will preserve and protect fish, wildlife, forests and streams. The Act was last amended in January 2010. The Timber Harvesting Plan (THP) is the environmental review document submitted by landowners to the California Department of Forestry and Fire Protection (CAL-FIRE) outlining what timber one wants to harvest, how it will be harvested, and the steps that will be taken to prevent damage to the environment. CAL-FIRE reviews and approves approximately 500 to 1,400 THPs each year. CAL FIRE follows-up on approved THPs with site inspections and can shut down operations, cite or fine if illegal operations are found.

[15] *Ibid*.
[16] *Ibid*.

SUBCHAPTER 3.3

EXISTING SETTING – AIR QUALITY, VISIBILITY AND CLIMATE CHANGE

INTRODUCTION

This section describes the existing air quality, visibility and greenhouse gas emissions within the district, as well as the regulatory setting for each of these topics, including the regulatory setting pertaining to climate change impacts and analysis.

AIR QUALITY ENVIRONMENTAL SETTING

Existing Physical Setting And Meteorology

Air Basins

The project area is the entire area of the SCAQMD's jurisdiction, referred to as the district, (Figure 3.3-1). The SCAQMD has jurisdiction over an area of 10,473 square miles, consisting of the four-county South Coast Air Basin (Basin) and the Riverside County portions of the Salton Sea Air Basin (SSAB) and the Mojave Desert Air Basin (MDAB). The Basin, which is a subarea of the district, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The 6,745 square-mile Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino counties. The combination of topography, low mean mixing height, abundant sunshine, and emissions from the second largest urban area in the United States gives the Basin the worst air pollution problems in the nation.

The Riverside County portion of the SSAB and MDAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal non-attainment area (known as the Coachella Valley Planning Area) is a sub-region of both Riverside County and the SSAB and is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east.

Climate/Meteorology in the Basin

Air quality is not only affected by various emission sources (mobile, industry, etc.) but is also affected by atmospheric conditions such as wind speed, wind direction, temperature, rainfall, etc. The following describes the climate and meteorology in the district portion of each of the three air basins.

Climate in the Basin is determined by its terrain and geographical location. The Basin consists of a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern border, and high mountains surround the rest of the Basin. The Basin lies in the semi-permanent high pressure zone of the eastern Pacific. The resulting climate is mild, and is tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions occur periodically.

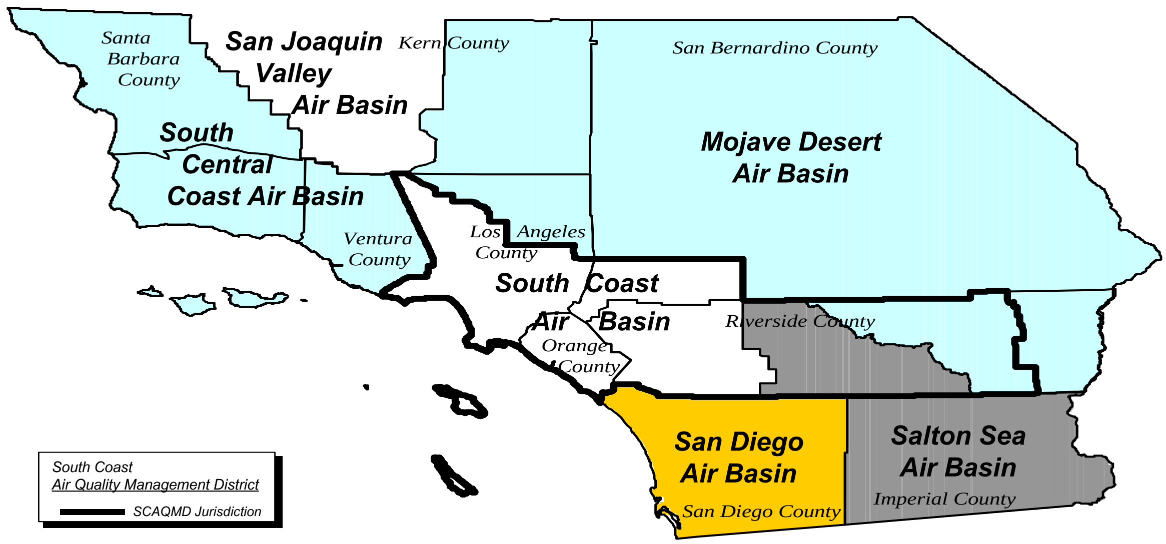

Figure 3.3-1

Southern California Air Basins within South Coast Air Quality Management District

Annual average temperature varies little throughout the Basin, ranging from the low-to-middle 60s, measured in degrees Fahrenheit. With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The majority of annual rainfall in the Basin occurs between October and March. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin and along the coastal side of the mountains.

Although the Basin has a semi-arid climate, air near the surface is generally moist because of the presence of a shallow marine layer. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The dominant daily wind pattern is an onshore 8 to 12 mph daytime breeze and an offshore 3 to 5 mph nighttime breeze. The typical wind flow pattern fluctuates only with occasional winter storms or strong northeasterly Santa Ana winds from the mountains and deserts northeast of the Basin. Summer wind flow patterns represent worst-case conditions, as this is the period of higher temperatures and more sunlight, which results in ozone formation.

During spring and early summer, pollution produced during any one day typically disperses out of the Basin through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. Air contaminants can be transported 60 miles or more from the Basin by ocean air during the afternoons. From early fall to winter, the transport is less pronounced because of slower average wind speed and the appearance of drainage winds earlier in the day. During stagnant wind conditions, offshore drainage winds may begin by late afternoon. Pollutants remaining in the Basin are trapped and begin to accumulate during the night and the following morning. A low morning wind speed in pollutant source areas is an important indicator of air stagnation and the buildup potential for primary air contaminants.

Temperature normally declines with altitude. A reversal of this atmospheric state, where temperature increases with altitude, is called an inversion. The height from the earth's surface to the inversion base is known as the mixing height. With persistent low inversions and cool coastal air, morning fog and low stratus clouds are common. Cloudy days are less likely in the eastern portions of the district and about 25 percent more likely along the coast. The vertical dispersion of air pollutants in the district is limited by temperature inversions in the atmosphere close to the earth's surface.

Inversions are generally lower in the nighttime, when the ground is cool, than during daylight hours when the sun warms the ground and, in turn, the surface air layer. As this heating process continues, the temperature of the surface air layer approaches the temperature of the inversion base, causing heating along its lower edge. If enough warming takes place, the inversion layer becomes weak and opens up to allow the surface air layers to mix upward. This can be seen in the middle to late afternoon on a hot summer day when smog appears to clear suddenly. Winter inversions typically break earlier in the day, preventing excessive contaminant build-up.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are carbon monoxide and oxides of nitrogen because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form photochemical smog.

Climate/Meteorology in the Mojave Desert Air Basin

The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking effect of the Sierra Nevada Mountains to the north. Air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California Valley regions by mountains (highest elevation approximately 10,000 feet), whose passes from the main channels for these air masses. The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass (4,200 feet). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains, the Morongo Valley. The Palo Verde Valley portion of the Mojave Desert lies in the low desert, at the eastern end of a series of valleys (notably the Coachella Valley) whose primary channel is the San Gorgonio Pass (2,300 feet) between the San Bernardino and San Jacinto Mountains.

During the summer, the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between three and seven inches of precipitation per year (from 16 to 30 days with at least 0.01 inch of precipitation). The MDAB is classified as a dry-hot desert climate (Bwh), with portions classified as dry-very hot desert (Bwhh), to indicate at least three months have maximum average temperatures over 100 degrees Fahrenheit.

Salton Sea Air Basin

The SSAB portion of the district is separated from the Basin region by the San Jacinto Mountains and from the MDAB region by the Little San Bernardino Mountains. Similar to the MDAB region, during the summer the SSAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The SSAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The SSAB averages between three and seven inches of precipitation per year.

Criteria Pollutants

Many of the air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Some of these regulated air pollutants are known as “criteria air pollutants” and are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and most fine particulate matter (PM_{10}, $PM_{2.5}$), including lead (Pb) and fugitive dust, are primary air pollutants. Of these, CO, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROG and NO_x are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Presented below is a description of each of the primary and secondary criteria air pollutants and their known health effects.

Ozone (O_3), or smog, is formed by photochemical reactions between oxides of nitrogen and reactive organic gases rather than being directly emitted. O_3 is a pungent, colorless gas typical of Southern California smog. Elevated O_3 concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, elderly, and young children. O_3 levels peak during the summer and early fall.

Carbon Monoxide (CO) is formed by the incomplete combustion of fossil fuels, and is almost entirely from automobile exhaust. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions.

Nitrogen Dioxide (NO_2), a reddish brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to jointly as nitrogen oxides, or NO_x. NO_x is a primary component of the photochemical smog reaction. They also contribute to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 decreases lung function and may reduce resistance to infection.

Sulfur Dioxide (SO_2) is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

Particulate Matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles (all particles smaller than 10 micrometers, or PM_{10}) come from a variety of sources, including windblown dust and grinding operations. Fine particles (less than 2.5 micrometers, or $PM_{2.5}$) often come from fuel combustion, power plants, and diesel buses and trucks. Fine particles can also be formed in the atmosphere through chemical reactions.

PM_{10} can accumulate in the respiratory system and aggravate health problems such as asthma. EPA's scientific review concluded that fine particles ($PM_{2.5}$), which penetrate deeply into the lungs, are more likely than coarse particles to contribute to the health effects listed in a number of recently published community epidemiological studies at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms.

Lead is found in old paints and coatings, plumbing, and a variety of other materials. There are also two lead-acid battery recycling facilities in the Basin. Once in the bloodstream, lead (Pb) can cause damage to the brain, nervous system and other body systems. Children are highly susceptible to the effects of lead.

Criteria Pollutant Levels

The SCAQMD and CARB maintain a network of air quality monitoring stations located throughout the project area (Figure 3.3-2). The district is divided into fourteen General Forecast Areas based on geography, and further divided into thirty-eight Source Receptor Areas (SRA). Tables 3.3-1 through 3.3-11 show the most recent data available from monitoring stations in each General Forecast Area for which monitoring data are available.

Tables 3.3-1 through 3.3-11 list the air quality data monitored at within nine of the fourteen General Forecast Areas for which monitoring data are available. The ambient air quality data in these tables show that NO2, SO2 and CO levels are either not monitored, or are below the relevant State and federal standards at all stations. O_3 levels exceeded State and federal standards in almost every year of the past three years at all nine monitoring stations where O_3 concentration was monitored.

The PM10 level monitored at these air monitoring stations exceeded the State standard in almost every year of the past three years at all monitoring stations that monitor this pollutant, while the federal standard was exceeded less frequently, or not at all, at each monitoring station. The PM2.5 level was exceeded at most of the stations.

Visibility, hydrogen sulfide and vinyl chloride are not measured at the monitoring stations.

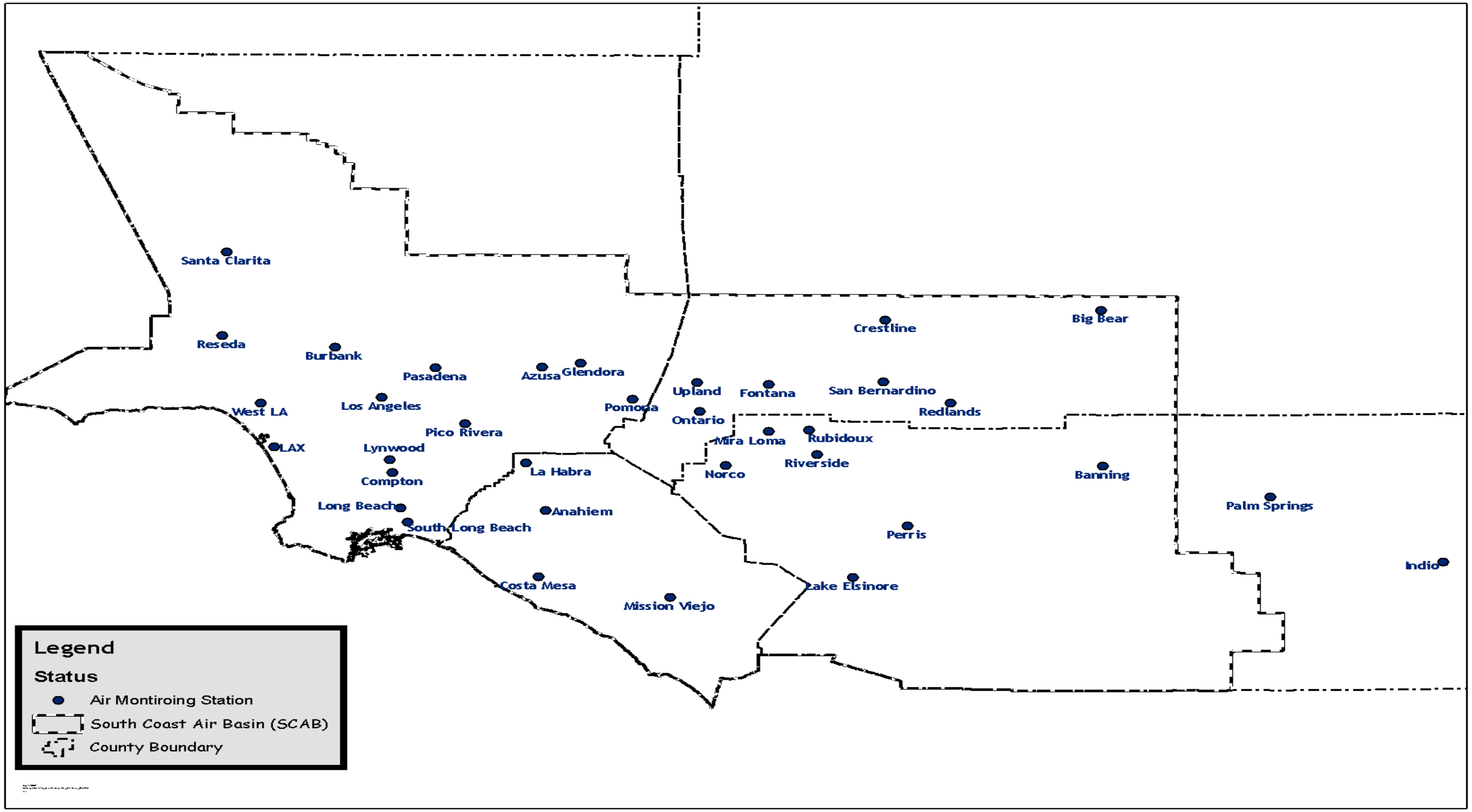

Figure 3.3-2

General Forecast and Air Monitoring Areas

TABLE 3.3-1

Air Quality Data from Banning Pass General Forecast Area – Banning Airport Monitoring Station (33164)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.139	0.129	0.149
Maximum Concentration 8-Hour Period (ppm)	0.116	0.114	0.120
Days State 1-Hour Standard Exceeded	57	28	57
Days National 8-Hour Standard Exceeded	74	43	74
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	NA	NA	NA
Days State/National 8-Hour Standard Exceeded	NA	NA	NA
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.107	0.079	0.079
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	NA	NA	NA
Days State Standard Exceeded	NA	NA	NA
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 μg/m^3)			
National Standard (24-Hour Average = 150 μg/m^3)			
Maximum State 24-Hour Concentration	70.0	72.0	47.0
Maximum National 24-Hour Concentration	75.0	78.0	51.0
Days Exceeding State Standard	5	7	0
Days Exceeding National Standard	0	0	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 μg/m^3)			
Maximum 24-Hour Concentration	NA	NA	NA
Days Exceeding National Standard	NA	NA	NA
Sulfates			
Maximum 24-Hour Concentration	NA	NA	NA

Source: California Air Resources Board.

TABLE 3.3-2

Air Quality Data from Coachella/Low Desert General Forecast Area – Palm Springs Fire Station Monitoring Station (33137)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.126	0.126	0.112
Maximum Concentration 8-Hour Period (ppm)	0.109	0.102	0.101
Days State 1-Hour Standard Exceeded	37	29	26
Days National 8-Hour Standard Exceeded	61	58	51
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	0.85	0.79	0.54
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.093	0.063	0.049
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	NA	NA	NA
Days State Standard Exceeded	NA	NA	NA
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 $\mu g/m^3$)			
National Standard (24-Hour Average = 150 $\mu g/m^3$)			
Maximum State 24-Hour Concentration	222.0	81.0	73.0
Maximum National 24-Hour Concentration	226.0	83.0	75.0
Days Exceeding State Standard	3	5	4
Days Exceeding National Standard	1	0	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 $\mu g/m^3$)			
Maximum 24-Hour Concentration	24.7	32.5	18.1
Days Exceeding National Standard	0	0	0
Sulfates			
Maximum 24-Hour Concentration	NA	NA	NA

Source: California Air Resources Board.

TABLE 3.3-3
Air Quality Data from Coastal General Forecast Area – North Long Beach Monitoring Station (70072)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.081	0.099	0.093
Maximum Concentration 8-Hour Period (ppm)	0.058	0.073	0.074
Days State 1-Hour Standard Exceeded	0	1	0
Days National 8-Hour Standard Exceeded	0	0	0
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	3.36	2.59	2.49
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.102	0.107	0.125
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	0.010	0.010	0.012
Days State Standard Exceeded	0	0	0
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 $\mu g/m^3$)			
National Standard (24-Hour Average = 150 $\mu g/m^3$)			
Maximum State 24-Hour Concentration	78.0	232.0	61.0
Maximum National 24-Hour Concentration	78.0	232.0	62.0
Days Exceeding State Standard	5	6	1
Days Exceeding National Standard	0	1	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 $\mu g/m^3$)			
Maximum 24-Hour Concentration	58.5	82.8	39.4
Days Exceeding National Standard	5	12	2
Sulfates			
Maximum 24-Hour Concentration	17.8	11.1	11.0

Source: California Air Resources Board.

TABLE 3.3-4
Air Quality Data from Hemet/Elsinore General Forecast Area – Lake Elsinore-W. Flint Street Monitoring Station (33158)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.142	0.129	0.139
Maximum Concentration 8-Hour Period (ppm)	0.109	0.109	0.118
Days State 1-Hour Standard Exceeded	42	26	49
Days National 8-Hour Standard Exceeded	54	35	69
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	1.01	1.40	0.84
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.072	0.064	0.055
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	NA	NA	NA
Days State Standard Exceeded	NA	NA	NA
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 μg/m^3)			
National Standard (24-Hour Average = 150 μg/m^3)			
Maximum State 24-Hour Concentration	NA	NA	NA
Maximum National 24-Hour Concentration	NA	NA	NA
Days Exceeding State Standard	NA	NA	NA
Days Exceeding National Standard	NA	NA	NA
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 μg/m^3)			
Maximum 24-Hour Concentration	NA	NA	NA
Days Exceeding National Standard	NA	NA	NA
Sulfates			
Maximum 24-Hour Concentration	NA	NA	NA

Source: California Air Resources Board.

TABLE 3.3-5

Air Quality Data from Inland Orange County General Forecast Area – Costa Mesa-Mesa Verde Drive Monitoring Station (30195)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.074	0.082	0.094
Maximum Concentration 8-Hour Period (ppm)	0.062	0.072	0.079
Days State 1-Hour Standard Exceeded	0	0	0
Days National 8-Hour Standard Exceeded	0	0	3
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	3.01	3.13	1.97
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.101	0.074	0.081
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	0.005	0.004	0.003
Days State Standard Exceeded	0	0	0
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 µg/m^3)			
National Standard (24-Hour Average = 150 µg/m^3)			
Maximum State 24-Hour Concentration	NA	NA	NA
Maximum National 24-Hour Concentration	NA	NA	NA
Days Exceeding State Standard	NA	NA	NA
Days Exceeding National Standard	NA	NA	NA
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 µg/m^3)			
Maximum 24-Hour Concentration	NA	NA	NA
Days Exceeding National Standard	NA	NA	NA
Sulfates			
Maximum 24-Hour Concentration	NA	NA	NA

Source: California Air Resources Board.

TABLE 3.3-6

Air Quality Data from Metropolitan General Forecast Area – Los Angeles-North Main Street Monitoring Station (70087)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.108	0.115	0.109
Maximum Concentration 8-Hour Period (ppm)	0.079	0.102	0.090
Days State 1-Hour Standard Exceeded	8	3	3
Days National 8-Hour Standard Exceeded	3	3	3
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	2.68	2.15	1.96
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.111	0.104	0.122
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	0.006	0.005	0.003
Days State Standard Exceeded	0	0	0
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 $\mu g/m^3$)			
National Standard (24-Hour Average = 150 $\mu g/m^3$)			
Maximum State 24-Hour Concentration	58.0	77.0	64.0
Maximum National 24-Hour Concentration	59.0	78.0	66.0
Days Exceeding State Standard	3	5	3
Days Exceeding National Standard	0	0	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 $\mu g/m^3$)			
Maximum 24-Hour Concentration	56.2	64.1	43.7
Days Exceeding National Standard	11	20	4
Sulfates			
Maximum 24-Hour Concentration	18.2	10.5	14.4

Source: California Air Resources Board.

TABLE 3.3-7
Air Quality Data from Riverside Valley General Forecast Area – Riverside-Rubidoux Monitoring Station (33144)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.151	0.131	0.146
Maximum Concentration 8-Hour Period (ppm)	0.117	0.111	0.112
Days State 1-Hour Standard Exceeded	45	31	54
Days National 8-Hour Standard Exceeded	57	46	64
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	2.29	2.93	1.86
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.076	0.072	0.092
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	0.003	0.004	0.003
Days State Standard Exceeded	0	0	0
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 µg/m^3)			
National Standard (24-Hour Average = 150 µg/m^3)			
Maximum State 24-Hour Concentration	106.0	540.0	70.0
Maximum National 24-Hour Concentration	109.0	559.0	82.0
Days Exceeding State Standard	69	65	7
Days Exceeding National Standard	0	1	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 µg/m^3)			
Maximum 24-Hour Concentration	68.4	75.6	53.3
Days Exceeding National Standard	32	33	7
Sulfates			
Maximum 24-Hour Concentration	10.8	13.0	9.1

Source: California Air Resources Board.

TABLE 3.3-8

Air Quality Data from San Bernardino Mountains General Forecast Area – Crestline Monitoring Station (36201)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.164	0.171	0.176
Maximum Concentration 8-Hour Period (ppm)	0.142	0.137	0.126
Days State 1-Hour Standard Exceeded	73	67	78
Days National 8-Hour Standard Exceeded	96	93	97
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	NA	NA	NA
Days State/National 8-Hour Standard Exceeded	NA	NA	NA
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	NA	NA	NA
Days State Standard Exceeded	NA	NA	NA
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	NA	NA	NA
Days State Standard Exceeded	NA	NA	NA
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 µg/m^3)			
National Standard (24-Hour Average = 150 µg/m^3)			
Maximum State 24-Hour Concentration	53.0	75.0	39.0
Maximum National 24-Hour Concentration	63.0	89.0	46.0
Days Exceeding State Standard	1	1	0
Days Exceeding National Standard	0	0	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 µg/m^3)			
Maximum 24-Hour Concentration	NA	NA	NA
Days Exceeding National Standard	NA	NA	NA
Sulfates			
Maximum 24-Hour Concentration	NA	NA	NA

Source: California Air Resources Board.

TABLE 3.3-9

Air Quality Data from San Bernardino Valley General Forecast Area – Fontana-Arrow Highway Monitoring Station (36197)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.159	0.144	0.162
Maximum Concentration 8-Hour Period (ppm)	0.123	0.122	0.124
Days State 1-Hour Standard Exceeded	48	40	55
Days National 8-Hour Standard Exceeded	46	41	58
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	NA	NA	1.69
Days State/National 8-Hour Standard Exceeded	NA	NA	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.094	0.093	0.101
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	0.003	0.004	0.003
Days State Standard Exceeded	0	0	0
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 µg/m^3)			
National Standard (24-Hour Average = 150 µg/m^3)			
Maximum State 24-Hour Concentration	135.0	264.0	72.0
Maximum National 24-Hour Concentration	142.0	276.0	75.0
Days Exceeding State Standard	29	33	11
Days Exceeding National Standard	0	2	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 µg/m^3)			
Maximum 24-Hour Concentration	52.6	77.5	49.0
Days Exceeding National Standard	8	10	4
Sulfates			
Maximum 24-Hour Concentration	10.3	20.3	9.5

Source: California Air Resources Board.

TABLE 3.3-10

Air Quality Data from San Fernando Valley General Forecast Area – Burbank Monitoring Station (70069)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.166	0.116	0.133
Maximum Concentration 8-Hour Period (ppm)	0.128	0.096	0.109
Days State 1-Hour Standard Exceeded	25	13	20
Days National 8-Hour Standard Exceeded	22	13	17
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	3.38	2.78	2.48
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.103	0.087	0.105
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	0.004	0.003	0.003
Days State Standard Exceeded	0	0	0
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 µg/m^3)			
National Standard (24-Hour Average = 150 µg/m^3)			
Maximum State 24-Hour Concentration	69.0	107.0	61.0
Maximum National 24-Hour Concentration	71.0	109.0	66.0
Days Exceeding State Standard	10	5	5
Days Exceeding National Standard	0	0	0
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 µg/m^3)			
Maximum 24-Hour Concentration	50.7	56.5	57.4
Days Exceeding National Standard	6	9	1
Sulfates			
Maximum 24-Hour Concentration	NA	NA	NA

Source: California Air Resources Board.

TABLE 3.3-11
Air Quality Data from San Gabriel Valley General Forecast Area – Pasadena Monitoring Station (70088)

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
State Standard (1-Hour Average = 0.09 ppm)			
National Standard (8-Hour Average = 0.075 ppm)			
Maximum Concentration 1-Hour Period (ppm)	0.151	0.149	0.122
Maximum Concentration 8-Hour Period (ppm)	0.117	0.101	0.100
Days State 1-Hour Standard Exceeded	26	13	16
Days National 8-Hour Standard Exceeded	23	11	16
Carbon Monoxide (CO)			
State Standard (8-Hour Average = 9 ppm)			
National Standard (8-Hour Average = 9 ppm)			
Maximum Concentration 8-Hour Period (ppm)	2.80	2.28	2.21
Days State/National 8-Hour Standard Exceeded	0	0	0
Nitrogen Dioxide (NO_2)			
State Standard (1-Hour Average = 0.18 ppm)			
Maximum 1-Hour Concentration	0.120	0.092	0.105
Days State Standard Exceeded	0	0	0
Sulfur Dioxide (SO_2)			
State Standard (24-Hour Average = 0.04 ppm)			
Maximum 24-Hour Concentration	NA	NA	NA
Days State Standard Exceeded	NA	NA	NA
Suspended Particulates (PM_{10})			
State Standard (24-Hour Average = 50 µg/m^3)			
National Standard (24-Hour Average = 150 µg/m^3)			
Maximum State 24-Hour Concentration	NA	NA	NA
Maximum National 24-Hour Concentration	NA	NA	NA
Days Exceeding State Standard	NA	NA	NA
Days Exceeding National Standard	NA	NA	NA
Suspended Particulates ($PM_{2.5}$)			
National Standard (24-Hour Average = 35 µg/m^3)			
Maximum 24-Hour Concentration	45.8	68.8	66.0
Days Exceeding National Standard	1	3	1
Sulfates			
Maximum 24-Hour Concentration	28.7	22.4	14.1

Source: California Air Resources Board.

Toxic Air Contaminants

Pollutants are identified as toxic air contaminants (TACs) because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, the California Air Resources Board (CARB) has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor, called a Hazard Index, is used to evaluate risk. In the early 1980s, CARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (AB 1807, CARB 1999[1]) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, CARB 1999) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

In August 1998, CARB identified particulate emissions from diesel-fueled engines as TACs. In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce diesel particulate emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020.

TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). TACs include air pollutants that can produce adverse human health effects, including carcinogenic effects, after short-term (acute) or long-term (chronic) exposure. Examples of TAC sources within the district include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources.

The SCAQMD has conducted several Multiple Air Toxics Exposure (MATES) studies to quantify the current magnitude of population exposure risk from existing sources of selected air toxic contaminants. In the most recent study, Multiple Air Toxics Exposure Study III (MATES III), SCAQMD determined that the risk of contracting cancer from air toxics in the Basin, based on the average concentrations at the fixed monitoring sites, is about 1,200 per million while the population-weighted risk is about 853 in one million.[2] This risk refers to the expected number of additional cancers in a population of one million individuals that are exposed over a 70-year lifetime. The air toxics risk at the fixed sites used in the study ranged from 870 to 1,400 per million. Using the MATES III methodology, about 94% of the risk is attributed to emissions associated with mobile sources, and about 6% of the risk is attributed to toxics emitted from stationary sources,

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[1] California Air Resources Board. *1999-08-12 California Air Toxics Program Background*. Available http://www.arb.ca.gov/toxics/background.htm. August, 1999.

[2] The Mates III Study is available at http://www.aqmd.gov/prdas/matesIII/MATESIIIFinalReportSept2008.html

which include industries, and businesses such as dry cleaners and chrome plating operations.

Diesel exhaust is the major contributor to air toxics risk, accounting for approximately 84 percent of the total risk. Compared to the MATES II study (originally published in 2000), the MATES III study (published in 2008) found a decreasing risk for air toxics exposure, with the population-weighted risk down by 17 percent from the analysis in MATES II.

AIR QUALITY REGULATORY SETTING

A number of plans, policies, and regulations have been adopted by various agencies that address air quality concerns. Those plans and policies that are relevant to the proposed project are discussed below.

Federal Clean Air Act

The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS), and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. Chapter 2 explains in more detail the architecture of the CAA.

California Clean Air Act

The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California Ambient Air Quality Standards (CAAQS) for ozone, NO2, CO and SO2 by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and set standards for other pollutants recognized by the state. In general, the California standards are more health protective than the corresponding NAAQS. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

Table 3.3-12 details the current NAAQS and CAAQS, while Table 3.3-13 provides the attainment status with respect to federal and state standards in each basin.

TABLE 3.3-12
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[3] Concentration	Federal Standards[4] Primary
Ozone (0_3)	1 hour	0.09 ppm (180 µq/m^3)	–
	8 hour	0.070 ppm (137 µq/m^3)	0.075 ppm (147 µq/m^3)
Respirable Particulate Matter (PM 10)	24 hour	50 µq/m^3	150 µq/m^3
	Annual Arithmetic Mean	20 µq/m^3	–
Fine Particulate Matter (PM 10)	24 hour	No Separate State Standard	35 µq/m^3
	Annual Arithmetic Mean	12 µq/m^3	15.0 µq/m^3
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m$^{3)}$	9.0 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µq/m^3)	0.053 ppm (100 µq/m^3)
	1 Hour	0.18 ppm (339 µq/m^3)	0.100 ppm
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	-	0.030 ppm (80 µq/m^3)
	24 Hour	0.04 ppm (105 µq/m^3)	0.14 ppm (365 µq/m^3)
	3 Hour	–	–
	1 Hour	0.25 ppm (655 µq/m^3)	–
Lead	30 Day Average	1.5 µq/m^3	–
	Calendar Quarter	–	1.5 µq/m^3
	Rolling 3-Month Average	–	0.15 µq/m^3
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer - visibility of ten miles or more due to particles when relative humidity is less than 70 percent.	**No Federal Standards**
Sulfates	24 Hour	25 µq/m^3	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µq/m^3)	
Vinyl Chloride	24 Hour	0.01 ppm (26 µq/m^3)	

[3] The California ambient air quality standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and PM_{25} are values not to be exceeded. All other California standards shown are values not to be equaled or exceeded.

[4] The national ambient air quality standards, other than 0_3 and those based on annual averages, are not to be exceeded more than once a year. The O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standards is equal to or less than one.

TABLE 3.3-13
Federal and State Attainment Status

Pollutants	Federal Classification	State Classification
South Coast Air Basin		
O_3 (1-hour standard)	—	Extreme Nonattainment
O_3 (8-hour standard)	Extreme Nonattainment	Nonattainment
PM_{10}	Nonattainment, Serious	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Unclassified /Attainment	Nonattainment
SO_2	Attainment	Attainment
Visibility Reducing Particles	—	Unclassified
Sulfates	—	Attainment
Hydrogen Sulfide	—	Unclassified
Vinyl Chloride	—	Unclassified
Salton Sea Air Basin		
O_3 (1-hour standard)	—	Extreme Nonattainment
O_3 (8-hour standard)	Nonattainment, Serious	Nonattainment
PM_{10}	Nonattainment	Nonattainment
$PM_{2.5}$	Unclassifiable/Attainment	Unclassified
CO	Attainment	Attainment
NO_2	Unclassified /Attainment	Attainment
SO_2	Unclassified /Attainment	Attainment
Visibility Reducing Particles	—	Unclassified
Sulfates	—	Attainment
Hydrogen Sulfide	—	Unclassified
Vinyl Chloride	—	Unclassified
Mojave Desert Air Basin		
O_3 (1-hour standard)	—	Extreme Nonattainment
O_3 (8-hour standard)	Nonattainment, Moderate	Nonattainment
PM_{10}	Nonattainment, Serious	Nonattainment
$PM_{2.5}$	Unclassifiable/Attainment	Unclassified
CO	Attainment	Unclassified
NO_2	Unclassified /Attainment	Attainment
SO_2	Unclassified /Attainment	Attainment
Visibility Reducing Particles	—	Unclassified
Sulfates	—	Attainment
Hydrogen Sulfide	—	Unclassified/ Nonattainment
Vinyl Chloride	—	Unclassified

Source: California Air Resources Board and USEPA. Blanks reflect standards for which there are no federal standards.

South Coast Air Quality Management District

SCAQMD has adopted a series of air quality management plans (AQMPs) to meet the CAAQS and NAAQS. These plans require, among other emissions-reducing activities, control technology for existing sources; control programs for area sources and indirect sources; a SCAQMD permitting system designed to allow no net increase in emissions from any new or modified (i.e., previously permitted) emission sources; and, transportation control measures.

The SCAQMD adopted a comprehensive AQMP update, the 2007 AQMP, on June 1, 2007. The Final 2007 AQMP addresses several federal planning requirements and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes and new air quality modeling tools. The 2007 AQMP builds upon the approaches taken in the 2003 AQMP for the attainment of the federal air quality standards. Additionally, the AQMP highlights the significant amount of reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet federal criteria pollutant standards within the timeframes allowed under federal Clean Air Act.

The SCAQMD adopts rules and regulations to implement portions of the AQMP. For example, SCAQMD Rule 403 requires implementing the best available fugitive dust control measures during active operations capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. In addition, SCAQMD has published two additional guidance documents; Localized Significance Threshold Methodology for CEQA Evaluations (June 2003) and Particulate Matter (PM) 2.5 Significance Thresholds and Calculation Methodology. Both were used in the preparation of this analysis.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties. It addresses regional issues relating to transportation, economy, community development, and environment. SCAG is the federally designated metropolitan planning organization (MPO) for the majority of the southern California region and is the largest MPO in the nation. With respect to air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide (RCPG) for the SCAG region, which includes Growth Management and Regional Mobility chapters, which form the basis for the land use and transportation components of the AQMP. These chapters are utilized in the preparation of air quality forecasts and the consistency analysis that is included in the AQMP.

VISIBILITY ENVIRONMENTAL SETTING

In 2005, annual average visibility at Rudiboux (Riverside), the worst case, was just over 10 miles.[5] With the exception of Lake County, which is designated in attainment, all of the air districts in California are currently designated as unclassified with respect to the CAAQS for visibility reducing particles.

In Class-I wilderness areas, which typically have visual range measured in tens of miles the deciview metric is used to estimate an individual's perception of visibility. The deciview index works inversely to visual range which is measured in miles or kilometers whereby a lower deciview is optimal. In the South Coast Air Basin, the Class-I areas are typically restricted to higher elevations (greater than 6000 feet above sea level) or far downwind of the metropolitan emission source areas. Visibility in these areas is typically unrestricted due to regional haze despite being in close proximity to the urban setting. The 2005 baseline deciview mapping of the Basin is presented in Figure 3.3-3. All of the Class-I wilderness areas reside in areas having average deciview values less than 20 with many portions of those areas having average deciview values less than 10. By contrast, Rubidoux, in the Basin has a deciview value exceeding 30.

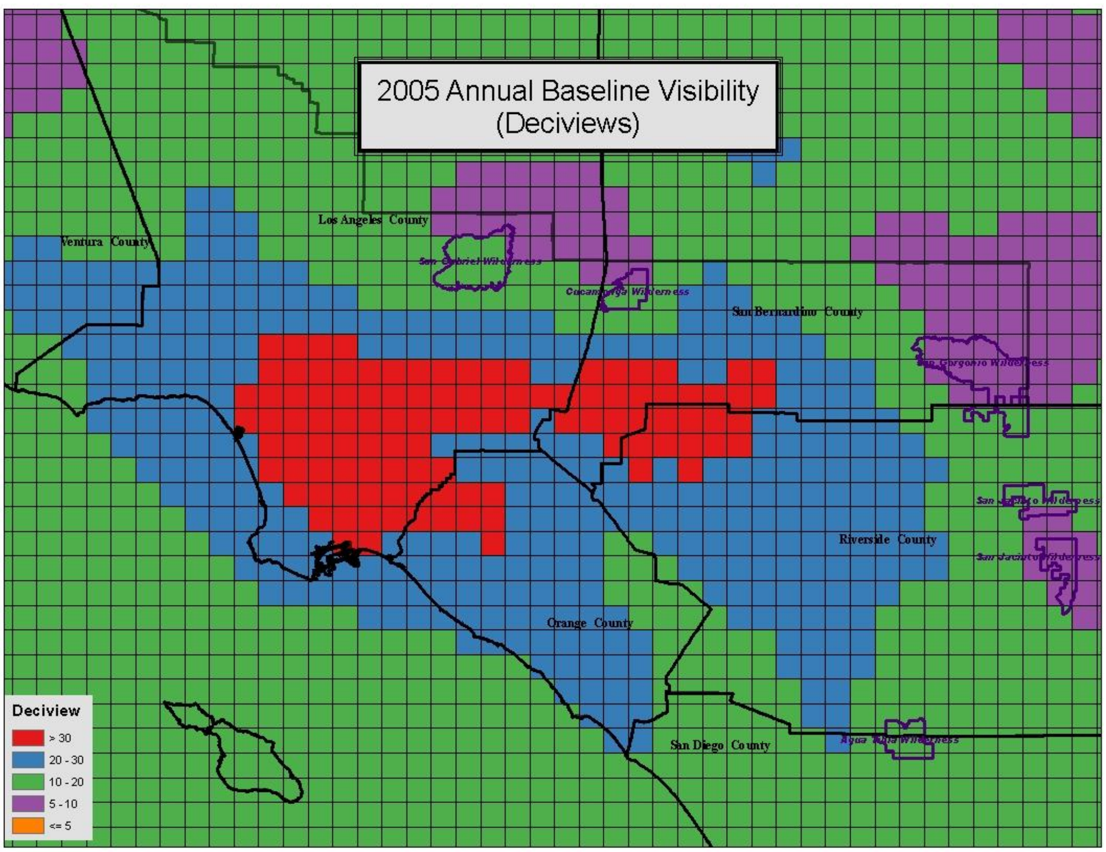

Figure 3.3-3
2005 Annual Baseline Visibility

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5 2007 AQMP

VISIBILITY REGULATORY SETTING

Federal Regional Haze Rule

The federal Regional Haze Rule, established by the EPA pursuant to Clean Air Act section 169A, establishes the national goal to prevent future and remedy existing impairment of visibility in federal Class I areas (such as federal wilderness areas and national parks). EPA's visibility regulations (40 CFR 51.300 through 51.309), require states to develop measures necessary to make reasonable progress towards remedying visibility impairment in these federal Class I areas. Section 169A and these regulations also require Best Available Retrofit Technology for certain large stationary sources that were put in place between 1962 and 1977. See Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations, 70 Fed. Reg. 39104 (July 6, 2005).

California Air Resources Board

To meet Federal Regional Haze Rule requirements, the California Air Resources Board adopted the California Regional Haze Plan on January 22, 2009, addressing California's visibility goals through 2018. As stated in Table 3.3-12 above, the California's statewide standard (applicable outside of the Lake Tahoe area) for Visibility Reducing Particles is an extinction coefficient of 0.23 per kilometer over an 8-hour averaging period. This translates to visibility of ten miles or more due to particles when relative humidity is less than 70 percent.

CLIMATE CHANGE ENVIRONMENTAL SETTING

The potential impacts of climate change due to greenhouse gas emissions are described in Chapter 4.1. Worldwide emissions of GHGs in 2004 were 26.8 billion tonnes (metric tons) of CO2e. In 2004, the US emitted about 7 billion tonnes of CO2e (CO2 equivalent) or about 24 tonnes of CO2e per year per person. Over 80 percent of the GHG emissions in the US are comprised of CO2 emissions from energy related fossil fuel combustion. In 2004, California emitted 0.492 billion tonnes of CO2e, or about 7 percent of the US emissions. If California were a country, it would be the 16th largest emitter of GHGs in the world. This large number is due primarily to the sheer size of California. Compared to other states, California has one of the lowest per capita GHG emission rates in the country. This is due to California's higher energy efficiency standards, its temperate climate, and the fact that it relies on substantial out-of-state energy generation.

California GHG emissions in 2008 totaled approximately 477.7 million metric tons (MMT) CO2e as shown in Table 3.3-14. Approximately 84 percent of GHG emissions (in CO2e) from California were comprised of CO2 emissions from fossil fuel combustion, with 4 percent comprised of CO2 from process emissions. CH4 accounted for 7.3 percent of total CO2e respectively, and high GWP gases accounted for 3.3 percent of the CO2e emissions.

TABLE 3.3-14

California Greenhouse Gas Inventory for 2000-2008 (million MT CO2e)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Transportation	**171.13**	**173.71**	**180.36**	**178.03**	**181.71**	**184.32**	**184.11**	**183.84**	**174.99**
On Road	***159.40***	***161.69***	***168.40***	***166.17***	***169.22***	***170.82***	***170.49***	***170.79***	***163.30***
Passenger Vehicles	126.91	129.25	135.43	132.83	134.24	134.51	133.80	133.34	128.51
Heavy Duty Trucks	32.49	32.45	32.97	33.34	34.98	36.31	36.68	37.45	34.79
Ships & Commercial Boats	***3.77***	***3.56***	***3.87***	***4.04***	***4.06***	***4.36***	***4.45***	***4.38***	***4.32***
Aviation (Intrastate)	***2.68***	***2.50***	***2.66***	***2.59***	***2.64***	***2.70***	***2.68***	***2.96***	***2.42***
Rail	***1.86***	***1.87***	***2.48***	***2.41***	***2.89***	***3.32***	***3.50***	***3.15***	***2.52***
Unspecified	***3.41***	***4.08***	***2.94***	***2.81***	***2.90***	***3.11***	***3.00***	***2.56***	***2.44***
Electric Power	**103.92**	**120.62**	**106.49**	**109.89**	**119.96**	**110.98**	**107.66**	**111.10**	**116.35**
In-State Generation	***59.93***	***63.86***	***50.87***	***49.08***	***57.40***	***51.75***	***56.28***	***55.16***	***55.12***
Natural Gas	51.06	55.55	42.42	41.01	48.66	43.21	47.62	47.20	48.07
Other Fuels	8.87	8.31	8.45	8.07	8.74	8.54	8.67	7.96	7.05
Imported Electricity	***43.99***	***56.76***	***55.62***	***60.81***	***62.56***	***59.22***	***51.38***	***55.94***	***61.24***
Unspecified Imports	13.83	24.69	25.42	30.21	31.32	28.44	26.40	30.57	35.19
Specified Imports	30.16	32.07	30.19	30.60	31.24	30.78	24.98	25.37	26.05
Commercial and Residential	**42.93**	**41.02**	**43.79**	**41.38**	**42.54**	**40.79**	**41.47**	**41.83**	**43.13**
Residential Fuel Use	***30.13***	***28.62***	***29.35***	***28.31***	***29.34***	***28.08***	***28.46***	***28.61***	***28.45***
Natural Gas	28.52	27.34	28.03	26.59	27.30	25.89	26.52	26.65	26.10
Other Fuels	1.61	1.27	1.32	1.72	2.04	2.19	1.93	1.96	2.35
Commercial Fuel Use	***11.69***	***11.32***	***13.37***	***12.81***	***12.71***	***12.56***	***12.84***	***12.73***	***14.31***
Natural Gas	10.24	10.07	12.11	11.34	11.13	10.90	11.58	11.35	12.51
Other Fuels	1.45	1.25	1.26	1.46	1.59	1.66	1.26	1.38	1.80
Commercial Cogeneration Heat Output	***1.11***	***1.07***	***1.08***	***0.26***	***0.49***	***0.15***	***0.17***	***0.49***	***0.37***
Industrial	**97.27**	**94.70**	**96.73**	**96.14**	**90.87**	**90.72**	**90.47**	**93.82**	**92.66**
Refineries	***33.25***	***33.07***	***33.87***	***34.80***	***34.06***	***35.31***	***36.09***	***36.07***	***35.65***
General Fuel Use	***18.76***	***17.87***	***19.53***	***16.39***	***16.28***	***14.80***	***15.17***	***14.78***	***14.82***
Natural Gas	13.82	11.92	12.80	10.26	10.53	9.86	9.90	9.76	9.14
Other Fuels	4.94	5.94	6.73	6.13	5.76	4.93	5.27	5.02	5.69
Oil & Gas Extraction [1]	***18.41***	***18.45***	***17.37***	***19.51***	***19.31***	***18.01***	***16.48***	***16.52***	***17.04***
Fuel Use	17.72	17.62	16.64	18.78	18.94	17.66	15.72	15.75	16.27
Fugitive Emissions	0.69	0.83	0.73	0.74	0.37	0.35	0.77	0.77	0.78

TABLE 3.3-14 (Concluded)

Cement Plants	***9.41***	***9.51***	***9.61***	***9.72***	***9.82***	***9.92***	***9.75***	***9.17***	***8.61***
Clinker Production	5.43	5.52	5.60	5.68	5.77	5.85	5.80	5.55	5.31
Fuel Use	3.97	4.00	4.01	4.03	4.05	4.07	3.95	3.62	3.30
Cogeneration Heat Output	***11.96***	***10.69***	***10.84***	***10.79***	***6.19***	***6.91***	***6.90***	***11.22***	***10.47***
Other Process Emissions	***5.49***	***5.11***	***5.50***	***4.94***	***5.22***	***5.78***	***6.08***	***6.07***	***6.06***
Recycling and Waste	**6.20**	**6.28**	**6.21**	**6.29**	**6.23**	**6.52**	**6.59**	**6.53**	**6.71**
Landfills [2]	***6.20***	***6.28***	***6.21***	***6.29***	***6.23***	***6.52***	***6.59***	***6.53***	***6.71***
High GWP	**10.95**	**11.34**	**11.97**	**12.75**	**13.57**	**14.23**	**14.92**	**15.27**	**15.65**
Ozone Depleting Substance (ODS) Substitutes	***8.55***	***9.30***	***10.12***	***10.92***	***11.74***	***12.41***	***13.05***	***13.47***	***13.89***
Electricity Grid SF6 Losses [3]	***1.14***	***1.15***	***1.07***	***1.05***	***1.05***	***1.04***	***1.00***	***0.97***	***0.96***
Semiconductor Mfg [2]	***1.26***	***0.89***	***0.78***	***0.78***	***0.78***	***0.78***	***0.87***	***0.84***	***0.80***
Agriculture [4]	**25.44**	**25.37**	**28.42**	**28.49**	**28.82**	**28.99**	**29.90**	**28.26**	**28.06**
Livestock	***13.61***	***14.10***	***14.56***	***14.88***	***14.81***	***15.36***	***15.63***	***15.96***	***16.28***
Enteric Fermentation (Digestive Process)	7.49	7.64	7.86	7.97	7.97	8.26	8.33	8.52	8.70
Manure Management	6.12	6.47	6.70	6.91	6.84	7.10	7.30	7.44	7.58
Crop Growing & Harvesting	***8.01***	***7.46***	***9.48***	***9.41***	***9.51***	***9.03***	***9.08***	***8.53***	***7.95***
Fertilizers	6.55	6.21	8.06	8.02	8.03	7.58	7.44	7.08	6.72
Soil Preparation and Disturbances	1.37	1.18	1.34	1.31	1.41	1.37	1.56	1.36	1.15
Crop Residue Burning	0.09	0.07	0.07	0.08	0.07	0.08	0.08	0.09	0.09
General Fuel Use	***3.82***	***3.81***	***4.39***	***4.20***	***4.50***	***4.60***	***5.19***	***3.78***	***3.82***
Diesel	2.51	2.68	3.02	2.94	3.15	3.38	3.85	2.66	2.93
Natural Gas	1.00	0.75	0.95	0.85	0.82	0.69	0.77	0.79	0.72
Gasoline	0.31	0.38	0.40	0.41	0.52	0.52	0.57	0.32	0.17
Other Fuels	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Forestry	**0.19**	**0.19**	**0.19**	**0.19**	**0.19**	**0.19**	**0.19**	**0.19**	**0.19**
Wildfire (CH4 & N2O Emissions)	***0.19***	***0.19***	***0.19***	***0.19***	***0.19***	***0.19***	***0.19***	***0.19***	***0.19***
Total Gross Emissions	***458.03***	***473.23***	***474.15***	***473.15***	***483.88***	***476.73***	***475.31***	***480.85***	***477.74***

Source: California Air Resources Board (As of May 12, 2010; http://arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-08_2010-05-12.pdf)

[1] Reflects emissions from combustion of natural gas, diesel, and lease fuel plus fugitive emissions
[2] These categories are listed in the Industrial sector of ARB's GHG Emission Inventory sectors
[3] This category is listed in the Electric Power sector of ARB's GHG Emission Inventory sectors
[4] Reflects use of updated USEPA models for determining emissions from livestock and fertilizers

As shown in Table 3.3-14, transportation is responsible for 37 percent of the state's GHG emissions, followed by electricity generation (24 percent), the industrial sector (19 percent), commercial and residential (9 percent), agriculture and forestry (6 percent) and other sources (5 percent).

Greenhouse Gases

Greenhouse gases (GHG) include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. Presented below is a description of each GHG and their known sources.

Carbon Dioxide (CO_2) enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4) is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide (N_2O) is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Fluorinated Gases are synthetic, strong greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases.

Chlorofluorocarbons (CFCs) are greenhouse gases covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds that are greenhouse gases covered under the Kyoto Protocol.

Perfluorocarbons (PFCs) are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF4] and perfluoroethane [C2F6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they are strong greenhouse gases.

Sulfur Hexafluoride (SF_6) is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong greenhouse gas used primarily in electrical transmission and distribution systems as a dielectric.

Hydrochlorofluorocarbons (HCFCs) contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent than CFCs. They have been introduced as temporary replacements for CFCs and are also greenhouse gases.

Hydrofluorocarbons (HFCs) contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong greenhouse gases.

CLIMATE CHANGE REGULATORY SETTING

Federal Climate Change Policy

The U.S. Environmental Protection Agency (EPA) is the Federal agency responsible for implementing the Clean Air Act (CAA). The U.S. Supreme Court ruled in its decision in *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007) that carbon dioxide (CO_2) is an air pollutant as defined under the CAA, and that EPA has the authority to regulate emissions of GHGs. In response to the mounting issue of climate change, EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, EPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States. 74 Fed. Reg. 56260 (Oct. 30, 2009). In general, this national reporting requirement will provide EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons or more of CO_2 per year.

On March 22, 2010, the EPA issued four proposed rules that amend the Mandatory Greenhouse Gas Reporting Rule. These proposals would require reporting of emissions data from the petroleum and natural gas industry, facilities that inject and sequester carbon dioxide (CO_2) underground, and from industries that emit fluorinated greenhouse gases. 75 Fed. Reg. 18608, 18576, 18652 (April 12, 2010). In addition, the EPA has proposed to add three new reporting requirements to the General Provisions of the rule. 75 Fed. Reg. 18455 (April 12, 2010). The EPA plans to finalize all four of these proposals this year.

Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act

On December 7, 2009, the EPA issued the Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the CAA. 74 Fed. Reg. 66496 (Dec. 15, 2009). Section 202(a) of the CAA states that the Administrator (of EPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."

The EPA made two distinct findings under Section 202(a). The first addresses whether or not the concentrations of the six key GHGs threaten the public health and welfare of current and future generations. The second addresses whether or not the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and, therefore, the threat of climate change.

> **Endangerment Finding**: The EPA found that the current and projected concentrations of the six key well-mixed GHGs - carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) - in the atmosphere threaten the public health and welfare of current and future generations. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

> **Cause or Contribute Finding**: The EPA found that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare. GHG emissions from motor vehicles and motor vehicle engines were found to contribute to air pollution that endangers public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite for finalizing the EPA and Department of Transportation's National Highway Safety Administration (NHTSA) joint standards for GHG emission for light-duty vehicles.

Light-Duty Vehicle GHG Standards and CAFE Standards (EPA and NHTSA)

On April 1, 2010, the EPA and NHTSA announce a joint final rule establishing a National Program to reduce greenhouse gas emissions and improve fuel economy for new cars and trucks sold in the United States. The joint rule was developed in response to the Obama Administration's National Fuel Efficiency Policy for a National Program to reduce greenhouse gases and improve fuel economy (May 19, 2009).

The combined EPA and NHTSA standards apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon (MPG) if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements.

The National Program allows automobile manufacturers to build a single light-duty national fleet that satisfies requirements under the CAA, the Energy Policy and Conservation Act, and standards of the State of California.

Regulation of GHGs from New or Modified Sources

In addition to the rules promulgated by CARB under AB32, EPA has promulgated a program requiring regulation of GHGs from specified new or modified sources. SCAQMD rules do not currently require BACT for new or modified sources of GHGs, except GHGs that are also ozone depleters. (Rule 1303(a)(1)). However, on June 3, 2010, EPA published in the Federal Register its Greenhouse Gas Tailoring Rule. 73 Fed. Reg. 31513. This rule will require air permitting agencies including SCAQMD to begin imposing GHG requirements on specified new or modified sources beginning in January, 2011. EPA has explained that the new source review program that applies for attainment pollutants, which is called "prevention of significant deterioration" (PSD), will apply to GHGs. This is because PSD applies to any major stationary source of air pollutants that are subject to regulation under the CAA. As of January 2, 2011, the six GHGs identified in AB 32 will become a pollutant subject to regulation under the CAA by reason of EPA's regulations for GHGs from motor vehicles.

Under the CAA, the PSD definition of major source includes facilities with the potential to emit 250 tpy of a regulated air pollutant, or 100 tpy for certain listed source categories. Similarly, the Title V operating permit program also applies to major sources, generally defined as emitting 100 tpy or more (or less for certain pollutants in certain areas.) Because GHGs are emitted in such large amounts (as calculated as CO2 equivalent (CO2e)), these thresholds would result in requiring permits from relatively small sources, such as apartment buildings.. At these levels, EPA has concluded that it is administratively infeasible for permitting agencies to handle the vast numbers of new permits that would be required (e.g., six million new Title V permits, compared to 17,000 existing permits nationwide). EPA also concludes that applicability of these complex programs for such relatively small sources was never Congress's intent. Therefore, EPA has promulgated the Tailoring Rule which would phase-in the PSD and Title V programs.

In Step 1, which begins January 1, 2011, only facilities that would already be subject to Title V or PSD would be subject to GHG requirements under these programs. In addition, a facility modification would only trigger PSD for GHGs if the modification resulted in an increase of 75,000 tpy CO2e. Therefore, SCAQMD would begin to require GHG BACT for these sources effective January 2, 2011.

In Step 2, which begins July 1, 2011, facilities with the potential to emit 100,000 tpy CO2e or more would be subject to Title V and PSD, regardless of whether they would otherwise be subject to these programs. However, the PSD significance threshold would still be 75,000 tpy.

In future phases of the program, EPA has committed to a further rulemaking to be completed in 2012, and a study in 2015, which will consider whether it is feasible to further lower the threshold for applicability of Title V and PSD for GHGs. It is unknown whether the thresholds will be further lowered. EPA has, however, committed not to lower the threshold below 50,000 tpy CO2e until at least May 1, 2016.

California Climate Change Policy

Assembly Bill 1493 (2002), California Greenhouse Gas Emissions Standards for Light-Duty Vehicles ("Pavley" Regulations)

Prior to the EPA and NHTSA joint rulemaking, the Governor signed Assembly Bill (AB) 1493 (2002). AB 1493 requires that ARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state."

The ARB originally approved regulations to reduce GHGs from passenger vehicles in September 2004, with the regulations to take effect in 2009. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1). California's first request to the EPA to implement GHG standards for passenger vehicles was made in December 2005 and denied in March 2008. The EPA then granted California the authority to implement GHG emission reduction standards for new passenger cars, pickup trucks and sport utility vehicles on June 30, 2009.

On April 1, 2010, the ARB filed amended regulations for passenger vehicles as part of California's commitment toward the National Program to reduce new passenger vehicle GHGs from 2012 through 2016. The amendments will prepare California to harmonize its rules with the federal Light-Duty Vehicle GHG Standards and CAFE Standards (discussed above).

Executive Order S-3-05 (2005)

Governor Schwarzenegger signed Executive Order S-3-05 on June 1, 2005, finding that California is vulnerable to the impacts of climate change. The executive order declared increased temperatures could reduce snowpack in the Sierra Nevada Mountains, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. The executive order established targets for total GHG emissions which include reducing GHG emissions to the 2000 level by 2010, to the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The executive order directed the Secretary of the California Environmental Protection Agency to coordinate a multiagency effort to reduce GHG emissions to the target levels. The secretary will submit biannual reports to the governor and legislature describing progress made toward reaching the emission targets; impacts of global warming on California's resources; and mitigation and adaptation plans to combat impacts of global warming.

To comply with the executive order, the Secretary of the California Environmental Protection Agency created the California Climate Action Team which is made up of members from various state agencies and commissions. The California Climate Action Team (CAT) released its first report in March 2006 of which proposed achieving the GHG emissions targets by building on voluntary actions of California businesses and actions by local governments and communities along with continued implementation of state incentive and regulatory programs.

Assembly Bill 32 (2006), California Global Warming Solutions Act

In September 2006, the governor of California signed AB 32 (Chapter 488, Statutes of 2006), the California Global Warming Solutions Act of 2006, which enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 requires the reduction of statewide GHG emissions to 1990 levels by 2020.

To effectively implement the statewide cap on GHG emissions, AB 32 directs ARB to develop and implement regulations that reduce statewide GHG emissions generated by stationary sources. Specific actions required of ARB under AB 32 include adoption of a quantified cap on GHG emissions that represent 1990 emissions levels along with disclosing how the cap was quantified, institution of a schedule to meet the emissions cap, and development of tracking, reporting, and enforcement mechanisms to ensure that the state achieves the reductions in GHG emissions needed to meet the cap.

AB 32 Climate Change Scoping Plan

In December 2008, ARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 169 million metric tons (MMT) of CO2e, or approximately 30 percent from the state's projected 2020 emission level of 596 MMT of CO2e under a business-as-usual scenario (this is a reduction of 42 MMT CO2e, or almost 10 percent, from 2002-2004 average emissions). The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO2e),
- The Low-Carbon Fuel Standard (15.0 MMT CO2e),

- Energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO2e), and

- A renewable portfolio standard for electricity production (21.3 MMT CO2e).

Senate Bill 1368 (2006)

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission (PUC) to establish a greenhouse gas emission performance standard for baseload generation from investor owned utilities by February 1, 2007. The California Energy Commission (CEC) must establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural gas fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the PUC and CEC.

Executive Order S-1-07 (2007)

Governor Schwarzenegger signed Executive Order S-1-07 in 2007 which finds that the transportation sector is the main source of GHG emissions in California. The executive order proclaims the transportation sector accounts for over 40 percent of statewide GHG emissions. The executive order also establishes a goal to reduce the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020.

In particular, the executive order established a Low-Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the CEC, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by CEC on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the LCFS on April 23, 2009.

Senate Bill 97 (2007) and Revised CEQA Guidelines

SB 97, signed by governor of California in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code, Sections 21083.05 and 21097), directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Resources Agency by July 1, 2009 guidelines for the analysis of GHG emissions under CEQA. The OPR submitted recommended amendments to the State CEQA Guidelines on April 13, 2009. The Office of Administrative Law approved the amendments on February 16, 2010. The amendments became effective on March 18, 2010. The amendments do not set a threshold for significance for GHG emissions.

Senate Bill 375 (2008)

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. As part of the alignment, SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS) which prescribes land use allocation in that MPO's Regional Transportation Plan (RTP). The ARB, in consultation with MPOs, is required to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years but can be updated every 4 years if advancements in emissions technologies affect the reduction strategies to achieve the targets. The ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned GHG emission reduction targets. If MPOs do not meet the GHG reduction targets, transportation projects located in the MPO boundaries would not be eligible for funding programmed after January 1, 2012.

ARB appointed the Regional Targets Advisory Committee (RTAC), as required under SB 375, on January 23, 2009. The RTAC's charge was to advise ARB on the factors to be considered and methodologies to be used for establishing regional targets. The RTAC provided its recommendation to ARB on September 29, 2009. ARB must adopt final targets by September 30, 2010.

Executive Order S-13-08 (2008)

Governor Schwarzenegger signed Executive Order S-13-08 on November 14, 2008 which directs California to develop methods for adapting to climate change through preparation of a statewide plan. The executive order directs OPR, in cooperation with the California Resources Agency (CRA), to provide land use planning guidance related to sea level rise and other climate change impacts by May 30, 2009. The order also directs the CRA to develop a state Climate Adaptation Strategy by June 30, 2009 and to convene an independent panel to complete the first California Sea Level Rise Assessment Report. The assessment report is required to be completed by December 1, 2010 and required to meet the following four criteria:

1. Project the relative sea level rise specific to California by taking into account issues such as coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates;

2. Identify the range of uncertainty in selected sea level rise projections;

3. Synthesize existing information on projected sea level rise impacts to state infrastructure (e.g., roads, public facilities, beaches), natural areas, and coastal and marine ecosystems; and

4. Discuss future research needs relating to sea level rise in California.

Senate Bills 1078 and 107 and Executive Order S-14-08 (2008)

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008 Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020.

SUBCHAPTER 3.4

EXISTING SETTING - BIOLOGICAL RESOURCES

Introduction

Environmental Setting

Regulatory Setting

INTRODUCTION

This section describes the existing biological regions and resources within the district and identifies applicable regulations regarding biological resources.

ENVIRONMENTAL SETTING

Climate and Biological Regions

Over much of the temperate zones of the world (e.g., eastern North America) most precipitation occurs when plants and animals are most active. California is an exception to this general pattern with the majority of precipitation falling during winter, when light and temperature are at their low points. In addition, annual variation is relatively great compared with many other regions. While coastal ("cismontane") and desert ("transmontane") portions of the district both experience such patterns, they are quite distinct. Coastal areas experience mild temperatures, somewhat more rain, and a year-round growing season while desert areas have a more continental climate that is cool to cold in winter and very hot in summer, as well as the driest in North America.

California desert areas are grouped into the Colorado Desert, also considered is part of the larger Sonoran Desert to the east and southeast, and the Mojave Desert, which extends beyond California's boundaries to the northeast. The district includes a large portion of the Colorado Desert but minimal Mojave Desert areas. The Colorado Desert is dominated by the Salton Sink and the Salton Sea therein; it has generally mild winters and low elevations. The Mojave Desert lies at higher average elevations and has colder winters, with snow unsurprising in some portions at that time. Rainfall in the Mojave Desert is almost entirely in the winter, while the Colorado Desert receives a moderate fraction of rainfall in the summer, though it is highly irregular from year to year. Deserts east of California tend to have an important influence of regular summer rains and, thus, are quite distinct in both plants and wildlife from the California Deserts.

The more coastal, "Mediterranean" climate in the district is shared with several other, generally coastal-associated areas of the world, such as portions of Chile, Australia, South Africa, and lands surrounding the Mediterranean Sea. Though lacking the high richness of species in tropical areas, Mediterranean climate areas are frequently noted for their high levels of endemism (species found nowhere else). They are also frequently at risk through large-scale human development, as climates are very mild and attractive to human lifestyles and commerce. The two major islands within the district are Santa Catalina and San Clemente; both have mild, marine climates but very restricted development. Both also have few species compared with the mainland, but even higher rates of endemism and significant numbers of threatened and endangered species.

As suggested above, the district extensively overlaps two distinct biomes, or large-scale ecosystems, as identified by many classical biological analyses. These are often termed the California floristic province and the North American Desert systems of the southwestern U.S. and northern Mexico.[1] The California floristic province extends from southern Oregon south into northern Baja California, west of the deserts and major mountain ranges such as the Sierra Nevada. This province has been extensively studied as a distinct and unique region, with strong support both to the idea that the region is a worldwide hotspot of biodiversity and that it is one of the most biologically threatened areas of the world.[2] There is a higher concentration of listed, endangered and threatened plant and animal species in southern California than anywhere else on earth except Hawaii, and these species persist in the same region as the largest metropolitan area in the U.S.[3] The California deserts have both lower biodiversity and lower levels of endemism but are also experiencing rapid and increasing human development and have higher levels of special-status species than most of North America.

Los Angeles County

Much of the Los Angeles County portion of the district has become urbanized, but many biologically important and extensive, mostly-natural spaces remain, including portions of the Santa Monica Mountains (much within a national recreation area), the San Gabriel Mountains (mostly within Angeles National Forest), and the Chino Hills and Puente Hills (within Chino Hills State Park).

Along the coast, the Palos Verdes Peninsula and Ballona Wetlands are both biologically important, with the Peninsula containing the City of Rancho Palos Verdes Multi-Species Habitat Conservation Plan (MSHCP). Dozens of smaller areas provide stepping stones among the larger open spaces; many of these are designated as Significant Ecological Areas (SEA) by the County. The Los Angeles and San Gabriel rivers are largely channelized, but both have sections with important biological resources and can provide connectivity across urban spaces to some degree.

Orange County

All of Orange County lies within the district. Most of the coastal plain in north and central Orange County has shared urban growth with Los Angeles County. However, roughly 2,337 hectares of preserved lands lie within the Central/Coastal Natural Communities Conservation Plan of Orange County. The Santa Ana Mountains, much of which is in the Cleveland National Forest and a series of parks and preserves, overlap those preserves and include extensive open space within the County. There are several important, protected open spaces elsewhere in Orange County. Along the coast is a series

[1] Hickman, J. C., *The Jepson Manual: Higher Plants of California*, Geographic Subdivisions of California, Berkeley, CA: Univ. of California Press, pp. 37-48, ed. 1993.
[2] Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca, and J. Kent, *Biodiversity Hotspots for Conservation Priorities*, Nature 403:853-858, 1999; Calsbeek, R., J. N. Thompson, and J. E. Richardson, *Patterns of Molecular Evolution and Diversification in a Biodiversity Hotspot: The California Floristic Province*. Molecular Ecology 12:1021-1029, 2003; Hunter, R., *South Coast Regional Report: California Wildlands Project Vision for Wild California*, Davis, CA: California Wilderness Coalition, 1999.
[3] Beier, P., K. L. Penrod, C. Luke, W. D. Spencer, and C. Cananero, *South Coast Missing Linkages: Restoring Connectivity to Wildlands in the Largest Metropolitan Area in the USA,* Chapter 22, pp. 555-586 in K. J. Crooks and M. Sanjayan, Connectivity Conservation, Conservation Biology 14, Cambridge Univ. Press, Cambridge, UK. 2006.

of estuaries and open spaces with a concentration of natural resources; among the larger of these are Seal Beach National Wildlife Refuge, Bolsa Chica Ecological Reserve, upper Newport Bay and San Joaquin Wildlife Sanctuary, and the Laguna Coast Wilderness Park.

Riverside County

The Riverside County portion of the district includes all of the cismontane, or coastal slope, portion of the County, as well as most of the transmontane, or desert portion, east to the Palo Verde Valley. This includes the extensive area within the boundary of the Western Riverside County Multiple Species Habitat Conservation Plan. The eastern slopes of the Santa Ana Mountains and the San Jacinto Mountains are within this area and also receive protection as part of the Cleveland National Forest and San Bernardino National Forest, respectively. While much of the lowlands in western Riverside County is rapidly urbanizing, many important reserves are also present, including lands at Lake Mathews, Santa Rosa Plateau, the Agua Tibia Wilderness Area, Bautista Canyon, San Jacinto State Wildlife Area, San Timoteo Creek, and areas along the Santa Ana River including Hidden Valley Wildlife Area.

Essentially, all of the desert portions of the district are within Riverside County and, thus, are primarily the northern portion of the lower, or Colorado Desert. Key natural areas in this area are Joshua Tree National Park and the north end of the Salton Sea. The Santa Rosa Wilderness (Santa Rosa Mountains) and several preserves in the Coachella Valley also are regionally important natural areas.

San Bernardino County

As with the other counties, the San Bernardino Valley lowlands have now largely urbanized, with few intact examples of representative wildlands in that area. Nearly all drainages in lowland areas are heavily modified for storm flow control. The most regionally significant, protected natural area in cismontane San Bernardino County is Prado Basin along the Santa Ana River. The eastern end of the San Gabriel Mountains and large portions of the San Bernardino Mountains receive protection and management by the Forest Service, and this includes some of Cajon Pass, a key connector between desert and coastal lowlands in the region. The district includes all of the cismontane slopes and extends in some areas past the upper ridgelines onto the upper, transmontane (desert) slopes. There are no approved, multi-species Habitat Conservation Plans or Natural Community Conservation Plans within San Bernardino County.

Human Alteration and Special-status Species

Several "keystone" species, those having an exceptional influence on their environment, became extinct or were extirpated from the region between initial settlement by Europeans and the early part of the twentieth century. These include the Grizzly Bear (*Ursus arctos*), Pronghorn (*Antilocapra americana*), Sea Otter (*Enhydra lutris*), and a subspecies of Kit Fox (*Vulpes macrotis macrotis*). A number of plant species similarly disappeared, and several natural community types, including coastal dunes and coastal strand vegetation, have virtually disappeared. At this time, there were also ecologically important introductions of invasive species, perhaps most notably European annual grasses of several species and Virginia Opossum (*Didelphis virginiana*).

Across the late nineteenth and early twentieth centuries, much of the coastal portion of the district was urbanized and most rivers and streams were channelized. Extensive portions of Orange County were converted from wetlands to agriculture, and then to urban and suburban spaces. Many large parks and open spaces were preserved during this period; montane areas were less-dramatically altered due to the presence of four extensive National Forests with very limited logging. During this period natural fire regimes also began to alter substantially through fire suppression and fragmentation of natural areas.

Concomitant with the development of many national, state and local environmental protections during the last half of the twentieth century, hundreds of additional plant and animal species were recognized as declining in the region. Efforts to provide protection and management of remaining natural systems have included substantial research and funding efforts as well as increased requirements for review, evaluation, and mitigation of human activities under applicable laws. The region has been a national leader in large-scale, multi-species habitat conservation plans under the federal Endangered Species Act and state Natural Communities Conservation Plan. At the same time, extensive development has continued, large-scale effects are becoming clearer, newly introduced, invasive plants and animals continue to be documented at increasing rates, and the prospect of indirect effects from global warming are beginning to be studied.

Table 3.4-1 includes all plant and animals within the district that are currently listed as endangered or threatened under either the federal or state Endangered Species Acts.[4] While representative of regional species with special legal status, the list is less than half of the total list of species within the district that presently have one or more types of special status routinely addressed in reviews of project-level and program-level environmental reviews within this geography. In addition, the full list of such species changes quite frequently as new species are added or, less frequently, delisted.

[4] California Department of Fish and Game, California Natural Diversity Data Base (CNDDB). Sacramento, CA: Wildlife and Habitat Data Analysis Branch, Data date: May 30, 2009.

TABLE 3.4-1

State and Federally Listed Plants and Animals Known from the District[a]

Federal/ State Status	Scientific Name	English Name	Counties
FE/-	*Acanthoscyphus parishii var. Goodmaniana*	Cushenbury oxytheca	SBD
FE/ST	*Allium munzii*	Munz's onion	RIV
FE/-	*Ambrosia pumila*	dwarf burr ambrosia	RIV
FT/-	*Ambystoma californiense*	California tiger salamander	RIV
FT/-	*Amphispiza belli clementeae*	San Clemente sage sparrow	LA
FE/-	*Anaxyrus californicus*	arroyo toad	LA, ORA, RIV, SBD
FE/SE	*Arenaria paludicola*	marsh sandwort	LA, RIV, SBD
FT/-	*Arenaria ursina*	Big Bear Valley sandwort	SBD
FE/-	*Astragalus albens*	Cushenbury milk-vetch	SBD
FE/-	*Astragalus brauntonii*	Braunton's milk-vetch	LA, ORA
FE/-	*Astragalus lentiginosus var. coachellae*	Coachella Valley milk-vetch	RIV
FE/SE	*Astragalus pycnostachyus var. lanosissimus*	Ventura Marsh milk-vetch	LA, ORA
FE/SE	*Astragalus tener var. titi*	coastal dunes milk-vetch	LA
FE/-	*Astragalus tricarinatus*	triple-ribbed milk-vetch	RIV, SBD
FE/-	*Atriplex coronata var. notatior*	San Jacinto Valley crownscale	RIV
FE/SE	*Batrachoseps major aridus*	desert slender salamander	RIV
FE/SE	*Berberis nevinii*	Nevin's barberry	LA, RIV, SBD
FT/-	*Branchinecta lynchi*	vernal pool fairy shrimp	RIV
FE/-	*Branchinecta sandiegonensis*	San Diego fairy shrimp	ORA
FT/SE	*Brodiaea filifolia*	thread-leaved brodiaea	LA, ORA, RIV, SBD
-/ST	*Buteo swainsoni*	Swainson's hawk	LA, SBD
FT/-	*Castilleja cinerea*	ash-gray paintbrush	SBD
FE/SE	*Castilleja grisea*	San Clemente Island paintbrush	LA
FT/-	*Catostomus santaanae*	Santa Ana sucker	LA, ORA, RIV, SBD
FT/SE	*Ceanothus ophiochilus*	Vail Lake ceanothus	RIV
FE/SE	*Cercocarpus traskiae*	Catalina Is. mountain-mahogany	LA
FT/-	*Charadrius alexandrinus nivosus*	western snowy plover	LA, ORA, RIV, SBD
-/ST	*Charina umbratica*	southern rubber boa	RIV, SBD
-/SE	*Chorizanthe parryi var. fernandina*	San Fernando Valley spineflower	LA, ORA

TABLE 3.4-1 (Continued)

State and Federally Listed Plants and Animals Known from the District[a]

Federal/ State Status	Scientific Name	English Name	Counties
-/SE	*Coccyzus americanus occidentalis*	western yellow-billed cuckoo	LA, RIV, SBD
-/SE	*Colaptes chrysoides*	gilded flicker	RIV
FE/SE	*Cordylanthus maritimus ssp. maritimus*	salt marsh bird's-beak	LA, ORA, RIV, SBD
FE/SE	*Cyprinodon macularius*	desert pupfish	RIV
-/SE	*Deinandra mohavensis*	Mojave tarplant	RIV, SBD
FE/SE	*Delphinium variegatum ssp. kinkiense*	San Clemente Island larkspur	LA
FE/-	*Dipodomys merriami parvus*	San Bernardino kangaroo rat	RIV, SBD
FE/ST	*Dipodomys stephensi*	Stephens' kangaroo rat	RIV, SBD
-/ST	*Dithyrea maritima*	beach spectaclepod	LA
FE/SE	*Dodecahema leptoceras*	slender-horned spineflower	LA, ORA, RIV, SBD
FT/-	*Dudleya cymosa ssp. agourensis*	Agoura Hills dudleya	LA
FT/-	*Dudleya cymosa ssp. marcescens*	marcescent dudleya	LA
FT/-	*Dudleya cymosa ssp. ovatifolia*	Santa Monica dudleya	LA, ORA
FT/ST	*Dudleya stolonifera*	Laguna Beach dudleya	ORA
FE/SE	*Empidonax traillii extimus*	southwestern willow flycatcher	LA, ORA, RIV, SBD
FE/SE	*Eriastrum densifolium ssp. sanctorum*	Santa Ana River woollystar	ORA, RIV, SBD
FT/-	*Erigeron parishii*	Parish's daisy	RIV, SBD
FT/-	*Eriogonum kennedyi var. austromontanum*	southern mountain buckwheat	SBD
FE/-	*Eriogonum ovalifolium var. vineum*	Cushenbury buckwheat	SBD
-/SE	*Eriogonum thornei*	Thorne's wild buckwheat	SBD
FE/SE	*Eryngium aristulatum var. parishii*	San Diego button-celery	RIV
FE/-	*Eucyclogobius newberryi*	tidewater goby	LA, ORA
FE/-	*Euphilotes battoides allyni*	El Segundo blue butterfly	LA
FE/-	*Euphydryas editha quino*	quino checkerspot butterfly	RIV
-/SE	*Falco peregrinus anatum*	American peregrine falcon	LA
-/SE	*Galium catalinense ssp. acrispum*	San Clemente Island bedstraw	LA
FE/SE	*Gasterosteus aculeatus williamsoni*	unarmored threespine stickleback	LA, SBD
FE/-	*Glaucopsyche lygdamus*	Palos Verdes blue butterfly	LA
FE/SE	*Gopherus agassizii*	desert tortoise	LA, RIV, SBD
FE/SE	*Gymnogyps californianus*	California condor	LA

TABLE 3.4-1 (Continued)

State and Federally Listed Plants and Animals Known from the District[a]

Federal/ State Status	Scientific Name	English Name	Counties
-/SE	*Haliaeetus leucocephalus*	bald eagle	LA, RIV, SBD
FT/-	*Helianthemum greenei*	island rush-rose	LA
FE/-	*Lanius ludovicianus mearnsi*	San Clemente loggerhead shrike	LA
-/ST	*Laterallus jamaicensis coturniculus*	California black rail	LA, ORA
FE/-	*Lesquerella kingii ssp. bernardina*	San Bernardino Mtns. bladderpod	SBD
-/SE	*Limnanthes gracilis ssp. parishii*	Parish's meadowfoam	RIV
FE/SE	*Lithophragma maximum*	San Clemente Is. woodland star	LA
-/SE	*Lotus argophyllus var. adsurgens*	San Clemente Is. bird's-foot trefoil	LA
FE/SE	*Lotus dendroideus var. traskiae*	San Clemente Island lotus	LA
FE/SE	*Malacothamnus clementinus*	San Clemente Island bush-mallow	LA
-/SE	*Melanerpes uropygialis*	Gila woodpecker	RIV, SBD
-/SE	*Micrathene whitneyi*	elf owl	RIV, SBD
FE/ST	*Nasturtium gambelii*	Gambel's water cress	LA, ORA, SBD
FT/-	*Navarretia fossalis*	Moran's navarretia	LA, RIV
FE/-	*Oncorhynchus mykiss irideus*	southern steelhead – So. Calif. ESU	LA, RIV
FE/SE	*Orcuttia californica*	California Orcutt grass	LA, RIV
FE/ST	*Ovis canadensis nelsoni DPS*	peninsular bighorn sheep	RIV
-/SE	*Passerculus sandwichensis beldingi*	Belding's savannah sparrow	LA, ORA
FE/SE	*Pentachaeta lyonii*	Lyon's pentachaeta	LA
FE/-	*Perognathus longimembris pacificus*	Pacific pocket mouse	LA, ORA
FE/-	*Poa atropurpurea*	San Bernardino blue grass	SBD
FT/-	*Polioptila californica californica*	coastal California gnatcatcher	LA, ORA, RIV, SBD
FE/SE	*Rallus longirostris levipes*	light-footed clapper rail	ORA
FE/ST	*Rallus longirostris yumanensis*	Yuma clapper rail	RIV, SBD
FT/-	*Rana draytonii*	California red-legged frog	LA, RIV, SBD
FE/-	*Rana muscosa*	Sierra Madre yellow-legged frog	LA, RIV, SBD
FE/-	*Rhaphiomidas terminatus abdominalis*	Delhi Sands flower-loving fly	RIV, SBD
FE/-	*Sibara filifolia*	Santa Cruz Island rock cress	LA,
FE/SE	*Sidalcea pedata*	bird-foot checkerbloom	SBD
FE/SE	*Sternula antillarum browni*	California least tern	LA, ORA,

TABLE 3.4-1 (Concluded)

State and Federally Listed Plants and Animals Known from the District[a]

Federal/ State Status	Scientific Name	English Name	Counties
FE/-	*Streptocephalus woottoni*	Riverside fairy shrimp	ORA, RIV
-/ST	*Synthliboramphus hypoleucus*	Xantus' murrelet	LA
FE/-	*Taraxacum californicum*	California dandelion	SBD
FE/SE	*Thelypodium stenopetalum*	slender-petaled thelypodium	SBD
FT/-	*Trichostema austromontanum ssp. compactum*	Hidden Lake bluecurls	RIV
FT/SE	*Uma inornata*	Coachella Valley fringe-toed lizard	RIV
FE/ST	*Urocyon littoralis catalinae*	Santa Catalina Island fox	LA
-/ST	*Urocyon littoralis clementae*	San Clemente Island fox	LA
FT/ST	*Verbesina dissita*	big-leaved crownbeard	ORA
FE/SE	*Vireo bellii pusillus*	least Bell's vireo	LA, ORA, RIV, SBD
FT/-	*Xantusia riversiana*	island night lizard	LA

[a]Note – Many additional species in the district have other types of special legal status.

Regional Functioning and Linkages

During the last several decades, attention toward the region's biological resources has grown beyond species-by-species and park-by-park management to a broader recognition of biological functions and values provided by the environment, as well as management for ecosystem health. Few, if any major new wildland areas, are likely to be designated in the region.[5] There is also ample evidence within the region that small to medium-sized reserves are failing to maintain viable populations of target species in isolation.

Therefore, much emphasis is now being placed on the viability of the existing open-space network by addressing both linkages (i.e., wildlife corridors, landscape-level functions) and management of cumulative, larger-scale issues. The latter issues include the effects of air quality, water quality, hydrologic regimes, fire cycles, invasive species, and light and noise pollution. In comparison with decades past, both regional and project-level mitigations now frequently address larger-scale values through strategic restoration, mitigation banking, and regional planning. The potential for conflicts, as well as the opportunities for cooperation in natural resource management, increase the value of

[5] Beier, P., K. L. Penrod, C. Luke, W. D. Spencer, and C. Cananero, *South Coast Missing Linkages: Restoring Connectivity to Wildlands in the Largest Metropolitan Area in the USA*, Chapter 22, pp. 555-586 in K. J. Crooks and M. Sanjayan, Connectivity Conservation, Conservation Biology 14, Cambridge Univ. Press, Cambridge, UK, 2006.

integrating efforts among the multitude of governmental and non-governmental entities at all levels.

REGULATORY SETTING

Federal

Many federal processes (e.g., permitting of impacts to wetlands jurisdiction under Section 404 of the Clean Water Act) trigger the need for processing and review under federal environmental laws that address biological resources. However, the following discussion presents only the major laws that deal directly with management and protection of biological resources.

Certain laws apply only when a particular project is "federalized" (i.e., when the action affects federal lands, will use federal funding, or requires a discretionary federal action, such as a Clean Water Act permit). The laws presented below for which federalization is an important trigger are the National Environmental Policy Act (NEPA), the Fish and Wildlife Coordination Act, and Executive Orders. The specific process under which projects are addressed under the federal Endangered Species Act also depends on whether a project is federalized.

Migratory Bird Treaty Act

This law, based on a series of treaties between the United States and other countries, makes it unlawful at any time, by any means or in any manner, to take (pursue, hunt, take, capture, or kill) migratory birds. Nearly all native birds are thus protected. The law applies to the destruction of active nests or eggs, as well as to activities that directly or indirectly cause the abandonment of active nests of covered species. Inactive nests of most, but not all, covered species may be removed.

Habitat destruction and degradation that do not result in take, as defined above, are not prohibited, and a permit process allows for intentional take where human safety or substantial property loss is at immediate risk. Indirect take, such as accidental destruction of active nests through project construction activities, cannot be allowed under the permit process. Projects that may result in take must apply reasonable avoidance measures, such as either avoiding the core nesting season for birds in the region or having a qualified biologist conduct a nesting bird survey and restricting work to when no nesting is present.

Bald and Golden Eagle Protection Act

This act provides for the protection of the bald eagle and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 U.S.C. 668(a); 50 CFR 22). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (16 U.S.C. 668c; 50 CFR 22.3). The U.S. Fish and Wildlife Service has prepared the "Bald Eagle Management Guidelines" to help landowners, land managers and others to meet the intent of this Act.

National Environmental Policy Act

NEPA declares a continuing federal policy "to use all practicable means and measures...to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations." NEPA also directs "a systematic, interdisciplinary approach" to planning and decision-making and requires environmental statements for "major Federal actions significantly affecting the quality of the human environment." Implementation regulations by the Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508) require federal agencies to identify and assess reasonable alternatives to proposed actions that would restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of federal actions.

The Fish and Wildlife Coordination Act

This act applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with USFWS and the appropriate state wildlife agency. Provisions of the act are implemented through the NEPA process and the Clean Water Act Section 404 permit process.

Federal Endangered Species Act

This complex act provides guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. "Take" is defined in Section 3 of the Act as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Section 9 extends prohibition against take to listed endangered species, and protections are also routinely applied for listed threatened species. Note that unlike many other laws protecting species, prohibitions apply to adverse habitat modifications that can be clearly tied back to effects on the species. A minority of species currently have "critical habitat" designated; where projects are federalized, potential impacts to designated critical habitat must also be addressed.

Section 10 provides mechanisms to permit take by non-federal entities, including Habitat Conservation Plans that may cover one to many species. Section 7 requires federal agencies in consultation with, and with the assistance of, the Secretary of the Interior to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. Where a proposed project is determined to affect federally listed species, compliance with Section 7 of the Federal Endangered Species Act (FESA) rather than Section 10 is typically necessary, though this can be complex. Finally, for many projects it may be useful to note that, unless federalized, prohibitions against take to not apply to federally listed plants.

Executive Order 13112 – Invasive Species

On February 3, 1999, President Clinton signed Executive Order 13112, requiring federal agencies to combat the introduction or spread of invasive species in the United States. Federal agencies involved in implementing, funding, or approving projects generally use the state's noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

State

California Environmental Quality Act

CEQA establishes state policy to prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures. CEQA applies to projects directly undertaken, financed, or permitted by state and local lead agencies. Regulations for implementation are found in the state CEQA guidelines published by the state resources agency (Office of the Secretary).

Lake or Streambed Alteration Program

Under California Fish and Game Code Sections 1600–1616, the California Department of Fish and Game (CDFG) has authority to regulate work that will substantially divert or obstruct the natural flow—or substantially change or use any material from the bed, channel, or bank—of any river, stream, or lake. CDFG also has authority to regulate work that will deposit or dispose of debris, water, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. This regulation takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to all activities, including those that do not involve government approvals at any level.

Unlike the federal Clean Water Act, whose primary purpose is to protect water quality, the Lake or Streambed Alteration Program is intended to preserve fish and wildlife habitat, and is thus centrally is a biological resource protection law.

Porter-Cologne Water Quality Control Act

Under this Act, the geographically relevant Regional Water Quality Control Board is empowered to regulate all activities that may affect "waters of the State," and the "best and highest uses" thereof (typically as defined under the relevant Basin Plan) through dredging, filling, or discharging materials. This includes those that lack significant nexus with traditionally navigable waters under the federal Clean Water Act. Note that uses that may be addressed by the regional boards under this process can and often do include habitat supporting native wildlife and plants.

California Endangered Species Act

This act establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The California Endangered Species Act (CESA) prohibits activities that would result in take of listed or candidate, threatened or endangered species. Take under this act is similar to that under FESA with the exception of normal agricultural practices and that indirect harm (e.g., habitat modification) is not generally considered take.

There are no state agency consultation procedures under CESA. For projects that affect species that are both state and federally listed, compliance with FESA will also satisfy CESA if the CDFG determines that the federal incidental take authorization is consistent with CESA under California Fish and Game Code Section 2080.1. For projects that would result in take of a state-only listed species, CDFG must provide a take permit under Section 2081(b).

Natural Communities Conservation Program (NCCP). This program, implemented under the Natural Communities Conservation Planning Act (California Fish and Game Code Sections 2800 through 2835), is broader in its orientation and objectives than the California and Federal Endangered Species Acts. The primary objective of the NCCP program is to conserve natural communities at the ecosystem scale while accommodating compatible land use. The program focuses on the long-term stability of wildlife and plant communities and including key interests in the process. It is intended for large-scale, long-term planning efforts, and provides an alternate mechanism for take of species protected under the California Endangered Species Act.

Native Plant Protection Act

Provisions of NPPA prohibit the taking of special-status plants from the wild and require notification of CDFG at least 10 days in advance of any change in land use. This allows CDFG to salvage listed plant species that would otherwise be destroyed.

California Desert Plant Protection Act

This act protects certain non-listed, perennial California desert native plants from unlawful harvesting on both public and privately owned lands. It applies throughout counties that include desert areas. Harvest, transport, sale, or possession of specific native desert plants is prohibited unless a person has a valid, county-level permit, or wood receipt, and the required tags and seals. Certain types of projects are exempt, including transportation and mining.

State Fully Protected Species

The California legislature first began to designate species as “fully protected” well prior to the creation of the federal and California Endangered Species Acts. Lists of fully protected species were initially developed to protect those animals viewed by legislators as rare or facing possible extinction, and included particular species of fish, mammals, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under CESA and/or FESA. The regulations that implement the Fully Protected Species Statute (Fish and Game Code Section 4700) provide that fully protected species may not be taken or possessed at any time and prohibits issuance of take permits except for necessary scientific research.

<u>State Protections for Native Birds</u>

California Fish and Game Code Sections 3503, 3503.5, 3505, 3800, and 3801.6 protect all native birds, birds of prey, and all nongame birds, including their eggs and nests, that are not already listed as fully protected and which occur naturally within the state. Take prohibition is similar to that under the federal Migratory Bird Treaty Act.

<u>California Coastal Act.</u>

The California Coastal Act (CCA) of 1976 was enacted to regulate development projects within California's Coastal Zone. The act includes requirements that protect biological resources through various control measures, which are typically implemented at the local planning level through local coastal programs (LCPs) or land use plans (LUPs). The California Coastal Act protects many biological resources through a broad definition of wetlands as, "...lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, swamps, mudflats, and fens." (Pub. Res. Code §30121)

For local jurisdictions that do not have an approved LCP, regulation of development projects remains under the jurisdiction of the California Coastal Commission (CCC).

Local

<u>Counties and Cities</u>

The geographic area encompassed by the district includes numerous cities and unincorporated communities in the counties of Los Angeles, Orange, San Bernardino, and Riverside. By law, each of these counties and incorporated cities has prepared a general plan, establishing local land use policies and goals. Many of these general plans also establish local policies related to recognition and protection of biological resources within their communities or sub-planning areas, and may include, for example, ordinances protecting native trees of certain species and/or sizes, and special review of projects that may affect resources of existing parks or open spaces.

<u>Local Coastal Programs</u>

The CCC and the local governments along the coast share responsibility for managing the state's coastal resources. Through coordination with the CCC, coastal cities and counties develop LCPs. These programs are the primary means for carrying out the policies of the California Coastal Act at the local level. In general, these policies are intended to promote public access and enhance recreational use of the coast as well as protection of natural resources in the coastal zone. Examples of counties, cities and local jurisdictions within the district that do have an approved LCP or LUP include Los Angeles County and the County of Orange, and the cities of Santa Monica, El Segundo, Manhattan Beach, Hermosa Beach, Redondo Beach, Palos Verdes Estates, Rancho Palos Verdes, Long Beach, Avalon, Huntington Beach, Newport Beach, Irvine, Laguna Beach, Laguna Niguel, Dana Point, and San Clemente.

Following approval by the CCC, an LCP is certified and the local governments implement the programs. LCPs include two main components, a Land Use Plan and an Implementation Plan. These components may include policies or regulations that apply to preservation of biological resources within the coastal zone.

SUBCHAPTER 3.5

EXISTING SETTING - CULTURAL RESOURCES

INTRODUCTION

This section describes the paleontological, archeological, and historic resources in the Southern California Association of Governments (SCAG) region.[1] The SCAQMD is encompassed within the SCAG region and includes Orange County and portions of Los Angeles, Riverside and San Bernardino Counties.

ENVIRONMENTAL SETTING

Paleontological Resources

Paleontological resources are fossilized remains of non-human organisms that lived in the region in the geologic past. Paleontological sites and fossils are non-renewable resources that are important in our understanding of the prehistory and the geologic development of Southern California. Many paleontological sites include remains of species that are now extinct. Paleontological sites are predominantly found in sedimentary rock deposits and alluvial gravels, and most of the region is composed of these sedimentary deposits. Paleontological resources are most easily found in areas that have been uplifted and eroded, and they can be found anywhere that subsurface excavation is being carried out. Ancient marine fossils have been found throughout the region, particularly in exposed canyon areas, streambeds, along road cuts. For example, they have been found in the Santa Monica Mountains and beneath the streets of Los Angeles during storm drain and subway construction. The following types of paleontological resources are known to exist within the SCAG region:

- True Fossils: Lithified or replaced remains of plants and animals preserved in a rock matrix (e.g., microfossils, shells, animal bones and skeletons, and whole tree trunks);
- Trace Fossils: Molds, casts, tracks, trails and burrow impressions made in soft clays and muds which subsequently were turned to stone, preserving the images of past life (e.g., shells, footprints, leaf prints, and worm tubes);
- Breas: Seeps of natural petroleum that trapped extinct animals and preserved and fossilized their remains.

Both marine and land vertebrate and invertebrate fossils are found in the region. Fossils and their associated geologic formations are the matrix in which most fossils are found. These formations are different from modern soils and cannot be correlated with soil maps, which depict a thin veneer of surface soils. Geologic formations form complex relationships below the surface and may range in thickness from a few feet to hundreds of

[1] Draft 2008 Regional Transportation Plan Program Environmental Impact Report. Southern California Association of Governments. January 2008.

thousands of feet. Geologic maps (available through the U.S. Geological Survey (USGS) and the California Geological Survey (CGS)) show the surface expression of geologic formations along with other geologic features such as faults, folds, and landslides. Sedimentary formations were initially deposited one atop the other. Over time the layers have been squeezed, tilted, folded, cut by faults and vertically and horizontally displaced, so that today, any one rock unit does not usually extend in a simple horizontal layer. If a sensitive formation bearing fossils can be found at the surface in an outcrop that same formation may extend many feet down into the ground and also extend for miles just below the surface. Thus, predicting which areas are paleontological sensitive is difficult. Paleontologists consider all vertebrate fossils to be of significance. Fossils of other types are considered significant if they represent a new record, new species, an oldest occurring species, the most complete specimen of its kind, a rare species worldwide, or a species helpful in the dating of formations. Fossil bearing sedimentary formations and crystalline basement rocks (metamorphic & plutonic) overlain by sedimentary and volcanic rocks are prevalent throughout Southern California. The exact locations of these formations are considered proprietary to help prevent the removal or destruction of these important, non-renewable resources.

Archaeological Resources

Archaeological resources are the physical remains of past human activity, and humans have occupied Southern California for thousands of years. The region is rich in archaeological resources that range from the early prehistoric period to the historic period. Detailed information is considered proprietary by State law and the location of known archaeological sites is confidential to help prevent scavenging of artifacts. Table 3.5-1 lists these resources by county. Some of the sites have been made public in county, regional, state, and federal parks, or listed on public registers. These include:

- The site of the Puvunga Indian Village (NR), Los Angeles County
- Vasquez Rocks (NR), Los Angeles County
- The Black Star Canyon Indian Village Site (CHL-217), Orange County
- The Fairview Indian Site (NR), Orange County
- Desert Intaglios (CHL-101), Riverside County
- Site of the Indian Village of Pochea (CHL-104), Riverside County
- Carved Rock (CHL-187), Riverside County
- Painted Rock (CHL-190), Riverside County
- The Hemet Maze (CHL-557), Riverside County
- The Calico "Early Man" Site San Bernardino County

TABLE 3.5-1

Archaeological Site Distribution

County	Site Distribution
Los Angeles County	3,752
Orange County	1,673
Riverside County	16,600
San Bernardino County	22,000
TOTAL	**43,425**

Note: Only the counties that are part of the district are shown, and the points tabulated are inclusive of the county as a whole, and not only the district region.

The SCAG region was occupied during both the prehistoric and protohistoric periods; therefore archaeological sites are widespread and numerous. Rocky outcrops, river and stream drainages, and coastal strips were often prime locations for Native American village sites or processing camps. These locations now include highly urbanized locations, such as cities, and undeveloped areas of the high desert. Often archaeological sites are exposed on the ground's surface. However, some sites have extensive depth or are covered by topsoil, and it is possible that construction may not disturb the surface soils by more than a foot or two, thereby protecting remains even after an area has been fully urbanized. In 1998 for example, a large undisturbed Native American burial ground, dating to the Protohistoric Period, was exposed during construction at the ARCO Refinery in Los Angeles. The refinery had been there for seventy-five years, yet the burial level was located under three to five feet of flood deposits from the nearby Los Angeles River.

Historical Resources

In contrast to archaeological sites, the location of historic sites is open to the general public and can be found in registries found at the federal, state, county, and city levels. Additionally, registries are maintained by local and regional historical societies.

Federal Registers

The National Register of Historic Places (NRHP) is the nation's official list of cultural resources worthy of preservation. It is administered by the National Park Service, which is part of the U.S. Department of the Interior. The NRHP is made up of all historic areas in the National Park System, National Historic Landmarks, and properties across the country that have been nominated by governments, organizations, and individuals because they are significant to the nation, to a state, or to a community. The NRHP was authorized under the National Historic Preservation Act of 1966. The National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. There are over 85,000 listings in the register nationally. There are several hundred listings on the NRHP for the SCAG region.

National Historic Landmarks (NHLs) are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. The NHL program is authorized under Section 213 the National Historic Preservation Act of 1966. There are over 2,400 listings in the NHL. There are over 2,400 listings in the NHL. There are 28 listings on the NHL in the SCAG region. Table 3.5-2 summarizes the number of NRHP-listed resources and NHLs found in each county in the SCAQMD within the SCAG region.

TABLE 3.5-2

National Register and National Landmark in SCAG Region (Summary)

County	NRHP	NHL
Los Angeles County	426	20
Orange County	108	2
Riverside County	53	2
San Bernardino County	54	2
Total	**641**	**28**

Note: Only the counties that are part of the district are shown, and the points tabulated are inclusive of the county as a whole, and not only the district region.

Sources: National Park Service, National Historic Landmarks Program. (2007.). National Historic Landmarks Survey. Retrieved September 2007 from http://www.nps.gov/nhl/designations/listsofNHLs.htm; National Park Service, National Register of Historic Places (n.d.). National Register Information System Database. Retrieved June 2007from http://www.nps.gov/nr/research/nris.htm

State Registers

California Historical Landmarks (CHLs) are buildings, structures, sites, or places that have been determined to have statewide historical significance. The resource also must be approved for designation by the County Board of Supervisors or the City or Town Council in whose jurisdiction it is located; be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks. There are 1,044 listings in the CHL. There are over 200 listings on the CHL for the SCAG region. California Points of Historical Interest (PHI) are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. There are 850 PHI listings, of which over 200 are located in the SCAG region. These registers are administered by the California Office of Historic Preservation (OHP) and the State Historical Resources Commission (SHRC), which are a part of the California Department of Parks and Recreation. Table 3.5-3 contains a summary of the period and number of historical places and landmarks in the SCAQMD region within the SCAG region, found on the California Historical Landmarks register. Table 3.5-4 contains a summary of the number of Points of Historical Interest found in each county.

TABLE 3.5-3
California Historical Landmarks in SCAG Region (Summary)

County	Pre-European	Spanish	Mexican	American	Total
Los Angeles County	3	17	13	65	98
Orange County	0	2	5	17	24
Riverside County	4	5	5	15	29
San Bernardino County	2	5	7	27	41
				Total	**192**

Note: Only the counties that are part of the district are shown, and the points tabulated are inclusive of the county as a whole, and not only the district region.

Source: California Department of Parks and Recreation, Office of Historic Preservation. (n.d.). California state historic landmarks listed by county. Retrieved June 12, 2007 from http://ceres.ca.gov/geo_area/counties/lists/landmarks_county.html

TABLE 3.5-4
California Points of Historical Interest in the SCAG Region (Summary)

County	Points Of Historical Interest
Los Angeles County	64
Orange County	21
Riverside County	72
San Bernardino County	119
Total	**276**

Note: Only the counties that are part of the district are shown, and the points tabulated are inclusive of the county as a whole, and not only the district region.

Source: California State Parks, Office of Historic Preservation, Patricia Ambacher, State Historian 1. Registration Unit. September 24, 2007.

Local Registers.

Registries may also be maintained by county and city commissions. Examples of these types of organizations include the Riverside County Historical Commission, Santa Ana Historic Resources Commission (516 Historical Properties on their register and a historic district that is composed of many historic structures and has zoning protection for its structures), and Santa Monica Landmarks Commission (with a registry that contains 89 landmarks, 2 historic districts, and more than 1,350 potential historic resources having been designated or identified).

One example of local level preservation is the City of Riverside's preservation ordnance and creation of the Cultural Heritage Board. The California State Office of Historic

Preservation has recognized the program with its designation of Riverside as a Certified Local Government (CLG). This distinction ensures that the City's preservation program meets all state and federal standards. The Historic Preservation Program is administered through the Planning Division of the Community Development Department.[2]

CULTURAL HISTORY OF THE SCAG REGION

Prehistoric Period (Prior to 1542)[3]

The prehistoric occupation of southern California is divided chronologically into four temporal phases or horizons. Horizon I, or the Paleo-Indian Horizon, began at the first appearance of people in the region (approximately 12,000 years ago) and continued until about 7000 before present (BP). Although little is known about these people, it is assumed that they were semi-nomadic and subsisted primarily on game.

Horizon II, also known as the Millingstone Horizon or Encinitas Tradition, began around 7000 BP and continued until about 3500 BP. The Millingstone Horizon is characterized by widespread use of milling stones (manos and metates), core tools, and few projectile points or bone and shell artifacts. This horizon appears to represent a diversification of subsistence activities and a more sedentary settlement pattern. Archaeological evidence suggests that hunting became less important and that reliance on collecting shellfish and vegetal resources increased.

Horizon III, the Intermediate Horizon or Campbell Tradition, began around 3500 BP and continued until about 1350–1150 BP. Horizon III is defined by a shift from the use of milling stones to increased use of mortar and pestle, possibly indicating a greater reliance on acorns as a food source. Projectile points become more abundant and, together with faunal remains, indicate increased use of both land and sea mammals.

Horizon IV, the Late Horizon, which began around 1350–1150 BP and terminated with the arrival of Europeans, is characterized by dense populations; diversified hunting and gathering subsistence strategies, including intensive fishing and sea mammal hunting; extensive trade networks; use of the bow and arrow; and a general cultural elaboration.

Protohistoric Period (1542 to 1769)

Although early Spanish explorers and mission fathers recorded information on the local Native American populations, professional anthropological studies did not begin until the end of the 19th Century after most of the SCAG region Indian groups had been either assimilated by Spanish, Mexican, and American cultures or relocated to reservations. The region once was the home to at least eleven distinct Native American groups. These

[2] "Historic Preservation in Riverside." Community Development Department. Historic Resources Division. City of Riverside. www.riversideca.gov/historic. Accessed online August 2009.
[3] Morrato, Michael. 1984. *California Archaeology.* Academic Press. San Diego, California.

include the Cahuilla, Chumash, Gabrielino, Halchidhoma, Kitanemuk, Luiseno, Mohave, Quechan, Serrano, Southern Paiute, Tataviam, and Tipai. The territorial boundaries of the Native Americans who were residing in Southern California at the time of first European contact do not coincide with today's political boundaries. Moreover, many tribal boundaries overlapped and most groups migrated within their general boundaries throughout the year. The federal government established reservations in Southern California between 1875 and 1891. This includes the Martinez, Fort Yuma, and Colorado River reservations in Imperial County. In Riverside County are Chemehuevi, Fort Mojave, Torres, Cabazon, Augustine, Santa Rosa, Ramona, Pechanga, Soboba, Agua Caliente, Mission Creek, and Morongo tribes. The two reservations in San Bernardino County are the San Manuel and Twenty-nine Palms reservations. No reservations were established in Los Angeles, Ventura, and Orange Counties. It was believed at the time that the local Native American groups in those counties had become extinct.

Historic Resources

Historic resources are classified into three distinct time periods of the region's history: the Spanish Period, the Mexican Period, and the American Period.

Spanish Period (1769-1822)

Exploration of California first occurred in 1540 when a land expedition under the command of Hernando de Alarcon traversed inland along the Colorado River. Two years later, Juan Rodriquez Cabrillo was commissioned by the Spanish government to investigate the western shores of the newly acquired territory. In the following two centuries, little interest was given to California. By the late 18th Century, European political powers created renewed interest in California. Military expeditions from Great Britain, France and Russia began investigating the resources along the western shores of the entire North American continent. The Spanish government, realizing that settlement by any of these foreign parties north of Mexico could become a threat, decided it was time to establish their own settlements in California. By1769, plans were put in place to found a series of forts (presidios) and Catholic missions along the Alta California coast extending as far north as Monterey Bay. Over the course of the next half-century, four presidios, twenty missions and three towns were established. The forts were located at San Diego, Santa Barbara, Monterey and San Francisco. The towns were founded at Los Angeles (1781), San Jose (1777) and Branciforte (1797), near Santa Cruz. The settlement at Branciforte failed but all the others were successful. During the early decades of the 19th Century, independence groups sprang up throughout the Spanish Empire. Mexico declared its independence in 1810. This attempt failed, but a second attempt ten years later succeeded. At that time, California was considered a province of Mexico. Throughout the Spanish Period, California remained largely unsettled.

Mexican Period (1822-1848)

When Mexico gained political independence from Spain, little changed for the citizens of California. The defining event from this time period was the secularization of the Catholic Missions in 1834, following the Act of Secularization of 1833. Over the next sixteen years, all of the former mission lands were granted to secular landowners. Secularization proved disastrous for the Native Americans who were part of the mission system. The mission system made the indigenous population completely dependent on the missions and when they closed the Indians were left to fend for themselves. During the two-decade period between the 1830s until 1848, one government after another ruled California. Meanwhile, the United States pushed west across the North American continent. By 1846, a number of Americans had settled in California, often marrying into landed Hispanic families. Between 1835 and 1846 relations between Mexico and the United States deteriorated. In 1846, a revolt was attempted in Northern California. Although it was quickly thwarted, it planted the seeds for the eventual insurrection that succeeded. Within three weeks, an American naval force appeared off the California coast and formally proclaimed rule over the presidios and coastal towns. On January 13, 1847, Captain John C. Fremont accepted the surrender of Governor Pio Pico and Commander Jose Maria Flores. The United States annexed California by the Treaty of Guadalupe Hidalgo in 1848, ending the Mexican War and beginning the American Period.

American Period (1848 - Present)

Shortly after the United States annexed California, gold was discovered in central California, changing the state forever. Within months of the news, foreigners poured into California. At the same time, the cattle industry flourished, causing some rancho owners to become wealthy. However, the legality of the land grants issued by the Spanish and Mexican governments came into question. It took the American courts years to decide all the cases. In the meantime, many of the Mexican landowners lost their great ranchos through other legal maneuvers or downright deception. By the time of the American Civil War (1861-1865), Americans were the dominant group in Southern California, both politically and economically. Their feelings toward the war were divided, but generally Southern sympathizers outnumbered Northern supporters. During this same decade, a drought struck Southern California, devastating the cattle industry. As a result many of the former cattle ranches were sold off and used for agricultural purposes. The railroad to southern California was completed during the 1870s, resulting in the first great land boom. New towns began to spring up along the new rail lines in places once thought too desolate soon attracted settlers, such as the Mojave Desert. Exploration for mineral deposits soon produced new strikes in places such as Calico in San Bernardino County in 1881. During the next several decades, many such mining camps were established in the eastern counties, but most of these camps remained in existence only for a short time. In the twentieth century the region underwent a metamorphosis from a primarily agricultural region into an urban metropolis. Southern California has attracted and maintained millions of people and employment opportunities and has developed into the second-largest metropolitan region in the country.

REGULATORY SETTING

Cultural resources in the six-county SCAG region include archaeological sites of prehistoric or historic origin, fossil deposits of paleontological importance, and standing structures with national, state, or local significance. These resources are regulated at the federal, state and local levels as discussed below.

Federal Agencies and Regulations

Federal Historic Preservation Laws

There are a number of federal laws and portions of laws, regulations, and Presidential executive orders that pertain to the preservation of the Nation's cultural heritage. These laws were developed over the course of the 20th century, beginning with the protection of cultural sites on federal lands. Today, many aspects of the nation's cultural heritage are recognized, protected, and interpreted in national parks, other public lands, and communities across the nation. The following are key laws related to the preservation of our cultural heritage:

- American Indian Religious Freedom Act of 1978 (42 USC 1966);
- Antiquities Act of 1906 (16 USC 431-433);
- Archeological and Historic Preservation Act of 1974 (16 USC 469);
- Archaeological Resources Protection Act of 1979 (ARPA) (16 USC 470);
- Historic Sites Act of 1935 (16 USC 461-467);
- National Environmental Policy Act of 1969 (NEPA) (42 USC 4321-4347);
- National Historic Preservation Act of 1966 (NHPA), (16 USC 470);
- Native American Graves Protection and Repatriation Act NAGPRA), (25 USC 3001-3013);
- Reservoir Salvage Act of 1960 (16 USC 469); and
- United States Department of Transportation Act of 1966 (Section 4[f]), (49 USC 303).

Implementing these laws are the following:

- Advisory Council on Historic Preservation, Protection of Historic and Cultural Properties (36 CFR 800);
- National Register of Historic Places (36 CFR 60);
- National Register of Historic Places, Determinations of Eligibility for Including in the National Register of Historic Places (30 CFR 63);
- US Department of Interior, NAGPRA Regulations (43 CFR 10);
- US Department of Transportation, Section 4(f) Regulations (23 CFR 771);
- US Secretary of Interior Standards for Treatment of Historic Properties (36 CFR 68); and
- Executive Order 11593, Protection and Enhancement of the Cultural Environment, 1971.

National Environmental Policy Act (NEPA)

NEPA (42 USC 4321 et seq.) became law on January 1, 1970 and mandates that all federal agencies carry out their regulations, policies, and programs in accordance with NEPA's policies of environmental protection. NEPA encourages the protection of all aspects of the environment and requires federal agencies to utilize a systematic, interdisciplinary approach to agency decision-making that will ensure the integrated use of natural sciences such as geology. NEPA, which either requires preparation of an Environmental Impact Statement (EIS) or Environmental Assessment (EA)/Finding of No Significant Impact (FONSI), addresses a wide range of environmental issues including the documentation of, and evaluation of potential impacts to, cultural and historic properties. When cultural or historic resources would be adversely affected, compliance includes an on-site survey by a qualified archaeologist or historian prior to construction. A report of findings would be included in the NEPA document and may be submitted to the State Historic Preservation Office (SHPO) for further consultation.

National Historic Preservation Act (NHPA)

The NHPA established laws for historic resources to "preserve important historic, cultural, and natural aspects of our national heritage, and to maintain, wherever possible, an environment that supports diversity and a variety of individual choice." The Antiquities Act of 1966, which aimed to protect important historic and archaeological sites, initiated historic preservation legislation. It established a system of permits for conducting archaeological studies on federal land, as well as setting penalties for noncompliance. This permit process controls the disturbances that may be caused to archaeological sites. New permits are currently issued under the Archeological Resources Protection Act (ARPA) of 1979. The purpose of ARPA is to enhance reservation and protection of archaeological resources on public and Native American lands.

Historic Sites Act of 1935 (HSA)

The HSA (16 USC 461-467) became law on August 21, 1935 and declared that it is national policy to "Preserve for public use historic sites, buildings, and objects of national significance." The NHPA expanded the scope to include important state and local resources. Provisions of NHPA established the National Register maintained by the National Park Service, advisory councils on Historic Preservation, State Historic Preservation Offices, and grants-in-aid programs. Section 106 of the NHPA requires all federal agencies to consult the Advisory Council before continuing any activity affecting a property listed on or eligible for listing on the National Register. The Advisory Council has developed regulations for Section 106, to encourage coordination of agency cultural resource compliance requirements under Executive Order 11593 and NEPA with those of Section 106.

American Indian Religious Freedom Act (AIRFA) and Native American Graves Protection and Repatriation Act (NAGPRA)

AIFRA (42 USC 1996) became law on August 11, 1978 and recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved. The remains of Native Americans are protected by NAGPRA (25 USC 3001 et seq.), which became law on November 11, 1990, and required that the excavation and disposition of remains is supervised by a designated "most likely descendent" as determined by the Native American Heritage Commission (see discussion of State Regulations below). Archeological and Historic Preservation Act (16 USC 469-469c-2) became law on June 27, 1960. The purpose of this Act is the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or any alteration of the terrain caused as a result of any federal construction project or federally licensed activity or program.

State Agencies and Regulations

Certain portions of California law are specifically concerned with the protection of cultural resources and archaeological human remains located on public or private land, including CEQA (Public Resources Code Section 21000); various Public Resources Code Sections 5020, 5029, 5097 including, but not limited to State-owned Historical Resources, California Register of Historical Resources, Archeological, Paleontological, and Historical Sites and Native American Historical, Cultural, and Sacred Sites; and Governor's Executive Order W-26-92.

California Environmental Quality Act (CEQA)

CEQA (Public Resource Code 21000 et seq. and CCR 15000 et seq.) was enacted in 1970 and is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. The impetus for CEQA can be traced to the passage of the first federal environmental protection statute, NEPA. The basic goal of CEQA is to develop and maintain a high-quality environment now and in the future, while the specific goals of CEQA are for California's public agencies to: identify the significant environmental effects of their actions, and, either avoid those significant environmental effects, where feasible or mitigate those significant environmental effects, where feasible. CEQA applies to certain activities of state and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." CEQA requires preparation of either an EIR or a Negative Declaration. When applicable, CEQA requires the evaluation and mitigation of impacts to paleontological, archeological and/or historic resources.

California Coastal Act (CCA)

The CCA (Public Resources Code, Sections 30000 et seq.) includes protection of archeological resources into Land Conservation Plans that regulate land uses within the coastal zone.

Other Provisions of Public Resources Code (PRC)

The State's cultural resources are regulated by the PRC. The PRC defines cultural preserves as "distinct areas of outstanding cultural interest" located in the State Park System for the protection of sites, buildings, or zones, which represent significant places or events in the flow of human experience in California. An historic resource includes, but is not limited to, "any object, building or structure, site, area, or place which is historically or archaeologically significant," or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Section 5097.5 of the PRC specifically defines unauthorized excavation, removal, destruction, etc., of archaeological, paleontological or historical features, on "Public Lands," as a misdemeanor. The California Administrative Code includes the following regulations, Title 14, State Division of Beaches and Parks, Section 4307: Archaeological Features: No person shall remove, injure, disfigure, deface, or destroy any object of paleontological, archaeological or historical interest or value. The California Penal Code, Title 14, part 1, Section 622 1/2 provides that injury, etc. to an object of archaeological or historical interest is punishable as a misdemeanor.

State Office of Historic Preservation (SHPO)

SHPO implements preservation laws regarding historic resources, and is responsible for the California Historic Resources Inventory (CHRI), which uses the National Criteria for listing resources significant at the national, state, and local level.

Native American Heritage Commission (NAHC)

Section 50907.9 of the PRC and Section 7050 of the Health and Safety Code authorizes the NAHC to regulate Native American concerns regarding the excavation and disposition of Native American cultural resources. Among its duties, the Commission is authorized to resolve disputes relating to the treatment and disposition of Native American human remains and items associated with burials. Upon notification of the discovery of human remains by a county coroner, the Commission notifies the Native American group or individual most likely descended from the deceased.

Local Agencies and Regulations

In addition to federal and state regulations, cities and counties in the SCAG region may also provide regulatory protection and advisement regarding cultural resources. The California's planning law requires each city and county to prepare a general plan containing required seven elements. One of these elements is a conservation element under which many agencies include policies for the projection of cultural and historical resources. Additionally, some agencies incorporate into their General Plans optional elements dealing with cultural or historic preservation issues.

SUBCHAPTER 3.6

EXISTING SETTING - ENERGY

INTRODUCTION

This section describes existing energy consumption and trends within the Southern California Association of Governments (SCAG) region.[1] The SCAQMD is encompassed within the SCAG region and includes Orange County and portions of Los Angeles, Riverside and San Bernardino Counties.

ENVIRONMENTAL SETTING

Energy Types, Sources and Providers

According to SCAG,[2] petroleum products supply approximately 40 percent of the energy demand in the U.S. Natural gas and coal supply approximately 23 percent each of the national energy demand, nuclear energy about 8 percent and renewable sources about 7 percent of energy use. Current annual energy consumption in the U.S. is approximately 100.7 quadrillion British thermal units (BTU), which represents approximately 22 percent of the world's energy consumption.

Petroleum and natural gas supply most of the energy consumed in California. Petroleum supplies 54 percent and natural gas supplies 33 percent of California's energy. In 2004, Californians consumed about 15.4 billion gallons of gasoline and 2.8 billion gallons of diesel fuel, an increase of nearly 50 percent over the last 20 years. Electricity generation requires nearly half of the natural gas consumed in California. Nearly all of the state's transportation system is fueled currently by fossil fuels.

Current annual energy consumption in California (for all purposes, including transportation) is approximately 8.4 x 10^{15} BTUs, which represents approximately 8.3 percent of the nation's total energy consumption. California consumes more energy than any other state in the U.S., except for Texas. However, in terms of energy consumption per person, California ranks 49th among the 50 states and the District of Columbia. Presented below is a discussion of the different energy sources and consumption patterns.[3]

Petroleum

The United States consumes approximately 25 percent of the world's oil, while making up 5 percent of the world's population. California consumes approximately 2 million barrels of oil per day or 2 percent of the world's oil consumption. The U.S. imports

[1] Draft 2008 Regional Transportation Plan Program Environmental Impact Report. Southern California Association of Governments. January 2008.

[2] Southern California Association of Governments (SCAG), *2008 Regional Transportation Plan (RTP), Final Environmental Impact Report (FEIR), Chapter 3.5 Energy*, 2008.

[3] *Ibid*.

approximately 60 percent of its oil. Canada provides the largest share of imported petroleum, with 1.8 million barrels per day, followed by Mexico with 1.6 million barrels per day and Saudi Arabia with 1.4 million barrels per day.

California as a state ranks fourth in crude oil reserves and crude oil production in the U.S. California also ranks first in gasoline consumption and jet fuel consumption and third in distillate fuel consumption. California relies on oil produced within the state, Alaska, and foreign nations to supply its refineries and produce the petroleum that is used in automobiles and for other purposes. The percentage of oil that is imported from foreign nations has increased dramatically in the past 20 years. For example, in 1994, California imported 49 million barrels of oil from foreign sources, and in 2006, California imported 295 million barrels from foreign sources. Of the total 655 million barrels of oil refined in 2006, 38.8 percent came from in-state oil production, 16.2 percent came from Alaska, and 45.0 percent came from foreign sources.

Most gasoline and diesel fuel sold in California for on-road motor vehicles is refined in California to meet state-specific formulations required by the California Environmental Protection Agency's (Cal/EPA) Air Resources Board (ARB). Major petroleum refineries in California are concentrated in three counties: Contra Costa County in northern California, Kern County in central California, and Los Angeles County in southern California. In Los Angeles County, petroleum refineries are located mostly in the southern portion of the county.[4]

Natural Gas

Eighty-five percent of the natural gas consumed in California comes from the southwestern U.S., the Rocky Mountains, and Canada. The remainder is produced in California. The district, within the larger SCAG region, is served primarily by the investor-owned Southern California Gas Company, a unit of Sempra Energy. A small portion of the region is served by a municipal gas utility, Long Beach Energy (part of the City of Long Beach). The Southern California Gas Company, a privately-owned utility company, provides natural gas service throughout the district, except for the City of Long Beach, the southern portion of Orange County, and portions of San Bernardino County. The service area for Long Beach Energy, a municipal utility and natural gas supplier owned and operated by the City of Long Beach, includes the cities of Long Beach and Signal Hill, and sections of surrounding communities, including Lakewood, Bellflower, Compton, Seal Beach, Paramount, and Los Alamitos. Long Beach Energy's customer load profile is 50 percent residential and 50 percent commercial/industrial. The majority of Long Beach Energy's supplies are purchased at the California border, primarily from the southwestern U.S. San Diego Gas & Electric Company (SDG&E) provides natural gas service to the southern portion of Orange County. In San Bernardino County, Southwest Gas Corporation provides natural gas service to Victorville, Big Bear, Barstow, and Needles. The Los Angeles Department of Water and Power (LADPW) utilizes natural gas for electrical generation in the City of Los Angeles.

[4] *Ibid*.

There is also a tightening of natural gas markets due to decreasing supplies and growing demand for natural gas, which makes up 25 percent of the nation's energy use and is by comparison, a relatively clean source of electricity compared to sources such as coal. The U.S. and California will lose a major source of natural gas imports by 2010 due to the decline of Canada's largest producing basin, the Western Sedimentary Basin, coupled with an approximately 2 percent projected average annual growth in Canada's domestic consumption. Although some research has shown a world peak in natural gas occurring a decade after oil, the U.S. and California could experience the effects sooner. For example, natural gas has become the preferred source of electricity generation, supplying over 40 percent of California's power. In addition, unlike oil, it is more difficult and expensive to import replacement natural gas from overseas − as it has to be liquefied for transport and then re-gasified for distribution. An increase in natural gas prices would negatively affect the economy, potentially leading to reduced sales and employment.[5]

Electricity

Power plants in California meet approximately 85 percent of the in-state electricity demand. Hydroelectric power from the Pacific Northwest provides another 2.6 percent, which is currently down due to drought conditions in recent years, and power plants in the southwestern U.S. provide another 13 percent. The relative contribution of in-state and out-of-state power plants depends upon, among other factors, the precipitation that occurred in the previous year and the corresponding amount of hydroelectric power that is available. Two of the largest power plants in California are located within the district: Alamitos and Redondo Beach. Both of these plants consume natural gas.

Local electricity distribution service is provided to customers within the district by one of two privately-owned utilities – either Southern California Edison Company (SCE) or San Diego-based Sempra Energy – or by a publicly-owned utility, such as the LADWP and the Imperial Irrigation district. Southern California Edison is the largest electricity utility in southern California, with a service area that covers all or nearly all of Orange, San Bernardino, and Ventura Counties, and most of Los Angeles and Riverside Counties. Sempra Energy provides local distribution service to the southern portion of Orange County.

The LADWP is the largest of the publicly-owned electric utilities in southern California. LADWP provides electricity service to most customers located in the City of Los Angeles. Other cities that operate their own electric utilities in the district include Burbank, Glendale, Pasadena, Azusa, Vernon, Anaheim, Riverside, Banning, and Colton. Two water districts provide local electric service to portions of the District: Imperial Irrigation District and Southern California Water Company. Imperial Irrigation District provides electricity to customers in the Coachella Valley portion of Riverside County. Southern California Water Company provides electric service to the community of Big

[5] *Ibid*.

Bear. Anza Electric Cooperative provides local distribution service to the Anza Valley area of southern Riverside County.[6]

Alternative and Renewable Energy Sources

Alternative fuels, as defined by the Energy Policy Act of 1992 (EPAct), include ethanol, natural gas, propane, hydrogen, biodiesel, electricity, methanol, and p-series fuels.[7] These fuels are being used worldwide in a variety of vehicle applications. Use of these fuels for transportation can generally reduce air pollutant emissions and can be domestically produced and, and in some cases, derived from renewable sources. The Energy Policy Act of 2005 directed the Department of Energy to carry out a study to plan for the transition from petroleum to hydrogen in a significant percentage of vehicles sold by 2020.

Alternative or renewable energy, including cogeneration, wind, geothermal, solar, biomass and biofuels, small hydroelectric, conversion technologies, distributed generation, and nuclear energy comprise another category of potential energy sources. Electricity supply reliability depends, in part, on the diversity of energy sources. In 1978, Congress passed the Public Utilities Regulatory Policies Act (PURPA). PURPA defines facilities that use alternative or renewable energy sources as "qualifying facilities." It provides financial incentives for their installation and requires utilities to sign long-term power purchase contracts with qualifying facilities. The California Public Utilities Commission (CPUC) has adopted contract incentives to assist qualifying facilities.

Qualifying facilities built within the district and beyond include wind and solar installations in Riverside and San Bernardino Counties and a number of cogeneration units around the southern California region. Original provisions of PURPA encouraged the construction of biomass-to-energy facilities, which use materials, such as agricultural and wood waste, as fuel for energy production. On or before March 1 of each year, each retail provider who makes a claim of specific purchases during the previous calendar year provides a filing to the Energy Commission, providing certain information about each electricity product for which a claim is made.[8] Cogeneration provides the most megawatts (MW) of energy from qualifying facilities for SCE with over 2,000 MWs under contract. Wind is the second largest source for energy from qualifying facilities with over 1,000 MWs.

Conversion technologies (CTs) refer to a diverse set of processes used to convert post-recycled, municipal solid waste to intermediate liquid, gas, or solid fuel products. The fuel products can then be combusted to produce energy. Conversion technology

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[6] *Ibid*.

[7] Formulated to be used alone or mixed in any concentration with gasoline, P-series fuels are clear liquid fuels, between 89 and 93 octane, designed to be used in flex-fuel vehicles (FFVs). They are a blend of 35 percent natural gas liquids (pentanes plus) and 45 percent ethanol, with the remaining 25 percent a biomass-derived co-solvent methyltetrahydrofuran (MeTHF). The biomass portion is utilized from grass and paper waste in addition to agricultural waste.

[8] Public Utilities Code , Section 398.5 and California Code of Regulations, Section 1394.

processes include (but are not limited to) the following: gasification (thermal conversion of solid organic material into gaseous fuel products), pyrolysis (anaerobic thermal conversion of solid organic materials into liquid fuel products), catalytic cracking (use of chemical catalysts to breakdown polymer plastics into diesel and gasoline), acid hydrolysis (acid treatment of biomass into sugar-based ethanol production), and anaerobic digestion (bacterial process yielding biogas through the fermentation of organic wastes). The public health impacts of conversion technologies are still being assessed, but CTs with appropriate controls and emissions technology produce lower emissions of criteria air pollutants (NO_x and SO_x) than either landfills or direct combustion incinerators. The environmental benefits of CT scenarios are dependent on their ability to achieve high conversion efficiencies and high materials recycling rates.

An important alternative to new central station fossil-fueled generation operated by public utility companies (such as LADWP or SCE), is distributed generation (DG), which includes both cogeneration and self-generation. DG is broadly defined as electricity produced on-site or close to a load center that is also interconnected with a utility distribution system. California has approximately 2,500 MWs of small scale renewable and non-renewable DG and has added an average of 100 MWs of new small scale DG capacity every year since 2001.

California receives approximately 15 percent of its energy from nuclear sources. The three plants that supply this energy include the Diablo Canyon Power Plant located near San Luis Obispo, the San Onofre Nuclear Generating Station located near San Clemente, and the Palo Verde Nuclear Generation Station located near Phoenix, Arizona.[9]

Consumptive Uses

Transportation

Transportation (i.e., the movement of people and goods from place to place) is an important end use of energy in California, accounting for approximately 40 percent of total statewide energy consumption in 2004, and 12 percent of total U.S. energy consumption.[10] Nonrenewable energy products derived from crude oil, including gasoline, diesel, kerosene, and residual fuel, provide most of the energy consumed for transportation purposes by on-road motor vehicles (i.e., automobiles and trucks), locomotives, aircraft, and ships. In addition, energy is consumed in connection with construction and maintenance of transportation infrastructure, such as highways, rail facilities, runways, andshipping terminals. Trends in transportation-related technology foretell increased use of electricity and natural gas for transportation purposes.

Transportation energy is derived from a wide variety of petroleum products. Automobiles and trucks consume gasoline and diesel fuel. Turbine aircraft consume

[9] Southern California Association of Governments (SCAG), *2008 Regional Transportation Plan (RTP), Final Environmental Impact Report (FEIR), Chapter 3.5 Energy*, 2008..

[10] Energy Information Administration, State Energy Profiles, California. (October 2007). Retrieved October 29, 2007 fromhttp://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=CA

kerosene fuel; trucks and locomotives consume diesel fuel; and ships consume residual fuel oil. The transportation sector consumes relatively minor amounts of natural gas or electricity but propelled mainly by air quality laws and regulations, technological innovations in transportation are expected to increasingly rely on compressed natural gas and electricity as energy sources. Biodiesel, derived from plant sources such as used vegetable oils, is a small but growing source of transportation fuel. Vehicles powered by fuels other than gasoline or diesel are referred to as "alternative fuel vehicles."[11]

Residential, Commercial, Industrial, and Other Uses

Major energy consumption sectors (in addition to transportation) include residential, commercial, industrial uses as well as street lighting, mining, and agriculture. Unlike transportation, these sectors primarily consume electricity and natural gas. Total annual electricity consumption in the SCAG region is approximately 123,678 million kWh (39,432 kWh for residential uses and 84,246 kWh for nonresidential uses).[12] The residential, commercial, and industrial sectors account for approximately 30, 39, and 19 percent, respectively, of total regional electricity consumption. The agriculture, mining and other uses account for another 14 percent.[13]

Within the residential sector, lighting, small appliances, and refrigeration account for most (approximately 60 percent) of the electricity consumption, and within the industrial and commercial sector, lighting, motors, and air cooling account for most (approximately 65 percent) of the electricity consumption. Electricity use by households varies depending on the local climate and on the housing type (i.e., single-family vs. multi-family), as per the four distinct geographic zones in the SCAG region: the cooler and more temperate coastal zone; an inland valley zone; the California central valley zone, and the desert zone, where temperatures are more extreme.

Californians consumed approximately 6 billion cubic feet per day of natural gas in 2006.[14] The California Energy Commission (CEC) expects residential natural gas use to increase by 1.3 percent per year and commercial natural gas use to increase by 1.8 percent per year. However, industrial natural gas demand is expected to plateau or decline in nearly all of the western states because industrial customers are the most likely to respond to currently rising natural gas prices. The most recent data from the CEC show that the residential sector uses the largest amount of natural gas, both across the state and in the SCAG region. Statewide, the industrial sector was second in the amount of natural gas consumed. The commercial sector falls behind residential, mining, and industrial uses in natural gas consumption in the SCAG region and statewide. The

[11] Southern California Association of Governments (SCAG), *2008 Regional Transportation Plan (RTP), Final Environmental Impact Report (FEIR), Chapter 3.5 Energy*, 2008.

[12] *Ibid.*

[13] California Energy Commission, California Energy Demand 2006-2016, Staff Energy Demand Forecast, Revised September 2005, Staff Final Report, CEC-400-2005-034-SF-ED2

[14] *Ibid*. Energy Almanac, Average Per Capita Natural Gas Consumption by State 2006. Accessed on July 10, 2009. Available http://energyalmanac.ca.gov/naturalgas/per_capita_consumption.html

agricultural sector accounts for only 1 percent of the natural gas use statewide and in the SCAG region.[15]

Consumption Reduction Efforts

There are various policies and initiatives to reduce petroleum vehicle fuel consumption and increase the share of renewable energy generation and use in the region. These strategies include energy efficient building practices, smarter land use with access to public transportation, increasing automobile fuel efficiency, and participating in energy efficiency incentive program. All publicly-owned utilities and most municipal-owned utilities that provide electric and natural gas service also administer energy conservation programs. These programs typically include home energy audits; incentives for replacement of existing appliances with new, energy-efficient models; provision of resources to inform businesses on development and operation of energy-efficient buildings; and construction of infrastructure to accommodate increased use of motor vehicles powered by natural gas or electricity.[16]

REGULATORY SETTING

Federal and state agencies regulate energy use and consumption through various means and programs. On the federal level, the U.S. Department of Transportation (USDOT), U.S. Department of Energy, and U.S. Environmental Protection Agency (USEPA) are three agencies with substantial influence over energy policies and programs. Generally, federal agencies influence energy consumption through establishment and enforcement of fuel economy standards for automobiles and light trucks, through funding of energy-related research and development projects, and through funding for energy-related infrastructure projects.

On the state level, the CPUC and CEC are the main agencies with authority over different aspects of energy. The CPUC regulates privately owned utilities in the energy, rail, telecommunications, and water fields. The CEC collects and analyzes energy-related data, prepares statewide energy policy recommendations and plans, promotes and funds energy efficiency programs, and regulates the power plant siting process. Some of the more relevant federal and state energy related laws and plans are presented below.[17]

Federal

Public Utility Regulatory Policies Act of 1978 (PURPA) (Public Law 95-617)

PURPA was passed in response to the unstable energy climate of the late 1970s. PURPA sought to promote conservation of electric energy. Additionally, PURPA created a new

[15] Southern California Association of Governments (SCAG), *2008 Regional Transportation Plan (RTP), Final Environmental Impact Report (FEIR), Chapter 3.5 Energy*, 2008...
[16] *Ibid*.
[17] *Ibid*.

class of nonutility generators, small power producers, from which, along with qualified co-generators, utilities are required to buy power.

PURPA was in part intended to augment electric utility generation with more efficiently produced electricity and to provide equitable rates to electric consumers. Utility companies are required to buy all electricity from qualifying facilities (Qfs) at avoided cost (avoided costs are the incremental savings associated with not having to produce additional units of electricity). PURPA expanded participation of nonutility generators in the electricity market and demonstrated that electricity from nonutility generators could successfully be integrated with a utility's own supply. PURPA requires utilities to buy whatever power is produced by Qfs (usually cogeneration or renewable energy). Utilities want these provisions repealed, and critics argue that it will decrease competition and impede development of the renewable energy industry. The Fuel Use Act (FUA) of 1978 (repealed in 1987) also helped Qfs become established. Under FUA, utilities were not allowed to use natural gas to fuel new generating technologies, but Qfs, which were by definition not utilities, were able to take advantage of abundant natural gas and abundant new technologies (such as combined-cycle).[18]

Energy Policy Act of 2005

On August 8, 2005, President George W. Bush signed the National Energy Policy Act of 2005 into law. This comprehensive energy legislation contains several electricity-related provisions that aim to achieve the following:

- Help ensure that consumers receive electricity over a dependable, modern infrastructure;
- Remove outdated obstacles to investment in electricity transmission lines;
- Make electric reliability standards mandatory instead of optional; and
- Give Federal officials the authority to site new power lines in DOE-designated national corridors in certain limited circumstances.[19]

Clean Air Act

Section 211(o) of the Clean Air Act (the Act), as amended by the Energy Policy Act of 2005, requires the Administrator of the U.S. Environmental Protection Agency (USEPA) to annually determine a renewable fuel standard (RFS), which is applicable to refiners, importers, and certain blenders of gasoline, and publish the standard in the Federal Register by November 30 of each year. On the basis of this standard, each obligated party determines the volume of renewable fuel that it must ensure is consumed as motor vehicle fuel. This standard is calculated as a percentage, by dividing the amount of renewable fuel that the Act requires to be blended into gasoline for a given year by the

[18] *Ibid*.
[19] *Ibid*.

amount of gasoline expected to be used during that year, including certain adjustments specified by the Act.[20]

Corporate Average Fuel Economy (CAFE) Program

Compliance with federal fuel economy standards is determined on the basis of each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the U.S. The Corporate Average Fuel Economy (CAFE) program, which is administered by the USEPA, was created to determine vehicle manufacturers' compliance with the fuel economy standards. The USEPA calculates a CAFE value for each manufacturer based on city and highway fuel economy test results and vehicle sales. Based on the information generated under the CAFE program, the USDOT is authorized to assess penalties for noncompliance.[21]

State

The CEC and CPUC have jurisdiction over the investor-owned utilities (IOUs) in California. Within the district, the CEC also collects information for the Los LADWP and the Burbank, Glendale and Pasadena Municipal Utilities. The applicable state regulations, laws, and executive orders relevant to energy use are discussed below.[22]

California Building Energy Efficiency Standards: Title 24

California established statewide building energy efficiency standards following legislative action. The legislation required the standards to be cost-effective based on the building life cycle and to include both prescriptive and performance-based approaches. The 2005 Building Energy Efficiency Standards were adopted in November 2003, took effect October 1, 2005, and followed by a 2008 update.[23]

AB 1007, Alternative Fuels Plan

Assembly Bill (AB) 1007, (Pavley, Chapter 371, Statutes of 2005) requires the CEC to prepare a state plan to increase the use of alternative fuels in California (Alternative Fuels Plan). The CEC must prepare the plan in partnership with the ARB, and in consultation with the other state, federal and local agencies. In preparing the Alternative Fuels Plan, the Market Advisory Committee will incorporate and build on the work currently underway within the Bio-Energy Interagency Working Group, the work of other agencies, and also will examine the broader suite of alternative fuels that could benefit California's transportation market.[24]

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[20] *Ibid*.
[21] *Ibid*.
[22] *Ibid*.
[23] *Ibid*.
[24] *Ibid*.

AB 1493, Vehicle Climate Change Standards

AB 1493 required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light-duty trucks. Regulations were adopted by ARB in September 2004. Compliance with these standards is expected to improve fuel efficiency.

Senate Bill (SB) 1368, Greenhouse Gas Emissions Performance Standard for Major Power Plant Investments

This law requires the CEC to develop and adopt by regulation a greenhouse gas emissions performance standard for long-term procurement of electricity by local publicly owned utilities. The CEC must adopt the standard on or before June 30, 2007 and must be consistent with the standard adopted by the CPUC for load-serving entities under their jurisdiction on or before February 1, 2007. On January 25, 2007, and on May 23, 2007, respectively, the CPUC [25] and the CEC[26] adopted specific regulations regarding greenhouse gas emissions performance standards for IOUs and other electricity service providers under SB 1368. Compliance with these standards is expected to improve fuel use.

California Solar Initiative

On January 12, 2006, the CPUC approved the California Solar Initiative (CSI), which provides $2.9 billion in incentives between 2007 and 2017. CSI is part of the Go Solar California campaign, and builds on 10 years of state solar rebates offered to California's IOU territories: Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E.) The California Solar Initiative is overseen by the CPUC, and includes a $2.5 billion program for commercial and existing residential customers, funded through revenues and collected from gas and electric utility distribution rates. Furthermore, the CEC will manage $350 million targeted for new residential building construction, utilizing funds already allocated to the CEC to foster renewable projects between 2007 and 2011.

Current incentives provide an upfront, capacity-based payment for a new system. In its August 24, 2006 decision, the CPUC shifted the program from volume-based to performance-based incentives and clarified many elements of the program's design and administration. These changes were enacted in 2007, when the CSI incentive system changed to performance-based payments. [27]

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[25] California Public Utilities Commission. Greenhouse Gas Emissions Performance Standard. January 25, 2007. Accessed July 10, 2009. Available http://www.cpuc.ca.gov/PUC/energy/Climate+Change/070411_ghgeph.htm

[26] California Energy Commission. SB 1368 Emission Performance Standards – Adopted Regulations. May 23, 2007. Accessed July 10, 2009. Available http://www.energy.ca.gov/emission_standards/regulations/index.html

[27] *Ibid*.

Reducing California's Petroleum Dependence

The CEC and ARB produced a joint report *Reducing California's Petroleum Dependence* to highlight petroleum consumption and to establish a performance based goal to reduce petroleum consumption in California over the next thirty years. The report includes the following recommendations to the Governor and Legislature regarding petroleum:

- Adopt the recommended statewide goal of reducing demand for on-road gasoline and diesel to 15 percent below the 2003 demand level by 2020 and maintaining that level for the foreseeable future.
- Work with the California delegation and other states to establish national fuel economy standards that double the fuel efficiency of new cars, light trucks, and sport utility vehicles.
- Establish a goal to increase the use of non-petroleum fuels to 20 percent of on-road fuel consumption by 2020, and 30 percent by 2030.

The CEC will use these recommendations when developing its series of recommendations to the Governor and Legislature for the integrated energy plan for electricity, natural gas, and transportation fuels.[28]

Renewables Portfolio Standard

California's renewables portfolio standard (RPS) requires retail sellers of electricity to increase their procurement of eligible renewable energy resources by at least 1 percent per year so that 20 percent of their retail sales are procured from eligible renewable energy resources by 2017. If a seller falls short in a given year, they must procure more renewables in succeeding years to make up the shortfall. Once a retail seller reaches 20 percent, they need not increase their procurement in succeeding years. RPS was enacted via SB 1078 (Sher), signed September 2002 by Governor Davis. The CEC and the CPUC are jointly implementing the standard.[29]

SB 107, Renewable Energy Procurement

This law requires IOUs**,** such as Pacific Gas and Electric (PG&E), SCE and SDG&E, to have 20 percent of its electricity come from renewable sources by 2010. Previously, state law required that this target be achieved by 2017.[30]

California Environmental Quality Act (CEQA)

Appendix F of the CEQA Guidelines describes the types of information and analyses related to energy conservation that are to be included in EIRs that are prepared pursuant to the CEQA. In Appendix F of the CEQA Guidelines, energy conservation is described in terms of decreased per capita energy consumption, decreased reliance on natural gas and oil, and increased reliance on renewable energy sources. To assure that energy

[28] *Ibid*.
[29] *Ibid*.
[30] *Ibid*.

implications are considered in project decisions, EIRs must include a discussion of the potentially significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

SUBCHAPTER 3.7

EXISTING SETTING - GEOLOGY AND SOILS

INTRODUCTION

This section describes the geology, soils, and seismicity within the district.

ENVIRONMENTAL SETTING

Topographic and Geologic Structures

Portions of the district extend over four geomorphic provinces (natural regions) of California: the Mojave Desert, the Transverse Ranges, the Peninsular Ranges, and the Colorado Desert.[1] These provinces are naturally defined geologic regions that display a distinct landscape or landform, as shown in Figure 3.7-1

Peninsular Ranges

The Peninsular Ranges geomorphic province extends from the Transverse Ranges to deep within Mexico, passing through the Los Angeles Basin and continuing 775 miles south of the U.S.-Mexico border. The Peninsular Ranges are bounded on the west by the Transverse Ranges and on the east by the Colorado Desert and include the southern portion of Los Angeles County, Orange County, and the San Jacinto Mountains and the Coachella Valley in the central portion of Riverside County. The ranges are comprised of a series of northwest-southeast trending mountains that are separated by several active faults, including the San Jacinto and Elsinore Fault zones.

The Peninsular Ranges province is one of the largest geologic units in western North America. Its highest elevations are found in the San Jacinto-Santa Rosa Mountains, with San Jacinto Peak reaching 10,805 feet above mean sea level (amsl). The orientation and shape of the Peninsular Ranges is similar to the Sierra Nevada, in that the western slope is gradual and the eastern face is steep and abrupt. Drainage from the province is typically by the San Diego, San Dieguito, San Luis Rey, and Santa Margarita rivers.

[1] California Geological Survey. 2002. California Geomorphic Provinces. Note 36. Accessed June 2009, http://www.consrv.ca.gov/cgs/information/publications/cgs_notes/note_36/Documents/note_36.pdf.

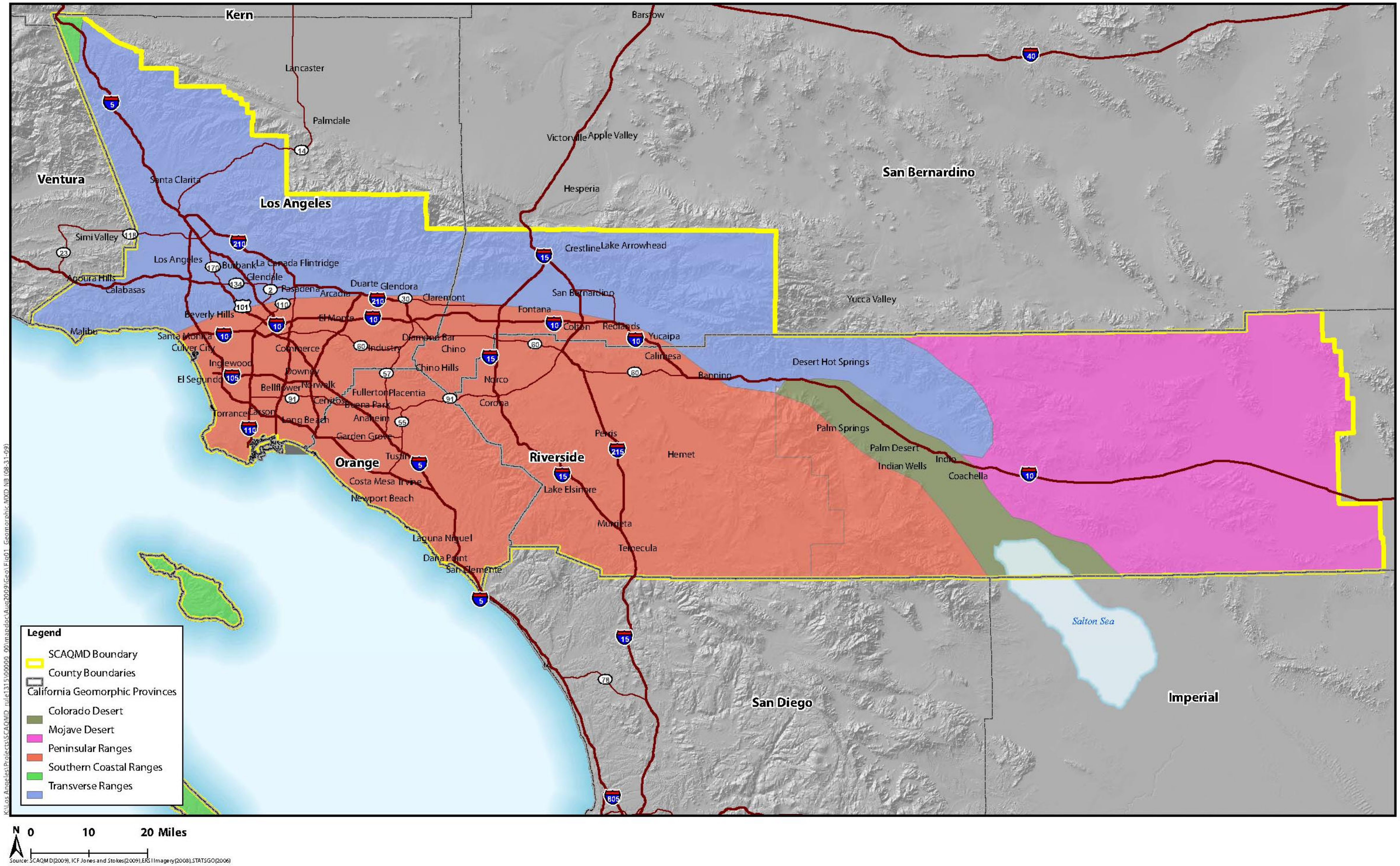

Figure 3.7-1
Geomorphic Provinces within South Coast Air Quality Management District

Mojave Desert

The Mojave Desert geomorphic province occupies approximately 25,000 square miles. It is bounded by the San Andreas fault and the Transverse Ranges to the west, the Garlock fault and the Tehachapi Mountains to the north (in Kern County), the Nevada Stateline to the east, and the San Bernardino/Riverside County boundary to the south. Portions of Los Angeles and Riverside Counties within the district lie within this province.

Erosional features, such as broad alluvial basins, that receive non-marine sediments from the adjacent uplands dominate the Mojave Desert region. Numerous playas, or ephemeral lakebeds within internal drainage basins, also characterize the region. Throughout this province, small hills—some comprise the remnants of ancient mountainous topography—rise above the valleys that are surrounded by younger alluvial sediments. The highest elevation approaches 4,000 feet amsl, and most valleys lie between 2,000 to 4,000 feet amsl.

Transverse Ranges

The Transverse Ranges geomorphic province is a series of east-west trending mountain ranges and broad alluvial valleys that extend approximately 320 miles from Point Arguello in the west to the Little San Bernardino Mountains at the edge of the Mojave and Colorado Desert provinces in the east. This geomorphic province includes portions of Los Angeles, San Bernardino, and Riverside Counties within the district.

Prominent basins and ranges in the Transverse Ranges include the Ventura basin and the San Gabriel and San Bernardino Mountains. Several active faults, including the San Andreas Fault Zone, are located in the Transverse Ranges. Faults in the province include the Santa Clara River Valley fault, the San Gabriel Fault Zone, the Santa Cruz Island faults, the Santa Rosa Island Faults and the Soledad faults. This province is one of the most geologically diverse in California, containing a wide variety of bedrock types and structures. The Transverse Ranges include California's highest peaks south of the central Sierra Nevada and the only Paleozoic rocks in the coastal mountains in the U.S. The province is subdivided into ranges and intervening valleys. Broad alluvial valleys, narrow stream canyons, and prominent faults separate these ranges. Intense north-south compression is squeezing the Transverse Ranges. As a result, this is one of the most rapidly rising regions on earth. Great thicknesses of Cenozoic petroleum-rich sedimentary rocks have been folded and faulted, making this one of the important oil-producing areas in the U.S.

Colorado Desert (Salton Trough)

The Colorado Desert geomorphic province (also referred to as the Salton Trough) is bounded to the east by the Colorado River, to the south by the Mexican border, and to the west by the Transverse Ranges. This province includes eastern Riverside County and Imperial County. The Colorado Desert trends northwesterly-southeasterly, as do most geologic provinces in southern California. The San Andreas Fault system is prominent in the northeast side of the Salton Trough. The Colorado Desert lies at low elevation, as compared with the Mojave Desert province, ranging from the Colorado River Valley, at approximately 350 feet amsl, to the Salton Sea Basin, at 235 feet below mean sea level. Its geologic features include playas separated by sand dunes and the Salton Trough, a large structural depression that extends from Palm Springs to the Gulf of California.

Soils

Soils within the district are classified by distinguishing characteristics and are arranged within soil associations.[2] Soils throughout the region differ in origin, composition, and slope development. The individual soil characteristics are important in determining the suitability of the soil for agricultural use or for urbanized development. Figure 3.7-2 shows the General soil types within the district.

The formation of surficial soil depends on the topography, climate, biology, local vegetation, and the material on which the soil profile is developed. Although many soils in the district are suitable for agricultural uses, each soil type may have properties that could limit its uses and represent an agricultural or development hazard.[3] Applicable U.S. Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) soil surveys for specific counties provide the classification and description of each soil type encountered in the district.

Soil Hazards

<u>Expansive Soils</u>

Expansive soils possess a “shrink-swell” behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may result over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Typically, soils that exhibit expansive characteristics comprise the upper five feet of the surface. The effects of expansive soils could damage foundations of aboveground structures, paved roads and streets, and concrete slabs. Expansion and contraction of soils, depending on the season and the amount of surface water infiltration, could exert enough pressure on structures to result in cracking, settlement, and uplift. Locations of expansive soils are site-specific and can generally be remedied through standard engineering practices.

<u>Soil Erosion</u>

Soil erosion is also a natural on-going process that transports, erodes and displaces soil particles through a transport mechanism, such as flowing water or wind. Loose texture and steep slopes primarily result in high wind erodibility potential in soils. Wind erosion is most severe in arid regions, where sandy or loamy sediments are unvegetated and

[2] Soil Association – A mapping unit consisting of a group of defined and taxanomic soil units occurring together in an individual and characteristic pattern over a geographic region.
[3] United States Department of Agriculture, Soil Conservation Service (SCS). 1970. *Soil survey of Ventura area, California.* Issued April 1970.

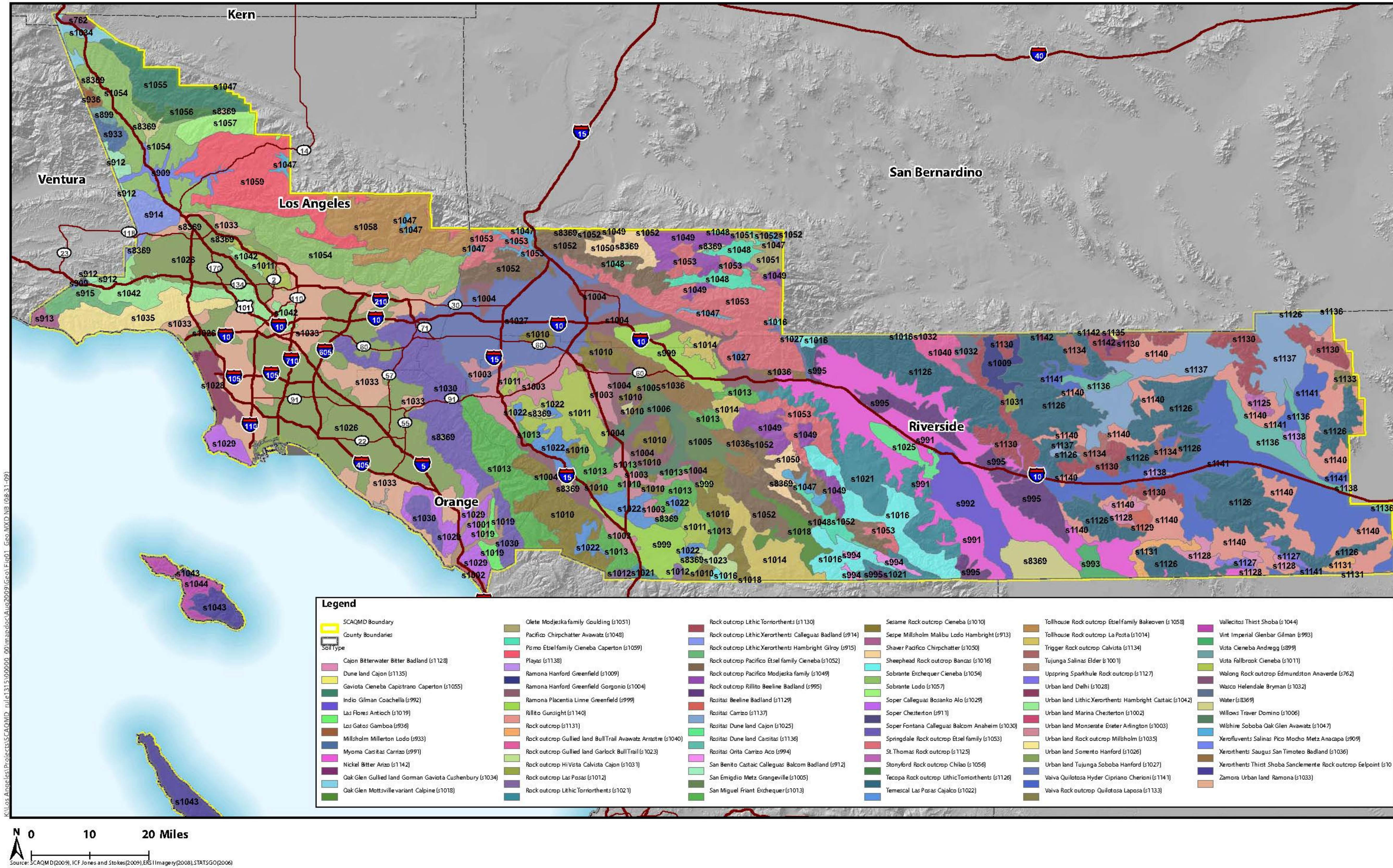

Figure 3.7-2
General Soil Types within South Coast Air Quality Management District

exposed to severe wind conditions. Portions of San Bernardino and Riverside Counties within District have the potential for soil erosion. Human intervention can accelerate the natural erosion process. For instance, typical consequences of development increase erosion potential from the removal of vegetative cover and reduction of overall permeable area. These activities can lead to increased water runoff rates and concentrated flows that have greater potential to erode exposed soils. The effects of excessive erosion range from nuisance problems that require additional maintenance, such as increased siltation in storm drains, to instances of more severe damage, where water courses are down-cut and gullies develop. These processes can eventually undermine adjacent structures or topography. Human activities that disturb soils in arid regions increase wind erosion potential. Many of the desert areas within the district are also susceptible to blowing sand, a severe form of wind erosion that damages property and accumulates soil on roadways. The majority of the soils within the district exhibit moderate to high erosion potential, which can be compounded by development.

Coastal Erosion

Coastal erosion is a natural process that is typically the most visible during storm events. Beach sand is replenished by sediment loads in rivers and gentler waves after storm events or during summer months. Erosion rates of one inch per year are considered moderate. However, depending on the severity and duration of storm events and the degree of human intervention with natural coastline or riverine processes, coastal erosion can proceed at considerable rates, resulting in rapid visible coastline recession. In areas of extreme coastal erosion, such as the cities of Rancho Palos Verdes and Malibu, slopes have been undercut by waves during storm events, causing slope failure and resulting in property damage and risks to human health and safety. The coastal regions of Los Angeles and Orange Counties are susceptible to wave erosion hazards.

The Pacific Ocean borders the Peninsular Range province and the Transverse Range Province on the west. Nearly all the sea cliffs along the coast display some sign of coastal erosion. Coastal retreat is attributable to various processes, including undercutting from wave action, weathering and erosion of rocks and cliffs, emergence of groundwater at the cliff face, rain-wash, and landsliding. Additionally, these naturally occurring forces can be assisted by human activity, such as coastal road construction, channelization of surface water flows, or development on marine terraces.

Geologic Hazards

Geologic hazards are natural geologic events that can endanger human lives and threaten human property. Potential geologic hazards include settlement, subsidence, and landslides. Relevant geologic hazards applicable within the district are discussed below. These conditions are important as they may pose hazards that can affect operation of any development project or can constrain project development.

Settlement

Loose, soft soil material comprised of sand, silt and clay, if not properly engineered, has the potential to settle after a building is placed on the surface. Settlement of the loose soils generally occurs slowly but over time can amount to more than most structures can tolerate. Building settlement could lead to structural damage, such as cracked foundations and misaligned or cracked walls and windows. Settlement problems are site-specific and can generally be remedied through standard engineering applications.

Land Subsidence

Land subsidence is generally caused by a variety of agricultural, municipal (construction, withdrawal of ground water for urban uses, etc.) or mining practices that contribute that contribute to the loss of support materials within a geologic formation. Agricultural practices can cause oxidation and subsequent compaction and settlement of organic clay soils or hydro compaction allowing land elevations to lower or sink. Agricultural and municipal practices can result in the overdraft of a groundwater aquifer, thereby causing aquifer settlement. Groundwater overdraft occurs when groundwater pumping from a subsurface water-bearing zone (aquifer) exceeds the rate of aquifer replenishment. The extraction of mineral or oil resources can also result in subsidence from removal of supporting layers in the geologic formation. Many areas of the district may be prone to due to groundwater extraction and subsequent lowering of the groundwater surface, typically beneath a confining clay stratum. The impact of subsidence could include lowering of the land surfaces, increased potential for flooding, potential disturbance or damage to buried pipelines and associated structures, and damage to structures designed with minimal tolerance for settlement.

Landslides

Generally, a slope can fail when its ability to resist movement decreases and the stresses on a slope increase. The material in the slope and external processes, such as climate, topography, slope geometry, and human activity, can render a slope unstable and eventually initiate slope movements and failures. Factors that decrease resistance to movement in a slope include pore water pressure, material changes, and structure. Changes in slope material, such as improperly engineered fill slopes, can alter water movement and lead to chemical and physical changes within the slope. Unfavorable fracture or joint orientation and density may develop as a rock material responds to reduced weight or strain relief, resulting in a decreased ability of the rock material to resist movement. Removing the lower portion (the toe) decreases or eliminates the support that opposes lateral motion in a slope. This can occur by man-made activity, such as excavations for road-cuts located along a hillside. Over-steepening a slope by removing material can also reduce its lateral support. Placement of buildings on slopes can increase the amount of stress that is applied to a potential failure surface. Shaking during an earthquake may lead materials in a slope to lose some cohesion and cause liquefaction or change pore water pressures.

Landslide-susceptible areas within the district are those with low-strength soil material on hilly topography (e.g., the Portuguese Bend and Point Fermin areas of the Palos Verdes

Peninsula and the Blackhawk slide area on the north slope of the San Bernardino Mountains).

Seismicity

The district consists of an area that has historically experienced high seismicity. In the past 100 years, several earthquakes of magnitude 5.0 or larger have been reported on the active San Andreas, San Jacinto, Elsinore, and Newport-Inglewood fault systems, all of which traverse the district. As a result, significant earthquake hazards exist in the region. It should be noted that new faults continue to reveal themselves, as in the case of the Northridge earthquake of 1994, and the potential seismic threats posed by these faults also continue to be reevaluated on the basis of new geologic information and analysis, as in the recent case of the Puente Hills Fault.[4] Injury to people and damage to structures during earthquakes can be caused by actual surface rupture along an active fault, by ground shaking from a nearby or distant fault, liquefaction, or dam failure.

In southern California, the last earthquake exceeding Richter magnitude 8.0 occurred in 1857. Much more frequent are smaller temblors, like the relatively moderate (but still exceedingly damaging) 1971 San Fernando and 1994 Northridge earthquakes, both classified as magnitude 6.7 quakes. The human and economic damage caused by earthquakes tends to increase with time, as more and more people and property come to occupy more and more of the land, thus cumulatively increasing the exposure of human habitation to seismic hazard. The 1994 Northridge earthquake, though hardly the most severe experienced by Southern California, was deemed the most expensive, in terms of its economic cost and its damage to human property. The California Office of Emergency Services claimed a $15 billion total damage estimate.[5]

Regional Faults

A fault is a fracture in the crust of the earth along which there has been displacement of the sides relative to one another parallel to the fracture. Most faults are the result of repeated displacements over a long period of time. Numerous active and potentially active faults have been mapped in the region.

The district contains lateral strike slip faults similar to the San Andreas Fault and various identified and hidden blind thrust faults. A fault trace is the surface expression of a particular fault. Buried or blind thrust faults are thought to underlie much of the district. These "buried" faults do not exhibit readily identifiable traces on the earth's surface and are typically at considerable depth within the underlying geologic formation. Although these faults typically do not offset surface deposits, they can generate substantial ground shaking.

[4] Dolan, J.F., Christofferson, S.A. and Shaw, J.H. (2003) "Recognition of Paleoearthquakes on the Puente Hills blind thrust fault, California," Science, 115-118.; McFarling, U.L. (2003) "Major Threat Seen in L.A. Quake Fault," Los Angeles Times, April 4, 2003 (http://articles.latimes.com/2003/apr/04/science/sci-fault4)

[5] EQE International, (1994) "The January 17, 1994 Northridge, CA Earthquake: An EQE Summary Report".

The California Geological Survey (CGS) defines active faults as those that have exhibited evidence of displacement during Holocene (10,000 years ago to present) period. Potentially active faults are defined as faults that have exhibited evidence of displacement during the Pleistocene period (10,000 years to 1.8 million years ago). Class A faults have slip rates greater than 5 millimeters per year (mm/yr) and generally have substantial historic seismic data available, while Class B faults have slip rates smaller than 5 mm/yr and, as a rule, historic seismic data on which to develop reliable recurrence intervals of large events is lacking. Table 3.7-1 characterizes the major faults in the district. Figure 3.7-3 illustrates the geographic location of these faults in the region.

TABLE 3.7-1

Characterization of Major Faults in the Southern California Region[a] (Los Angeles, San Bernardino, Riverside, Orange Counties)

Fault	Counties	Recency[b]	Slip Rate (mm/yr)	Max. Moment Magnitude[c]
Class A Faults				
San Andreas	Los Angeles, San Bernardino, Riverside	Historic	25.0-34.0	7.2-7.5
San Jacinto-Imperial	San Bernardino, Riverside	Holocene, Later Quaternary	4.0-20.0	6.6-7.2
Elsinore	Riverside	Holocene	2.5-5.0	6.8-7.1
ELSINORE AND SAN JACINTO FAULT ZONES (NON-CLASS A FAULTS)				
Chino	San Bernardino, Riverside		1	6.7
Earthquake Valley	-		2	6.5
TRANSVERSE RANGES AND LOS ANGELES BASIN				
Clamshell-Sawpit	Los Angeles		0.5	6.5
Class B faults				
TRANSVERSE RANGES AND LOS ANGELES BASIN (cont.)				
Cucamonga	San Bernardino		5	6.9
Hollywood	Los Angeles		1	6.4
Malibu Coast	Los Angeles		0.3	6.7
Mission Ridge - Arroyo Parida -Santa Ana	Los Angeles		0.4	7.2
Newport-Inglewood	Los Angeles, Orange	Late Quaternary (?)	1	7.1
Palos Verdes	Los Angeles		3	7.3
Pleito	-			
Raymond	Los Angeles		1.5	6.5
Red Mountain	San Bernardino		2	7
San Gabriel	Los Angeles	Holocene	1	7.2

TABLE 3.7-1 (Continued)

Characterization of Major Faults in the Southern California Region[a] (Los Angeles, San Bernardino, Riverside, Orange Counties)

Fault	Counties	Recency[b]	Slip Rate (mm/yr)	Max. Moment Magnitude[c]
San Jose	San Bernardino, Los Angeles		0.5	6.4
Santa Monica	Los Angeles		1	6.6
Santa Susana	Los Angeles	Historic, Late Quaternary	5	6.7
Sierra Madre (San Fernando)	Los Angeles		2	6.7
Sierra Madre	Los Angeles	Holocene, Late Quaternary	2	7.2
Verdugo	Los Angeles		0.5	6.9
White Wolf	-		2	7.3
LOS ANGELES BLIND THRUSTS				
Compton thrust	-		1.5	6.8
Elysian Park	-		1.5	6.7
Upper Elysian Park	-		1.3	6.4
Northridge	Los Angeles		1.5	7
Puente Hills blind thrust	Los Angeles		0.7	7.1
TRANSVERSE RANGES AND MOJAVE				
Blackwater	-		0.6	7.1
Burnt Mountain	-		0.6	6.5
Calico-Hidalgo	San Bernardino		0.6	7.3
Cleghorn	San Bernardino		3	6.5
Eureka Peak	-		0.6	6.4
Gravel Hills-Harper Lake	San Bernardino		0.6	7.1
Helendale-S. Lockhart	San Bernardino		0.6	7.3
Johnson Valley (Northern)	San Bernardino		0.6	6.7
Landers	-		0.6	7.3
Lenwood -Lockhart-Old Woman Springs	San Bernardino		0.6	7.5
North Frontal Fault zone (Western)	San Bernardino		1	7.2
North Frontal Fault zone (Eastern)	San Bernardino		0.5	6.7
Pinto Mountain	San Bernardino		2.5	7.2

TABLE 3.7-1 (Concluded)

Characterization of Major Faults in the Southern California Region[a] (Los Angeles, San Bernardino, Riverside, Orange Counties)

Fault	Counties	Recency[b]	Slip Rate (mm/yr)	Max. Moment Magnitude[c]
Pisgah -Bullion Mountain-Mesquite Lake	San Bernardino		0.6	7.3
S. Emerson-Copper Mountain	San Bernardino		0.6	7

- Location data not found

[a] Characterization of the faults in southern California is derived from documents accessible at the California Geological Survey's web page, Probabilistic Seismic Hazard Assessment Maps (PSHA) available at http://www.consrv.ca.gov/cgs/rghm/psha/ index.htm; see Petersen, et al., 1996. The geographic location of the faults is derived from fault characterizations at the U.S. Geological Survey (USGS) web site for recent earthquake activity at http://quake.wr.usgs.gov/recenteqs/FaultMaps/118-34.htm, and also from the list of California and Nevada faults at http://quake.wr.usgs.gov/info/faultmaps/ faultlist.html.
[b] Recency of fault movement refers to the time period when the fault is believed to have last moved. The age is expressed in terms of the Geologic Time Scale. Generally, the older the activity on a fault, the less likely it is that the fault will produce an earthquake in the near future. For assessing earthquake hazard, usually only faults active in the Late Quaternary or more recently are considered. These include the following three non-overlapping time periods: *Historic:* Refers to the period for which written records are available (approximately the past 200 years, in California and Nevada). *Holocene:* Refers to a period of time between the present and 10,000 years before present. Faults of this age are commonly considered active. For the purpose of classifying faults, C.W. Jennings defined Holocene to exclude the Historic; that is, from 200 to 10,000 years before the present). *Late Quaternary:* Refers to the time period between the present and approximately 700,000 years before the present. Here too, for the purpose of classifying faults, Jennings defined Late Quaternary to exclude the Holocene and the Historic." http://quake.wr.usgs.gov/info/faultmaps/slipage.html
[c] The Maximum Moment Magnitude is an estimate of the size of a characteristic earthquake capable of occurring on a particular fault. Moment magnitude is related to the physical size of a fault rupture and movement across a fault. Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave. Moment magnitude provides a physically meaningful measure of the size of a faulting event. Richter magnitude estimations can be generally higher than moment magnitude estimations.

Source: California Geological Survey; U.S. Geological Survey.

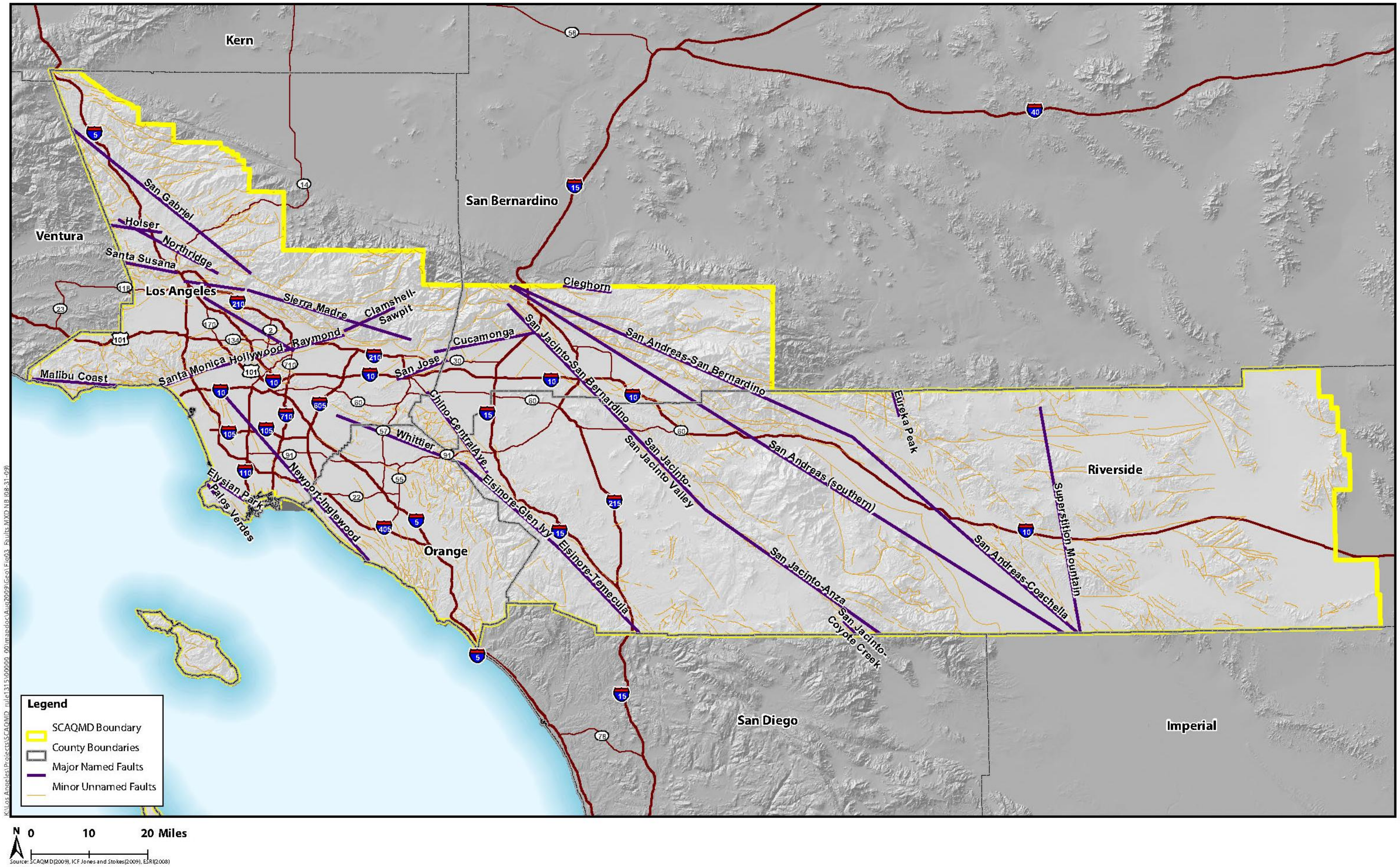

Figure 3.7-3
Major Faults within South Coast Air Quality Management District

Potential geologic hazards include expansive soils, settlement, subsidence, and erosion. Relevant geologic hazards applicable to the district are discussed below.

Seismic Hazards

Movements on the previously identified faults will likely cause future earthquakes within the district. Earthquakes can originate in areas where potential seismic energy has built up along a fault over time, but has not yet been released in the form of an earthquake. Studies supported by the National Earthquake Hazards Reduction Program enable scientists to evaluate the hazard level in different areas. In southern California, scientists estimate that the probability of a magnitude 7.0 or greater earthquake by the year 2024 approaches 80 to 90 percent. The four major hazards generally associated with earthquakes are ground shaking, fault surface rupture (ground displacement), liquefaction ground failures, and settlement.

Peak Ground Acceleration: Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. Historic earthquakes have caused strong ground shaking and damage in many areas within the district. The composition of underlying soils in areas located relatively distant from faults can intensify ground shaking. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill.

Ground shaking is commonly described in terms of peak ground acceleration as a fraction of the acceleration of gravity (g), or by using the Modified Mercalli Intensity Scale, a common metric for characterizing intensity. The Mercalli Scale is a more descriptive method involving 12 levels of intensity denoted by Roman numerals. As presented in Table 3.7-2, below, Modified Mercalli (MM) intense ties range from Level I (shaking that is not felt) to Level XII (total damage). MM intensities ranging from Levels IV to X could cause moderate to significant structural damage. However, the degree of structural damage will not be uniform. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance.

Earthquakes on the various and potentially active fault systems are expected to produce a wide range of ground shaking intensities within the district. The estimated maximum moment magnitudes represent characteristic earthquakes on particular faults.[6] While the magnitude is a measure of the energy released in an earthquake, intensity is a measure of the ground shaking effects at a particular location.

[6] Moment magnitude is related to the physical size of a fault rupture and movement across a fault. Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave. Moment magnitude provides a physically meaningful measure of the size of a faulting event [California Geological Survey (CGS), 1997- California Geological Survey (CGS) (1997) *Guidelines for Evaluating and Mitigating Seismic Hazards in California*, CDMG Special Publication 117 (Last Updated: 05/28/02). Accessed June 2009, < http://gmw.consrv.ca.gov/shmp/webdocs/sp117.pdf >

TABLE 3.7-2

Modified Mercalli Intensity Scale[a]

Level	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings; many people do not recognize it as an earthquake; standing motor cars may rock slightly; vibrations similar to the passing of a truck; duration estimated.
IV	Felt indoors by many, outdoors by few during the day; at night, some awakened; dishes, windows, doors disturbed; walls make cracking sound; sensation like heavy truck striking building; standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened; some dishes, windows broken; unstable objects overturned; pendulum clocks may stop.
VI	Felt by all, many frightened; some heavy furniture moved; a few instances of fallen plaster; damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse; damage great in poorly built structures; fall of chimneys, factory stacks, columns, monuments, walls; heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; damage great in substantial buildings, with partial collapse; buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; rails bent.
XI	Few, if any (masonry) structures remain standing; bridges destroyed; rails bent greatly.
XII	Damage total; lines-of-sight and level are distorted; objects thrown into the air.

[a] Excerpted from http://earthquake.usgs.gov/learning/topics/mercalli.php

Source: U.S. Geological Survey, National Earthquake Information Center.

Shaking intensity can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and characteristics of geologic media. Generally, intensities are highest at the fault and decrease with distance from the fault.

Surface Fault Rupture

The surface expression of earthquake fault rupture typically occurs in the immediate vicinity of the originating fault. The magnitude and nature of the rupture may vary across different faults, or even along different segments of the same fault.[7] Rupture of the surface during earthquake events is generally limited to the narrow strip of land

[7] California Geological Survey (CGS), *Guidelines for evaluating the hazard of surface fault rupture*, CGS Note 49, 2002a.

immediately adjacent to the fault on which the event is occurring. Surface ruptures associated with the 1992 Landers earthquake in San Bernardino County extended for a length of 50 miles, with displacements varying from one inch to 20 feet.

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972, to mitigate the risk to human habitation of seismically-induced ground-surface ruptures. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard, provided regulatory stipulations embedded in this law are met.

The law requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults, and to issue appropriate maps.[8] An indicative map of identified Earthquake Fault Zones delineating potential rupture areas is provided in Figure 3.7-3. Detailed maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling new or renewed construction. Local agencies must regulate most development projects within the zones, including all land divisions and most structures intended for human habitation. Fault surface rupture almost always follows preexisting faults, which are zones of weakness.

Rupture may occur suddenly during an earthquake, or slowly in the form of fault creep. Sudden displacements are more damaging to structures because they are accompanied by ground shaking. Fault creep is the slow rupture of the earth's crust. Not all earthquakes result in surface rupture (e.g., the 1994 Northridge earthquake).

Liquefaction and Ground Failure

Liquefaction is a phenomenon in which soil loses its shear strength for short periods during an earthquake. Ground shaking of sufficient duration can result in the loss of grain-to-grain contact, due to a rapid increase in pore water pressure, causing the soil to behave as a fluid for short periods. Liquefaction has been responsible for ground failures during almost all of California's large earthquakes. The depth to groundwater can control the potential for liquefaction; the shallower the groundwater, the higher the potential for liquefaction. Earthquake-induced liquefaction most often occurs in low-lying areas with soils or sediments composed of unconsolidated, saturated, clay-free sands and silts but can also occur in dry, granular soils, or saturated soils with some clay content.

Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation, and loss of bearing strength. A lateral spread is a horizontal displacement of surficial blocks of sediments resulting from liquefaction in a subsurface layer. Lateral spread occurs on slopes ranging between 0.3 and 3 percent and commonly displaces the surface by several meters to tens of meters. Flow failures occur on slopes greater than 3 degrees and are primarily liquefied soil or blocks of intact material riding on a liquefied subsurface zone. Ground oscillation occurs on gentle slopes when liquefaction occurs at depth and no lateral displacement takes place. Soil units that are

[8] "Earthquake Fault Zones" were called "Special Studies Zones" prior to January 1, 1994.

not liquefied may pull apart from each other and oscillate on the liquefied zone. Ground fissures can accompany ground oscillation and sand boils and damage underground structures and utilities. The loss of bearing pressure can occur beneath a structure when the underlying soil loses strength and liquefies. When this occurs, the structure can settle, tip, or even become buoyant and "float" upwards.

Liquefaction potential is a function of the potential level of ground shaking at a given location and depends on the geologic material at that location. Structural failure often occurs as sediments liquefy and cannot support structures that are built on them. Alluvial valleys and coastal regions are particularly susceptible to liquefaction. Unconsolidated alluvial deposits in desert region deposits are rarely saturated because of the depth to the water table and are, thus, less susceptible to liquefaction than unconsolidated alluvium adjacent to stream channels.

Earthquake-Induced Subsidence

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid compaction and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments) due to the rearrangement of soil particles during prolonged ground shaking. Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Within the district, artificial fills, unconsolidated alluvial sediments, slope washes, and areas with improperly engineered construction-fills typically underlie areas susceptible to this type of settlement.

Seismically-Induced Landslides

Strong ground shaking during earthquake events can generate landslides and slumps in uplands or coastal regions near the causative fault. Seismically-induced landsliding has typically been found to occur within 75 miles of the epicenter of a magnitude 6.5 earthquake. Seismically-induced landslides would be most likely to occur in areas that have previously experienced landslides or slumps, in areas of steep slopes, or in saturated hillside areas. Areas within the district are susceptible to seismically-induced landsliding because of the abundance of active faults in the region and the existing landslide hazards.

Earthquake-Induced Inundation

Because California and the West Coast of the U.S. are seismically active, California is subject to flood hazard from tectonic activity capable of generating submarine earthquakes, volcanic eruptions, and landslides. Considering its proximity to the Pacific Ocean, the inundation by tsunamis (seismic sea waves) or seiches (oscillating waves in enclosed water bodies) can occur along the California coast in the event of significant earthquake. For purposes of a relative comparison, an earthquake with its epicenter in Alaska and with a magnitude of 8.5 (Richter scale) generated a seismically induced sea wave with a maximum wave height of 11 feet in the Monterey Harbor, on the central coast of California north of the district.

REGULATORY SETTING

The regulatory setting describes the federal, state, and local agencies that have jurisdiction over geology, soils, and seismicity. The regulations pertinent to these areas that each of these agencies enforce are also described.

Federal Agency Regulations

U.S. Department Of Agriculture (USDA), Natural Resources Conservation Service (NRCS)

The NRCS maps soils and farmland uses to provide comprehensive information necessary for understanding, managing, conserving and sustaining the nation's limited soil resources. In addition to many other natural resource conservation programs, the NRCS manages the Farmland Protection Program, which provides funds to help purchase development rights to keep productive farmland in agricultural uses. Working through existing programs, USDA joins with state, tribal, or local governments to acquire conservation easements or other interests from landowners.

State Agency Regulations

California Department of Conservation

In 1982, the State of California created the Farmland Mapping and Monitoring Program within the California Department of Conservation to carry on the mapping activity from the NRCS on a continuing basis. The California Land Conservation Act of 1965, also known as the Williamson Act, is designed to preserve agricultural and open space lands by discouraging their premature and unnecessary conversion to urban uses. Williamson Act contracts, also known as agricultural preserves, offer tax incentives for agricultural land preservation by ensuring that land will be assessed for its agricultural productivity rather than its highest and best uses.

California Building Code

The California Building Code is another name for the body of regulations contained in Title 24, Part 2, of the California Code of Regulations, which is a portion of the California Building Standards Code.[9] Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Published by the International Conference of Building Officials, the Uniform Building Code (UBC) is a widely adopted model building code in the U.S. The California Building Code incorporates by reference the UBC with necessary California

[9] California Building Standards Commission, (CBSC), *California Building Code, Title 24, Part 2*, 2007. Available < http://ia311328.us.archive.org/1/items/gov.ca.bsc.title24.part02.vol02/title24_part02_vol02.pdf>

amendments. About one-third of the text within the California Building Code has been tailored for California earthquake conditions.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1971 requires that special geologic studies be conducted to locate and assess any active fault traces in and around known active fault areas prior to development of structures for human occupancy. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. The Alquist-Priolo Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. This Act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically-induced landslides. The purpose of the Act is to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act.

Local Agency Regulations

General Plans and Seismic Safety Element

City and county governments typically develop as part of their General Plans safety and seismic elements that identify goals, objectives, and specific actions to minimize the loss of life, property damage and disruption of goods and services from man-made and natural disasters including floods, fires, non-seismic geologic hazards and earthquakes. General Plans can provide policies and develop ordinances to ensure acceptable protection of people and structures from risks associated with these hazards. Ordinances can include those addressing unreinforced masonry construction, erosion or grading.

SUBCHAPTER 3.8

EXISTING SETTING - HAZARDS AND HAZARDOUS MATERIALS

INTRODUCTION

This section describes the potential use of hazardous materials, releases to the environment, and the associated risks within the district.

Definitions

A number of properties may cause a substance to be hazardous, including toxicity, ignitability, corrosivity, and reactivity. The term "hazardous material" is defined in different ways for different regulatory programs. For the purposes of this PEA, the term "hazardous materials" refers to both hazardous materials and hazardous wastes. A hazardous material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local regulatory agency or if it has characteristics defined as hazardous by such an agency. The California Health & Safety Code §25501(k) defines hazardous material as follows:[1]

> "Hazardous material" means any material that because of its quantity, concentrations, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the Contaminated Sites from Prior Hazardous Material Releases environment. "Hazardous materials" include but are not limited to hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Examples of the types of materials and wastes considered hazardous are hazardous chemicals (e.g., toxic, ignitable, corrosive, and reactive materials), radioactive materials, and medical (infectious) waste. The characteristics of toxicity, ignitability, corrosivity, and reactivity are defined in Title 22, CCR, §§66261.20-66261.24 and are summarized below:

Toxic Substances

Toxic substances may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or even death. For example, such substances can cause disorientation, acute allergic reactions, asphyxiation, skin irritation, or other adverse health effects if human exposure exceeds certain levels. (The level depends on the substances involved and are chemical-specific.) Carcinogens (substances that can cause cancer) are a special class of toxic substances. Examples of toxic substances include benzene (a component of gasoline and a suspected carcinogen) and methylene chloride (a common laboratory solvent and a suspected carcinogen).

[1] SCAG 2008 RTP FEIR, Section 3.7, Hazardous Materials.

Ignitable Substances

Ignitable substances are hazardous because of their ability to burn. Gasoline, hexane, and natural gas are examples of ignitable substances.

Corrosive Materials

Corrosive materials can cause severe burns. Corrosives include strong acids and bases such as sodium hydroxide (lye) or sulfuric acid (battery acid).

Reactive Materials

Reactive materials may cause explosions or generate toxic gases. Explosives, pure sodium or potassium metals (which react violently with water), and cyanides are examples of reactive materials.

ENVIRONMENTAL SETTING

The potential for hazards exist in the production, use, storage and transportation of hazardous materials. Hazardous materials may be found at industrial production and processing facilities, institutional, commercial, and residential establishments. Some facilities produce hazardous materials as their end product, while others use such materials as an input to their production process. Examples of hazardous materials used as consumer products include gasoline, solvents, and coatings/paints. Hazardous materials are stored at facilities that produce such materials and at facilities where hazardous materials are a part of the production process. Specifically, storage refers to the bulk handling of hazardous materials before and after they are transported to the general geographical area of use. Currently, hazardous materials are transported throughout the district in great quantities via all modes of transportation including rail, highway, water, air, and pipeline.

Contaminated Sites from Prior Hazardous Material Releases

Soil and groundwater can become contaminated by hazardous material releases in a variety of ways, including permitted or illicit use and accidental or intentional disposal or spillage. Before the 1980s, most land disposal of chemicals was unregulated, resulting in numerous industrial properties and public landfills becoming dumping grounds for unwanted chemicals. The largest and most contaminated of these sites, in general, became federal Superfund sites in the early 1980s, so named for their eligibility to receive cleanup money from a federal fund established for that purpose under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Sites are added to the National Priorities List (NPL) following a hazard ranking system. The U.S. Environmental Protection Agency (USEPA) maintains this list of federal Superfund sites, as well as a more extensive list of all sites with potential to be listed, known as Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS).

Numerous smaller properties also have been designated as contaminated sites. Often, these are gas station sites, where leaking underground storage tanks were upgraded under a federal requirement in the late 1980s. Another category of sites, which may have some overlap with the types already mentioned, is brownfields – previously used, often abandoned sites that because of actual or suspected contamination, are undeveloped or underused. Both the USEPA and the California Department of Toxic Substances Control (DTSC) maintain lists of known brownfield sites. These sites are often difficult to inventory due to their owners' reluctance to publicly label their property as potentially contaminated. In California, numerous regulatory barriers have blocked effective reuse of brownfields sites, including uncertainty as to cleanup levels and ultimate cleanup cost. Senate Bill [SB] 32 and also known as the California Land Environmental Restoration and Reuse Act, adopted in 2001, establishes a locally-based program to help speed the cleanup and reuse of brownfield sites.[2]

Several California environmental agencies maintain lists of properties that are contaminated or are otherwise associated with the use of hazardous materials, including the following:[3]

- Department of Toxic Substances Control (DTSC; part of the California Environmental Protection Agency [Cal/EPA]):
    - Site Mitigation and Brownfields Reuse Program ("CalSites") list – sites that have known or suspected contamination;
    - HazNet list – data on hazardous waste shipments from Hazardous Waste Information System; and
    - Hazardous Waste and Substances Site List ("Cortese" list) – hazardous materials release locations.
- California Integrated Waste Management Board (CIWMB; part of Cal/EPA):
    - Solid Waste Information System – data on open, closed, or inactive solid waste disposal facilities and transfer stations.
- State Water Resources Control Board (SWRCB; part of Cal/EPA):
    - Leaking Underground Storage Tank list – data for specific parts of the state is also maintained by the Regional Water Quality Control Boards (RWQCB).
- Cal/EPA:
    - Annual Work Plan – indicates which sites are targeted for cleanup using state funds.

Underground Storage Tanks

An underground storage tank (UST) system is a tank and any underground piping connected to the tank that has at least 10 percent of its combined volume underground.

[2] Southern California Association of Governments (SCAG), 2008 Regional Transportation Plan (RTP), Final Environmental Impact Report (FEIR), Section 3.7, Hazardous Materials.
[3] *Ibid*.

The federal UST regulations apply only to underground tanks and piping storing either petroleum or certain hazardous substances. When the UST program began, there were approximately 2.1 million regulated tanks in the U.S. Today, there are far fewer since many substandard UST systems have been closed. Nearly all USTs at these sites contain petroleum. These sites include marketers who sell gasoline to the public (such as service stations and convenience stores) and non-marketers who use tanks solely for their own needs (such as fleet service operators and local governments). The USEPA estimates about 25,000 tanks hold hazardous substances covered by the UST regulations.

The greatest potential hazard from a leaking UST is that the petroleum or other hazardous substance can seep into the soil and contaminate groundwater, the source of drinking water for nearly half of all Americans (although not such a high percentage within the district). A leaking UST can present other health and environmental risks, including the potential for fire and explosion. Until the mid-1980s, most USTs were made of bare steel, which is likely to corrode over time and allow UST contents to leak into the environment. Faulty installation or inadequate operating and maintenance procedures also can cause USTs to release their contents into the environment.[4]

Los Angeles County

According to the 2008 Los Angeles County Draft General Plan,[5] the County is vulnerable to the unauthorized releases of hazardous materials. The County is also a major producer of a wide variety of toxic, flammable, and explosive materials. An assortment of toxic materials are also stored and used in many small businesses and households throughout the County. Earthquakes, fires, and floods pose a threat to the possible release or explosion of hazardous materials.

Orange County

According to the 2004 County of Orange General Plan[6], Orange County is among the most rapidly growing counties in California. However, this economic growth may have environmental costs. Virtually all sectors of the County's economy are users of materials that, if improperly handled, stored, or disposed of, can pose profound health and environmental problems. Their presence in the environment can degrade air quality and groundwater, severely damaging the food chain. Because of their effects, special care is required to transport, store, and dispose of these materials to ensure they do not enter the environment.

Hazardous material users include manufacturing and service industries, agriculture, military bases, hospitals, schools and households. Hazardous materials used by these societal segments are normally stored in secured, on-site areas, in small containers or large aboveground or underground storage tanks. There are approximately 9,500 underground storage tanks (UST) storing over 60 million gallons of hazardous materials at 2,875 facilities in Orange County.

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[4] *Ibid*.
[5] Los Angeles County Draft General Plan. 2008. Chapter 8: Safety Element.
[6] County of Orange 2004 General Plan. Prepared by the Resources and Development Management Department of Orange County. Effective April 20, 2004.

The major transportation routes in Orange County include the freeway system, surface streets, and railroads. These routes are used daily to transport hazardous materials from suppliers to users. On these routes, transportation accidents involving hazardous materials can occur. The threats posed by a transportation accident involving hazardous materials include explosions, physical contact by emergency response personnel, and exposure to the public via airborne exposure.

Another major hazardous materials transportation mode in Orange County is that of underground pipelines. These pipelines predominately transport crude or refined petroleum, gasoline, and jet fuel. The major threats posed by this transportation method include explosions, fire, and contamination of groundwater potentially used as a source of drinking water.

The County has 175 specific licensees who use sealed and unsealed sources of radiation. Sources of radioactive material users include manufacturing and service industries, agriculture, hospitals, schools, and military bases. Each of the military bases in Orange County has the potential to store and transport radioactive material in the form of fissionable material. The County also has a large gamma ray sterilization facility that utilizes radioactive materials to sterilize equipment and food. The San Onofre Nuclear Generating Station (SONGS), located next to San Onofre State Beach, is on the Camp Pendleton U.S. Marine Corps Base in San Diego County. SONGS is approximately five miles south of the City of San Clemente.

San Bernardino County

According to the 2007 County of San Bernardino General Plan[7], a combination of climate, topography, vegetation, and development patterns creates high fire hazard risks throughout the County, especially in the many areas of wildland/urban intermix located in foothills and mountainous areas. As development encroaches upon wild land areas, the potential for disastrous loss of watershed, structures, and life, both human and wildlife, increases.

San Bernardino County generates about 65,000 tons of hazardous waste per year. The County's waste stream represents about 5 percent of the wastes generated in the southern California region. The major categories of waste produced in the County include metal containing liquids, waste oil, oily sludge, and baghouse waste. These wastes come from a variety of industries ranging from small businesses, such as automotive services and plating companies, to large industries, such as steel manufacturing.

Riverside County

Historically, Riverside County has had the second highest number of state and federally-declared disasters in California. For example, Riverside County has suffered six fire disasters since 1970. Much of the County is at risk from wildland fire, which is a severe and growing problem. Meanwhile, throughout the 20th century, floods caused by storms have been the number one natural disaster in the U.S., for lives lost and property damage. Since 1975, Riverside County has suffered eleven floods severe enough to merit

[7] County of San Bernardino 2007 General Plan. Prepared by URS Corporation. Effective April 12, 2007.

declarations of disaster. All of these hazards are costly and potentially life-threatening and affect significant portions of Riverside County.

REGULATORY SETTING

The use, storage, and transportation of hazardous materials are subject to numerous laws and regulations at all levels of government, which serve to minimize the potential impacts associated with hazards at industrial or commercial facilities. The most relevant hazardous materials laws and regulations are summarized in the following discussion.

Federal

United States Environmental Protection Agency (USEPA)

The USEPA is the primary federal agency charged with protecting human health and with safeguarding the natural environment: air, water, and land. The USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress. The USEPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Since 1970, Congress has enacted numerous environmental laws including the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and the Toxic Substances Control Act (TSCA).

Hazardous waste generation, storage, treatment, and disposal are regulated by the USEPA (see 40 CFR Parts 238-282) pursuant to RCRA. According to USEPA estimates, of the 13 billion tons of industrial, agricultural, commercial, and household wastes generated annually, more than 279 million tons (2 percent) are "hazardous," as defined by RCRA regulations. The regulations specify requirements for generators, including waste minimization methods, as well as for transporters and for treatment, storage, and disposal facilities (TSDFs). The regulations include restrictions on land disposal of wastes and used oil management standards.

CERCLA (generally referred to as Superfund) was enacted by Congress on December 11, 1980. CERCLA established a trust fund to provide for toxic waste cleanup when no responsible party could be identified. Additionally, CERCLA gave the USEPA power to seek out those parties responsible for any release and assure their cooperation in the cleanup. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the NPL sites, which is the list of hazardous waste sites eligible for long-term remedial action financed under the federal Superfund program. CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation, including additional enforcement authorities.

The TSCA was enacted by Congress to give the USEPA the ability to track the 75,000 industrial chemicals currently produced or imported into the U.S. The USEPA repeatedly screens these chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. The USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.[8]

United States Department of Transportation (USDOT)

The United States Department of Transportation (USDOT) (see 49 CFR Parts 171-180) regulates hazardous materials shipping at the federal level. Congress passed the Hazardous Materials Transportation Act to give authority to the Secretary of Transportation "to provide adequate protection against the risks to life and property inherent in transporting hazardous materials in commerce."

The Research and Special Programs Administration (RSPA) of the USDOT issues the hazardous materials regulations. The regulations cover definition and classification of hazardous materials, communication of hazards to workers and the public, packaging and labeling requirements, operational rules for shippers, and training. They apply to interstate, intrastate, and foreign commerce by air, rail, ships, and motor vehicles, and also cover hazardous waste shipments. The Federal Highway Administration (FHWA) is responsible for highway routing of hazardous materials and highway safety permits. The U.S. Coast Guard regulates bulk transport by vessel.

The hazardous material regulations include emergency response provisions, including incident reporting requirements. Reports of major incidents go to the National Response Center, which in turn is linked with CHEMTREC, a service of the chemical manufacturing industry that provides details on most chemicals shipped in the U.S.[9]

State

The Office of Emergency Services (OES) coordinates overall state agency response to major disasters in support of local government. OES is responsible for assuring the state's readiness to respond to and recover from natural, manmade, and war-caused emergencies, and for assisting local governments in their emergency preparedness, response, and recovery efforts. During major emergencies, OES may call upon all state agencies to help provide support. Due to their expertise, the California National Guard, California Highway Patrol (CHP), Department of Forestry and Fire Protection, Conservation Corps, Department of Social Services, and California Department of Transportation (Caltrans) are the agencies most often asked to respond and assist in emergency response activities.

California Assembly Bill (AB) 2185 requires local agencies to regulate the storage and handling of hazardous materials and requires development of a plan to mitigate the release of hazardous materials. Businesses that handle any of the specified hazardous materials must submit to government agencies (i.e., fire departments), an inventory of their hazardous materials, an emergency response plan, and an employee training

[8] SCAG 2008 RTP FEIR, Section 3.7, Hazardous Materials.
[9] *Ibid*.

program (19 CCR §2729 et seq.). The business plans must provide a description of the types of hazardous materials/waste on-site and the location of these materials. The information in the business plan can then be used in the event of an emergency to determine the appropriate response action, the need for public notification, and the need for evacuation. The USEPA's Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of SARA, imposes similar requirements.

Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) to prevent accidental releases of these substances. US EPA regulations relative to risk management are set forth in 40 Code of Federal Regulations (CFR) Part 68. Similarly, in California, the California Accidental Release Prevention (CalARP) Program regulation (19 CCR Division 2, Chapter 4.5) was issued by OES. Stationary sources with more than a threshold quantity of a regulated substance shall be evaluated to determine the potential for and impacts of accidental releases from any processes subject to the above federal or state risk management requirements. Under certain conditions, the owner or operator of a stationary source may be required to develop and submit an RMP. RMPs consist of three main elements: a hazard assessment that includes off-site consequences analyses and a five-year accident history, a prevention program, and an emergency response program. RMPs for existing facilities were required to be submitted by June 21, 1999. The local fire department usually administers the CalARP program.

Facilities that store large volumes of hazardous materials are required to have a Spill Prevention Containment and Countermeasures (SPCC) Plan per the requirements of 40 CFR, Section 112. The SPCC is designed to prevent spills from on-site facilities and includes requirements for secondary containment, provides emergency response procedures, establishes training requirements, and so forth.[10]

Transportation and use of hazardous materials are the concern of several state and local agencies, including Caltrans, which tracks hazardous materials spills at the district level; the CHP, whose Commercial Vehicle Section includes a Motor Carrier/Licensing and HazMat Regulations Unit; and the state OES, which responds to hazardous materials emergencies in cooperation with local responders. In addition, state law has established Certified Uniform Program Agencies (CUPA), often housed within local fire departments, to oversee local hazardous materials storage, usage, and disposal.

The identification and cleanup, or remediation, of environmentally contaminated properties is regulated by several agencies in California, depending on the size and nature of the site, its past uses, and whether soil or groundwater are impacted. As indicated by the lists given under Environmental Setting, the Cal/EPA, the DTSC, SWRCB, and RWQCBs may all have an interest or role in site cleanup. Generally, the water boards will get involved where groundwater or surface water is impacted by contamination. Cleanup of former military bases may also be managed by a group of agencies, including

[10] South Coast Air Quality Management District (SCAQMD), 2007 Air Quality Management Plan (AQMP), Final Program Environmental Impact Report (FPEIR). Section 3.3, Hazards.

the USEPA and DTSC, regional water boards, and occasionally water districts, and is advised by a local citizens' group called a Restoration Advisory Board.[11]

Local

Los Angeles County

The Office of Emergency Management is responsible for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. The County's policies towards hazardous materials management include enforcing stringent site investigations for factors related to hazards; limiting the development in high hazard areas, such as floodplains, high fire hazard areas, and seismic hazard zones; facilitating safe transportation, use, and storage of hazardous materials in the County; supporting lead paint abatement; remediating brownfield sites; encouraging the purchase of homes on the FEMA Repeat Hazard list and designating the land as open space; enforcing restrictions on access to important energy sites; limiting development downslope from aqueducts; promoting safe alternatives to chemical-based products in households; and prohibiting development in County floodways. The County has defined effective emergency response management capabilities to include supporting County emergency providers with reaching their response time goals; promoting the participation and coordination of emergency response management between cities and other Counties at all levels of government; coordinating with other County and public agency emergency planning and response activities; and encouraging the development of an early warning system for tsunamis, floods and wildfires.[12]

Orange County

The regulatory agency responsible for enforcement, as well as inspection of pipelines transporting hazardous materials, is the California State Fire Marshal's Office, Hazardous Liquid Pipeline Division. The Orange County Health Care Agency (OCHCA) has been designated by the Board of Supervisors as the agency to enforce the UST program. The OCHCA UST Program regulates approximately 7,000 of the 9,500 underground tanks in Orange County. The program includes conducting regular inspections of underground tanks; oversight of new tank installations; issuance of permits; regulation of repair and closure of tanks; ensuring the mitigation of leaking USTs; pursuing enforcement action; and educating and assisting the industries and general public as to the laws and regulations governing USTs.

Under mandate from the California Health and Safety Code, the Orange County Fire Authority is the designated agency to inventory the distribution of hazardous materials in commercial or industrial occupancies, develop and implement emergency plans, and require businesses that handle hazardous materials to develop emergency plans do deal with these materials.

[11] SCAG 2008 RTP FEIR, Section 3.7, Hazardous Materials.
[12] Safety Element, 2009. Los Angeles County Draft General Plan.

Orange County's Hazardous Materials Program Office is responsible for facilitating the coordination of various parts of the County's hazardous materials program; assisting in coordinating County hazardous materials activities with outside agencies and organization; providing comprehensive, coordinated analysis of hazardous materials issues; and directing the preparation, implementation, and modification of the County's Hazardous Waste Management Plan. In regards to San Onofre Nuclear Generating Station, in an effort to prepare those who live and work in areas outside, but adjacent to SONGS, the federal and state governments have established three levels of emergency zones. Orange County is responsible for its own emergency plans concerning a nuclear power plant accident, and the Incident Response Plan is updated regularly.[13]

San Bernardino County

San Bernardino County's Hazardous Waste Management Plan (HWMP) serves as the primary planning document for the management of hazardous waste in San Bernardino County. The HWMP identifies the types and amounts of wastes generated in the County; establishes programs for managing these wastes; identifies an application review process for the siting of specified hazardous waste facilities; identifies mechanisms for reducing the amount of waste generated in the County; and identifies goals, policies, and actions for achieving effective hazardous waste management. One of the County's stated goals is to minimize the generation of hazardous waste in the County and reduce the risk posed by storage, handling, transportation, and disposal of hazardous wastes. In addition, the County will protect its residents and visitors from injury and loss of life and protect property from fires by deploying firefighters and requiring new land developments to prepare site-specific fire protection plans.[14]

Riverside County

Through its membership in the Southern California Hazardous Waste Management Authority (SCHWMA), the County of Riverside has agreed to work on a regional level to solve problems involving hazardous waste. SCHWMA was formed through a joint powers agreement between Santa Barbara, Ventura, San Bernardino, Orange, San Diego, Imperial, and Riverside Counties and the Cities of Los Angeles and San Diego. Working within the concept of "fair share," each SCHWMA county has agreed to take responsibility for the treatment and disposal of hazardous waste in an amount that is at least equal to the amount generated within that county. This responsibility can be met by siting hazardous waste management facilities (transfer, treatment, and/or repository) capable of processing an amount of waste equal to or larger than the amount generated within the county, or by creating intergovernmental agreements between counties to provide compensation to a county for taking another county's waste, or through a combination of both facility siting and intergovernmental agreements. When and where a facility is to be sited is primarily a function of the private market. However, once an application to site a facility has been received, the County will review the requested facility and its location against a set of established siting criteria to ensure that the

[13] Safety Element, 2004. Orange County General Plan.
[14] Safety Element, 2007. County of San Bernardino General Plan.

location is appropriate and may deny the application based on the findings of this review. The County of Riverside does not presently have any of these facilities within its jurisdiction and, therefore, must rely on intergovernmental agreements to fulfill its fair share responsibility to SCHWMA.[15]

[15] Safety Element. 2003. County of Riverside General Plan.

SUBCHAPTER 3.9

EXISTING SETTING - HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section describes existing water resources within the district.

ENVIRONMENTAL SETTING

Climate

The climate within the district varies widely between the coastal and inland areas. Coastal areas are characterized by long, hot, dry summers, and short, mild, relatively wet winters, also known as Mediterranean climate, while inland areas experience more extreme temperatures and little precipitation. Storms that have the potential to produce significant amounts of precipitation and flooding are extra-tropical cyclones of North Pacific origin, which normally occur from December through March. As the large winter storms move south over the ocean, they encounter colder air masses and the orographic effect of the mountains, producing widespread precipitation. These storms often last for several days. In addition to the extra-tropical cyclones, the district receives thunderstorms, which can occur at any time of the year. Comparatively, thunderstorms cover small areas but result in high-intensity precipitation, usually lasting for shorter periods. As such, thunderstorms can produce flash flooding, which are more common than widespread flooding within the region.

Most precipitation within the district occurs as rainfall, although snowfall is common at higher elevations. Historically, the region receives most of its rainfall during the month of January and the least of its rainfall during the month of June. For the entire region, annual rainfall can range from 2 to 5 inches, 10 to 18 inches on the coastal plains, and 20 to 40 inches in the mountains. The region is also subject to multi-year cycles of wet (El Niño) and dry (La Niña) weather.

Hydrologic Regions

The Department of Water Resources (DWR) has divided the state into ten hydrologic regions (HR), corresponding to the state's major water drainage basins. Of the ten hydrologic regions, three are, in part, within the district: South Lahontan (parts of Los Angeles and San Bernardino counties), South Coast (Orange County, along with parts of Los Angeles, San Bernardino, and Riverside counties), and Colorado River (parts of Riverside, and San Bernardino counties). These three regions are described below.

<u>South Coast Hydrologic Region</u>

The South Coast Hydrologic Region comprises the southwestern portion of the state and is California's most urbanized and populous region. The topography includes a series of nearly flat coastal plains and valley, broad interior valleys, and several mountains of low and moderate elevation. The region extends from the Santa Barbara-Ventura County line south to San Diego and the U.S. international border with Mexico. The area within the district includes portions of Orange County, Los Angeles, San Bernardino, and Riverside County. Several prominent rivers exist within the region, including Ventura River, Santa Clara River, Los Angeles River, San Gabriel River, Santa Ana River, San Jacinto Rivers, and Santa Margarita River.

Water Supply and Use in the South Coast Hydrologic Region. The region has a diverse mix of both local and imported water supply sources. Local water sources include water recycling, groundwater storage and conjunctive use, conservation, brackish water desalination, water transfer and storage, and infrastructure enhancements. The region imports water through the State Water Project (SWP), the Colorado River Aqueduct (CRA), and the Los Angeles Aqueduct (LAA). These resources allow the region flexibility in managing supplies and resources in wet and dry years.

The Metropolitan Water District of Southern California (MWD) wholesales imported water to a consortium of 26 cities, water districts, and a county authority that serves 18 million people living in six counties, stretching from Ventura to San Diego. MWD imported an average of 703,000 acre-feet per year of water from the SWP from 1972 to 2003, and 680,000 acre-feet or more of water from the CRA.

South Lahontan Hydrologic Region

The South Lahontan Hydrologic Region is located in the southeast portion of California and is characterized by desert, sand dunes, and dry lakes. The northern half of the region includes Mono Lake, Owens Valley, Panamint Valley, Death Valley, and the Amargosa River Valley. The Mojave Desert occupies the southern half of the hydrologic region and is characterized by many small mountain ranges and valleys with playas, or dry lakes. The southern half falls within the district in San Bernardino and Los Angeles counties.

Water Supply and Use in the South Lahontan Hydrologic Region. The Los Angeles Aqueduct is the region's major water development feature. The initial 223-mile long aqueduct was completed by the Los Angeles Department of Water and Power (LADWP) and began diverting water from Owens Valley into the City of Los Angeles. The aqueduct was extended 115 miles in 1940 and 137 miles in 1970. The Los Angeles Aqueduct system passes through 12 hydropower plants in its way to Los Angeles. The annual energy generated is more than 1 billion kilowatt-hours (enough to supply the energy demand of approximately 220,000 homes).

Five water agencies in the southwestern portion of this region have contracts with the State Water Project (SWP) for a total of about 250,000 acre-feet of surface water annually. The East Branch of the SWP is used to recharge groundwater in the Mojave River Valley.

Colorado River Hydrologic Region

The Colorado River Hydrologic Region covers the southeastern portion of California and contains 12 percent of the state's land area. The Colorado River, the main tributary of this hydrologic region, forms most of the region's eastern boundary and international boundary with Mexico. The region includes all of Imperial County, the eastern two-thirds of Riverside County, the southeastern one-third of San Bernardino County, and about one-fourth of San Diego County. It has a variety of arid desert terrain that includes many bowl-shaped valleys, broad alluvial fans, sandy washes, and hills and mountains.

Water Supply and Use in the Colorado River Hydrologic Region. About 85 percent of the region's urban and agricultural water supply comes from surface water deliveries from the Colorado River. Water from the river is delivered in the region via the All American and Coachella canals, local diversions, and the Colorado River Aqueduct by means of an exchange for SWP water. The Colorado River is an interstate and international river whose use is apportioned among the seven Colorado River Basin states and Mexico by a complex body of statues, decrees, and court decisions known collectively as the "Law of the River." Local surface water, groundwater and the SWP provide the reminder of water to the region. In addition, many of the alluvial valleys in the regions are underlain by groundwater aquifers that are the sole source of water for many local communities. However, some alluvial valleys contain groundwater of such poor quality that is not suitable for potable uses.

Surface Hydrology

Surface water hydrology refers to surface water systems, including watersheds, floodplains, rivers, streams, lakes and reservoirs, and the inland Salton Sea.

Watersheds

Watersheds refer to areas of land, or basin, in which all waterways drain to one specific outlet, or body of water, such as a river, lake, ocean, or wetland. Watersheds have topographical divisions, such as ridges, hills or mountains. All precipitation that falls within a given watershed, or basin, eventually drains into the same body of water.

Major watersheds within the district are outlined and shaped by the various topographic features of the region. Given the physiographic characteristics of the district, most of the watersheds are located along the Transverse and Peninsular Ranges, and only a small number are in the desert areas. Below is a summary of each of the major watersheds, by county, with their corresponding Hydrologic Unit Code (HUC), which is assigned by the U.S. Geological Survey (USGS).). Figure 3.9-1 presents a map of the watersheds within the district.

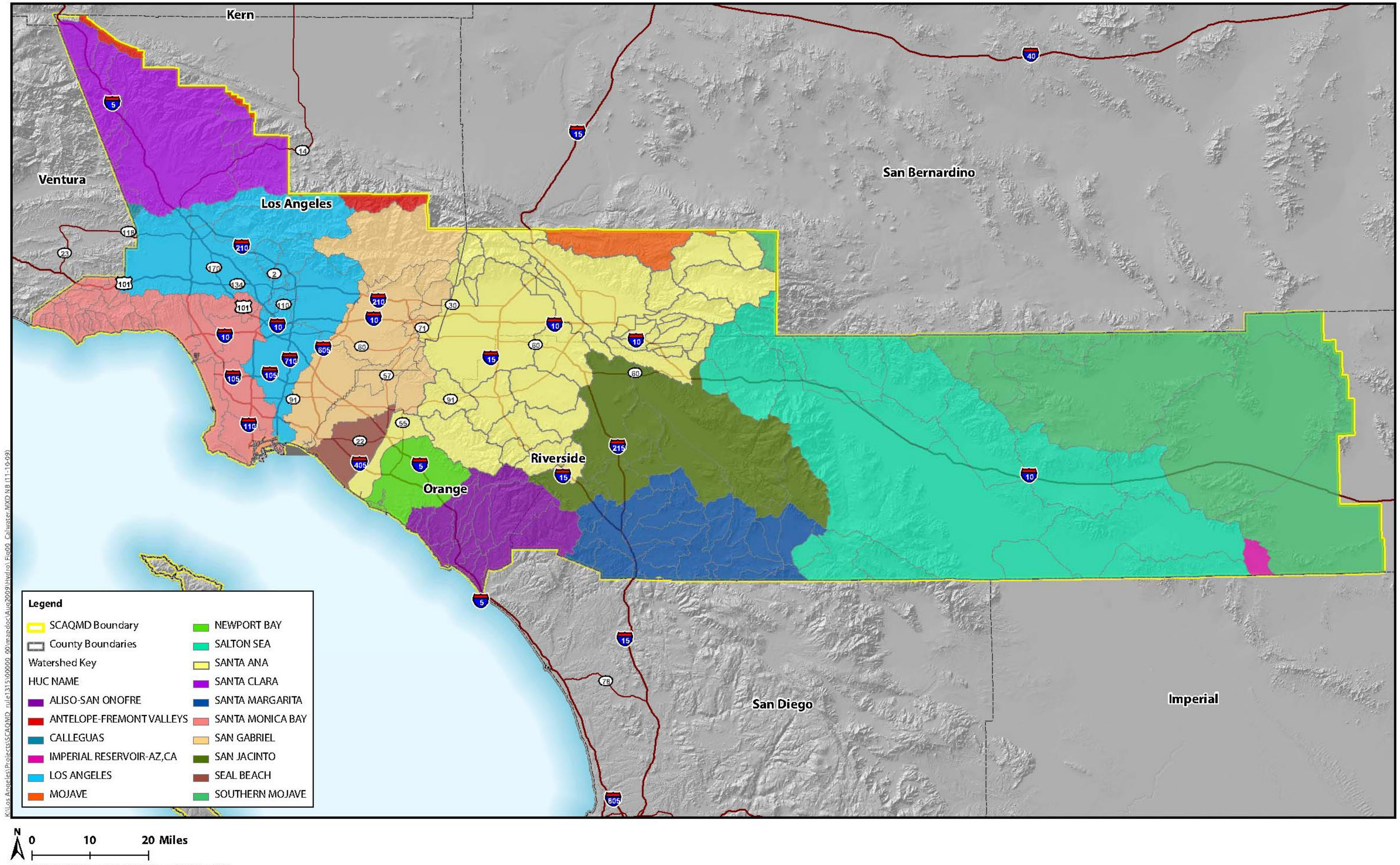


Figure 3.9-1
USGS Watersheds within the South Coast Air Quality Management District

Santa Monica Bay Watershed (HUC 18070104). The majority of the Santa Monica Bay Watershed is in Los Angeles County and contained within the South Coast Hydrologic Region. In the north, the watershed reaches eastward from the Santa Monica Mountains to downtown Los Angeles. From there, it extends south and west across the Los Angeles plain to include the area east of Ballona Creek and north of the Baldwin Hills. South of Ballona Creek the natural drainage area is a narrow strip of wetlands between Playa del Rey and Palos Verdes. The watershed is comprised of many sub-watersheds that cover broad alluvial valleys, coastal dunes, coastal mountains, and a number of deep and narrow canyons that flow to the Pacific Ocean. The major sub-watersheds include Ballona Creek, Malibu Creek, Topanga Canyon Creek, and Solstice Creek Watersheds. The total drainage area is 414 square miles. Santa Monica Bay Watershed is one of the nation's most highly urbanized watersheds. Major cities within the watershed include Agoura Hills, Calabasas, Malibu, Los Angeles, Culver City, Beverly Hills, Inglewood, Santa Monica, and West Hollywood.

Los Angeles River Watershed (HUC 18070105). Los Angeles River watershed is bounded by the Santa Susanna Mountains to the west, the San Gabriel Mountains to the north and east, and the Santa Monica Mountains and Los Angeles coastal plain to the south. The Los Angeles River is born at the confluence of Bell Creek and Calabasas Creek in the San Fernando Valley. It drains eastward from its headwaters to the northern corner of Griffith Park where the channel then turns southward through the rocky bottleneck of Glendale Narrows. After crossing the coastal plain, the river finally drains into San Pedro Bay near Long Beach. The drainage area of Los Angeles Watershed is 834 square miles and the entire watershed falls within the South Coast Hydrologic Region.

Major tributaries of the watershed are Burbank Western Channel, Pacoima Wash, Tujunga Wash, and Verdugo Wash in the San Fernando Valley and the Arroyo Seco, Compton Creek, and Rio Hondo south of the Glendale Narrows. There are numerous lakes and reservoirs in the watershed to include Big Tujunga Reservoir, Chatsworth Reservoir, Encino Reservoir, Echo Park Lake, Los Angeles Reservoir, and Silverlake Reservoir. The upper 57 percent of the watershed is covered by forest and open space, while the remaining 43 percent is highly developed with residential and urban use. Major cities within the watershed include Long Beach, Los Angeles, and East Los Angeles.

San Gabriel River Watershed (HUC 18070106). San Gabriel Watershed lies mostly in Los Angeles County. It is bounded by the San Gabriel Mountains to the north, Puente-Chino Hills to the southeast, the division of the Los Angeles River from the San Gabriel River to the west, and the Pacific Ocean to the south. From the mouth of San Gabriel Canyon in the city of Azusa, the San Gabriel River flows south across the San Gabriel Valley and passes through Whittier Narrows, a natural gap in the hills that form the southern boundary of the San Gabriel Valley. It continues across the Pacific Coastal Plain, through the cities of Pico Rivera, Downey, Bellflower, and Lakewood to eventually meet the Pacific Ocean. Geology of the San Gabriel Valley creates an unusual flow pattern that keeps the San Gabriel River along the western edge of the watershed for most of its length. Major tributaries are San Jose Creek, San Dimas Creek, and Walnut Creek. The watershed falls within the South Coast Hydrologic Region.

The watershed drains 640 square miles. Twenty-six percent of the watershed is developed, leaving 74 percent as open space. The river system runs through lands in the Angeles National forest as well as highly urbanized lands in the San Gabriel, Walnut, and Pomona Valleys. Major cities include Covina, Pomona, Whittier, Los Angeles, and Long Beach.

Newport Bay Watershed (HUC 18070204). The Newport Bay Watershed is sandwiched between the San Joaquin Hills to the north and the Santiago Hills to the south, which force surface flow onto the central, flat Tustin plain. The Pacific Ocean comprises 13.5 miles of the watersheds western border. Coastal foothills accent the alluvial and coastal plains between the two mountain ranges. In total, the watershed drains 150 square miles, which encompasses all water draining to Newport Bay. Peters Canyon Wash, San Diego Creek, and Santa Ana Delhi Channel are the watershed's major tributaries. Newport Bay Watershed falls within the South Coast Hydrologic Region.

Land in the Newport Bay Watershed is highly developed. Forty-seven percent of the landscape is urban, 4 percent agriculture, and 49 percent open space. Major cities include Santa Ana, Tustin, Irvine, Costa Mesa, and Newport Beach.

Seal Beach - Westminster Watershed (HUC 1807020). Westminster Watershed lies on a flat coastal plain in the northwestern corner of Orange County. Three main tributaries drain a total of 74 square miles in the watershed. The Los Alamitos Channel drains into the San Gabriel River, the Bolsa Chica Channel empties into the Anaheim Bay-Huntington Harbour complex, and the East Garden Grove-Wintersburg Channel drains through Bolsa Bay into Huntington Harbour. Seal Beach – Westminster Watershed falls in the South Coast Hydrologic Region. Westminster Watershed is almost entirely urbanized with residential and commercial development. The watershed comprises portions of the cities of Anaheim, Cypress, Fountain Valley, Garden Grove, Huntington Beach, Los Alamitos, Santa Ana, Seal Beach, Stanton, and Westminster.

Aliso-San Onofre Watershed (HUC 18070301). Aliso-San Onofre Watershed lies within Orange County, in the South Coast Hydrologic Region. The major waterway is Aliso Creek, which drains to the Pacific Ocean. Aliso Creek is one of three significant waterbodies in the watershed, including also Lake Mission Viejo and San Juan Creek. This watershed is highly urbanized, with over fifty percent of the land area classified as urban.

Antelope-Fremont Valleys Watershed (HUC 18090206). The Antelope-Fremont Valley Watershed straddles Kern and Los Angeles County, and is bordered on the southwest by the San Gabriel Mountains, on the northwest by the Tehachapi Mountains, and on the east by a series of hills and buttes that follow the San Bernardino County line. Numerous streams originate in the mountains and foothills surrounding the valley and flow across the valley floor before eventually pooling in the dry lakes adjacent to the county line. It's located in the South Lahontan Hydrologic region.

The watershed drains a total of 12,000 square miles within Los Angeles County. Three of the major tributaries are Big Rock Creek and Little Rock Creek that run from the San

Gabriel Mountains and Oak Creek that runs from the Tehachapi Mountains. Los Angeles Aqueduct also runs 180 miles through the watershed. Reservoirs include the California Aqueduct, Fairmont Reservoir, and Littlerock Reservoir. Major cities within the Los Angeles County portion of the watershed include Lancaster and Palmdale.

Mojave Watershed (HUC 18090208). The Mojave Watershed – comprised of high desert, mountains, and valleys - is located entirely within San Bernardino County and within the South Lahontan Hydrologic Region. It drains a total of 1,600 square miles. The San Bernardino, Granite, and Barstow Mountains form the southwestern borders of the watershed. Mountains in this region are the highest and include Butler Peak, which is the highest point of elevation at 8,500 feet. The San Bernardino Mountains are the headwaters for the Mojave River system which is born of Deep Creek and West Fork, the two perennial tributaries to the Mojave River. The Mojave River traverses the watershed for 120 miles until its terminus at Soda Lake and Silver Dry Lake. Flow is from the southwest to the northeast.

Land in the Mojave Watershed is largely recreational areas and rangeland. A small amount of the land is irrigated agricultural land and 'rural urban' areas. Major population centers in the watershed include Victorville, Hesperia, Apple Valley, and Adelanto.

Southern Mojave Watershed (HUC 18100100). The Southern Mojave Watershed lies in San Bernardino and Riverside Counties and within the Colorado River Hydrologic Region. It is bordered by a mountainous region of the Mojave Watershed to the north. The watershed is comprised of mountains, valleys, and dry lakes. A significant geographical feature of the region is the Salton Trough, which contains the Salton Sea and Imperial and Coachella Valleys. The two valleys are separated by the Salton Sea, which covers the lowest area of the depression. Major tributaries include Antelope Creek, Arrastre Creek, Homer Wash, and Pipes Canyon Creek.

Santa Ana River Watershed (HUC 18070203). The Santa Ana River Watershed includes much of Orange County, the northwestern corner of Riverside County, the southwestern corner of San Bernardino County, and a small portion of Los Angeles County, draining a total of 2,065 square miles. The Watershed is located within the South Coast Hydrologic Region. The watershed is bounded on the south by the San Jacinto Watershed, on the east by the Salton Sea and Southern Mojave watersheds, and on the north/west by the Mojave and San Gabriel watersheds. The highest elevation in the watershed occurs in the San Bernardino Mountains at San Gorgonio Peak at 11,485 feet and the eastern San Gabriel Mountains at Mt. Baldy at 10,080 feet. Surface waters start in this mountainous zone and flow northeast to southwest. Further downstream, the Santa Ana Mountains and the Chino Hills form a topographic high before the river flows onto the Coastal Plain in Orange County and outlets into the Pacific Ocean in Huntington Beach. Major tributaries to the Santa Ana River include San Timoteo Creek and Santiago Creek.

Santa Ana Watershed is home to the most developed portion of Orange County and much of the built-up portions of Riverside and San Bernardino Counties. Major Cities include Santa Ana, Rancho Cucamonga, Corona, and San Bernardino.

San Jacinto Watershed (HUC 18070202). The San Jacinto Watershed is in Riverside County, and is centered roughly on the city of Hemet. It includes Lake Elsinore, as well as Sun City.

Calleguas Creek Watershed (HUC 18070103). Calleguas Creek and its tributaries are located in southeast Ventura County and a small portion of western Los Angeles County. The watershed falls within the South Coast Hydrologic Region. Calleguas Creek drains an area of approximately 343 square miles from the Santa Susana Pass in the east to Mugu Lagoon in the southwest. The watershed drains from the mountains in the northeast part of the watershed toward the southwest where it flows through the Oxnard Plain before emptying into the Pacific Ocean through Mugu Lagoon. The Santa Susana Mountains, South Mountain, and Oak Ridge form the northern boundary of the watershed; the southern boundary is formed by the Simi Hills and Santa Monica Mountains.

The watershed is characterized by three major sub-watersheds: the Arroyo Simi/Las Posas in the north, Conejo Creek in the south, and Revolon Slough in the west. Major tributaries of Calleguas Creek include Arroyo Simi, Arroyo Conejo, and Arroyo Santa Rosa. The watershed includes the cities of Simi Valley, Moorpark, Thousand Oaks, and Camarillo. Most of the agriculture is located in the middle and lower watershed with the major urban areas (Thousand Oaks and Simi Valley) located in the upper watershed. The current land use in the watershed is approximately 26 percent agriculture, 24 percent urban, and 50 percent open space.

Santa Clara River Watershed (HUC 18070102). Santa Clara River and its tributaries run through Ventura County and the northwestern part of Los Angeles County, and it located in the South Coast Hydrologic Region. The portion of the watershed within Los Angeles County is referred to as Upper Santa Clara and the portion within Ventura County is referred to as Lower Santa Clara. Santa Clara River drains an area of 1,634 square miles from the mountains in northern Los Angeles County to the Pacific Ocean. The watershed drains from Pacifico Mountain in the San Gabriel Mountains westward through the Angeles National Forest System before emptying into the Pacific Ocean near the City of Ventura. Ninety percent of the watershed consists of rugged mountains. The remainder of the watershed consists of valley floor and coastal plains.

Land uses in the Santa Clara watershed is 62 percent open space, 29 percent agriculture, and 9 percent urban. Major cities include Acton, Santa Clarita, Fillmore, Santa Paula, venture, and Oxnard.

Salton Sea Watershed (HUC 18100200). The Salton Sea Watershed extends from just north of the Salton Sea, in Riverside County, to the Mexicali Valley, near the US-Mexico border, in Imperial County. This watershed makes up the lower part of the Coachella Valley, bordered by mountains to the east and west, and extending south to the Colorado Delta in the Sea of Cortez. The main geographic feature in this watershed is California's largest lake, the Salton Sea, an inland saltwater lake approximately 380 square miles in size.

In 2001, the Imperial Irrigation District, the largest recipient of Colorado River water in California, agreed to a plan to transfer up to 200,000 acre-feet of water per year to San Diego for municipal water uses.

Floodplains

Much of the district region's urbanized area lies within alluvial fan floodplains. Since the region is so mountainous, development often occurs in the valleys, and newer development extends into the foothills of those mountains. Floodplains in Southern California are a unique hazard area; although flooding from rain-swollen rivers can occur in valley bottoms, a more common floodplain hazard is debris flow. Debris flows are common in mountain foothill areas, especially after fire and heavy rain events, when wet, heavy soils and rock flow like water down steep slopes and into the valley below. Areas with a history of such slides can often be identified by sloping, fanshaped landforms at the base of mountains and hillsides.

Rivers

Because the climate of Southern California is predominantly arid, many of the natural rivers and creeks are intermittent or ephemeral, drying up in the summer or flowing only after periods of precipitation. For example, annual rainfall amounts vary depending on elevation and proximity to the coast. Some waterways such as Ballona Creek and the Los Angeles River maintain a perennial flow due to agricultural irrigation and urban landscape watering. Figure 3.9-2 presents a map of the major rivers within the district.

Major natural streams and rivers in the district region include the Santa Clara River, Los Angeles River, San Gabriel River, Santa Ana River, San Jacinto River, and upstream portions of the Santa Margarita River.

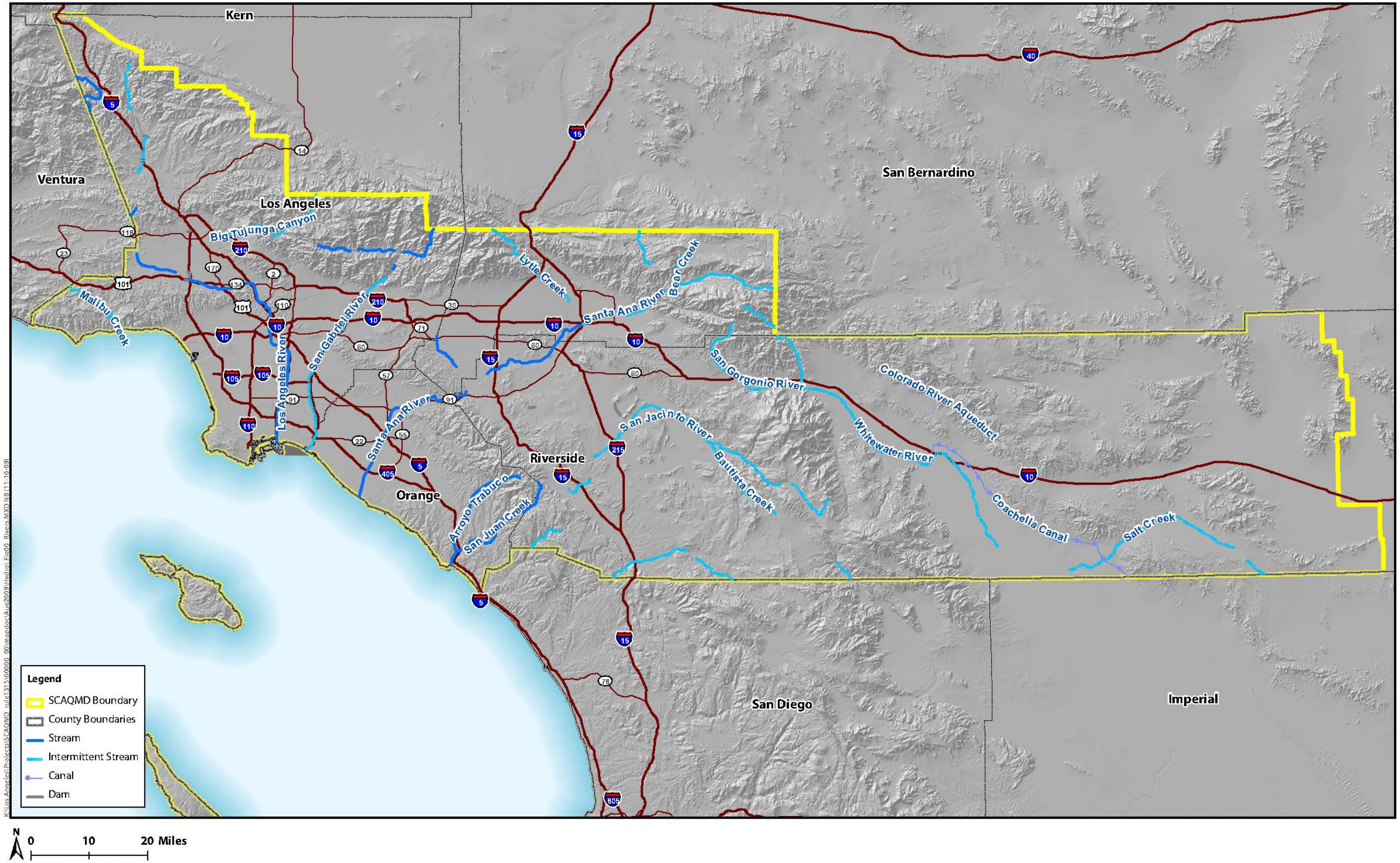
The Santa Clara River flows through the center of Ventura County and remains in a relatively natural state. Threats to water quality include increasing development in floodplain areas, flood control measures such as channeling, erosion, and loss of habitat.

The Los Angeles River is a highly disturbed system due to the flood control features along much of its length. Due to the high urbanization in the area around the Los Angeles River, runoff from industrial and commercial sources as well as illegal dumping contribute to reduce the channel's water quality.

The San Gabriel River is similarly altered with concrete flood control embankments and impacted by urban runoff.

The Santa Ana River drains the San Bernardino Mountains, cuts through the Santa Ana Mountains, and flows onto the Orange County coastal plain. Recent flood control projects along the river have established reinforced embankments for much of the river's path through urbanized Orange County.

The Santa Margarita River begins in Riverside County, draining portions of the San Jacinto Mountains and flowing to the ocean through northern San Diego County.



Source: SCAQMD (2009), ICF Jones and Stokes (2009), ERSI Imagery (2008), ESRI (2008)

Figure 3.9-2
Rivers within South Coast Air Quality Management District

Complete lists of surface water resources within the district region along with the beneficial uses associated with them are contained in each of the five Basin Plans prepared by the Regional Water Quality Control Boards of the region.

Lakes and Reservoirs

Since Southern California is a semi-arid region, many of its lakes are drinking water reservoirs, created either through damming of rivers, or manually dug and constructed. Reservoirs also serve as flood control for downstream communities. Some of the most significant lakes, including reservoirs, in the district region are Big Bear Lake, Lake Arrowhead, Castaic Lake, Pyramid Lake, Lake Elsinore, Diamond Valley Lake, and the Salton Sea.

Big Bear Lake is a reservoir in San Bernardino County, in the San Bernardino Mountains. It was created by a granite dam in 1884, which was expanded in 1912, and holds back approximately 73,000 acre-feet of water. The lake has no tributary inflow, and is replenished entirely by snowmelt. It provides water for the community of Big Bear, as well as nearby communities.

Lake Arrowhead is also in San Bernardino County, at the center of an unincorporated community also called Lake Arrowhead. The lake is a man-made reservoir, with a capacity of approximately 48,000 acre-feet. The Lake Arrowhead Dam was completed in 1922, with the intention of turning the area into a resort for wealthy Angelinos. It is now used for recreation and as a potable water source for the surrounding community.

Castaic Lake is on the Castaic Creek, and was formed by the completion of the Castaic Dam. The lake is in northwestern Los Angeles County. It is the terminus of the West Branch of the California Aqueduct, and holds over 323,000 acre-feet of water. Much of the water is distributed throughout northern Los Angeles County, though some is released into Castaic Lagoon, which feeds Castaic Creek. The creek is a tributary of the Santa Clara River. Pyramid Lake is just above Castaic Lake, and water flows from Pyramid into Castaic through a pipeline, generating electricity during the day. At night, when electricity demand and prices are low, water is pumped back up into Pyramid Lake. Pyramid Lake is on Piru Creek, and holds 180,000 acre-feet of water.

Lake Elsinore is in the City of Lake Elsinore, in Riverside County. The lake has dried and up and been replenished throughout the last century, it is now managed to maintain a consistent water level, with outflow piped into the Temescal Canyon Wash.

Diamond Valley Lake is Southern California's newest and largest reservoir. Located in Riverside County, it was a project of the Metropolitan Water District (MWD) to expand surface storage capacity in the region. A total of three dams were required to create the lake. Completed in 1999, it was full by 2002, holding 800,000 acre-feet of water, effectively doubling MWD's surface water stores in the region. The lake is connected to the existing water infrastructure of the SWP. The lake is situated at approximately 1,500 feet above sea level, well above most of the users of the lake's water; this enables the lake to also provide hydroelectric power, as water flows through the lowest dam.

The Salton Sea is California's largest lake, nearly 400 square miles in size. The basin is over 200 feet below sea level, and has therefore flooded and evaporated many times over, when the Colorado overtops its banks during extreme flood years. This cycle of flooding and evaporation has re-created the Sea several times over at least the last thousand years. Its most recent formation occurred in 1905 after an irrigation canal was breached and the Colorado River flowed into the basin for 18 months, creating the current lake.

The principle inflow to the Sea is from agricultural drainage, which is high in dissolved salts; approximately four million tons of dissolved salts flow into the Sea every year. The evaporation of the Sea's water, plus the addition of highly saline water from agriculture, has created one of the saltiest bodies of water in the world. The Sea has been a highly successful fishery and is a habitat and migratory stopping and breeding area for 380 different bird species; however, the high, and ever-increasing, salinity of the Sea is a continual challenge for the fish and birds that inhabit it.

The 2001 agriculture to city water transfer agreement, between the Imperial Valley Irrigation District and San Diego will have significant implications for the Salton Sea, and the watershed. The reduction in agricultural water flowing into the Sea will significantly lower water levels, shrinking the overall size of the Sea.

The major surface waters in this section are presented in Table 3.9-1.

TABLE 3.9-1

Major Surface Waters

Wetlands	Rivers, Creeks, and Streams	Lakes and Reservoirs
	Los Angeles Basin	
Ventura River Estuary Santa Clara River Estuary McGrath Lake Ormond Beach Wetlands Mugu Lagoon Trancas Lagoon Topanga Lagoon Los Cerritos Wetlands Ballona Lagoon Los Angeles River Ballona Wetlands	Sespe Creek Piru Creek Ventura River Santa Clara River Los Angeles River Big Tujunga Canyon San Gabriel River Ballona Creek	Lake Casitas Lake Piru Pyramid Lake Castaic Lake Bouquet Reservoir Los Angeles Reservoir Chatsworth Reservoir Sepulveda Reservoir Hansen Reservoir San Gabriel Reservoir Morris Reservoir Whittier Narrows Reservoir Santa Fe Reservoir
	Lahontan Basin	
	Mojave river Amargosa River	Silver Lake Silverwood Lake Mojave River Reservoir Lake Arrowhead Soda Lake

TABLE 3.9-1 (Concluded)

Major Surface Waters

Wetlands	Rivers, Creeks, and Streams	Lakes and Reservoirs
	Colorado River Basin	
	Colorado River Whitewater River Alamo River New River	Lake Havasu Gene Wash Reservoir Copper Basin Reservoir Salton Sea Lake Cahuilla
	Santa Ana Basin	
Hellman Ranch Wetlands Anaheim Bay Bolsa Chica Wetlands Huntington Wetlands Santa Ana River Laguna Lakes San Juan Creek Upper Newport Bay San Joaquin Marsh Prado Wetlands	Santa Ana River San Jacinto River	Prado Reservoir Big Bear Lake Lake Perris Lake Matthews Lake Elsinore Vail Lake Lake Skinner Lake Hemet Diamond Valley Lake

Source: Draft 2008 RTP PEIR, January 2008 p. 3.15-14.

Groundwater Hydrology

Groundwater is the part of the hydrologic cycle representing underground water sources. Groundwater is present in many forms: in reservoirs, both natural and constructed, in underground streams, and in the vast movement of water in and through sand, clay and rock beneath the earth's surface. The place where groundwater comes closest to the surface is called the water table, which in some areas may be very deep, and in others may be right at the surface. Groundwater hydrology is therefore connected to surface water hydrology, and cannot truly be treated as a separate system. One example of this is surface streams that are partly filled by groundwater. When that groundwater is pumped out and removed from the system, the stream levels will fall, or even dry up entirely, even though no water was removed from the stream itself.

Groundwater represents most of the district region's fresh water supply. Groundwater basins are replenished mainly through infiltration – precipitation soaking into the ground and making its way into the groundwater. Two threats to the function of this system are increases in impervious surface and overdraft.

Impervious surface decreases the area available for groundwater recharge, as precipitation runoff flows off of streets, buildings, and parking lots directly into storm sewers, and straight into either river channels or into the ocean. This prevents the natural recharge of groundwater, effectively removing groundwater from the system without any pumping. Impervious surface also deteriorates the quality of the water, as it moves over streets and buildings, gathering pollutants and trash before entering streams, rivers, and the ocean.

To prevent seawater intrusion in coastal basins in Orange County, recycled water is injected into the ground to form a mound of groundwater between the coast and the main groundwater basin. In Los Angeles County, imported and recycled water is injected to maintain a seawater intrusion barrier.

Overdraft is the condition where the rate of water withdrawal exceeds the rate of water recharge in a particular basin over a period of time. A comprehensive assessment of overdraft in California groundwater basins has not been conducted since 1980. The most recent (2003) DWR report on California's groundwater found that in most cases, there is insufficient quantitative information to identify overdrafted groundwater basins. The report encourages local groundwater managers and DWR to seek funding and work cooperatively to evaluate groundwater basins for overdraft. The report recommends that local agencies take the lead in collecting and analyzing data to understand groundwater basin conditions, and points out that much of the data are needed by the agencies to effectively manage groundwater. Despite the lack of local data, DWR does provide overdraft estimates for the State as a whole, which are on the order of one to two million acre-feet per year, during average precipitation years.

The Natural Resources Defense Council issued a 2001 report that found California's groundwater resources face a serious long-term threat from contamination. Subsequent legislation required a comprehensive assessment of groundwater quality. The evaluation is being conducted by the U.S. Geological Survey, U.S. Department of the Interior and SWRCB. Groundwater wells throughout the district region are being studied for contaminants; the evaluation is scheduled for completion in 2010. The only portion of the district region completed to date is the Temecula Valley area in southwestern Riverside County. In the Temecula area, the study found perchlorate, pesticides, and other contaminants in water wells, but none exceeding drinking water quality standards (i.e., primary standards for maximum contaminant loads).

Volatile organic compounds have created groundwater impairments in industrialized portions of the San Gabriel and San Fernando Valley groundwater basins, where some locations have been declared federal Superfund sites. Subsequently, perchlorate contamination was found in the San Gabriel Valley. As of 2003, $99 million had been spent removing contaminants from affected aquifers. The EPA continues to oversee installation of a groundwater cleanup system, components of which are being installed beneath the cities of La Puente and Industry in 2006. Groundwater continues to be used as the predominant source of water supply in the valley. Similar problems exist in the Bunker Hills subbasin of the Upper Santa Ana Valley groundwater basin. Perchlorate contamination is emerging as an important contaminant, and has been found in wells in the Rialto, Colton and Fontana areas of San Bernardino County.

The presence of contamination in the source water does not necessarily require the closure of a groundwater well. Water systems can implement water treatment accompanied by monthly monitoring for contaminants and/or may blend the problematic water with other "cleaner" water in order to reduce the concentration of the contaminants of concern in the water that is ultimately to be delivered to the end-users.

Water Supply and Demand

Water Demand

Water demand in California can generally be divided between urban, agricultural, and environmental uses. In the SCAG area, which includes the SCAQMD area, 75 percent of potable water is provided from imported sources. Annual water demand fluctuates in relation to available supplies and according to the rainfall of a particular year. During prolonged periods of drought, water demand can be reduced significantly through conservation measures, while in years of above average rainfall, demand for imported water usually declines. In 2000, a 'normal' year in terms of annual precipitation, the demand for water in the State was between 82 and 83 million acre feet (maf). Of this total, the SCAG region accounted for approximately 9.8 maf.[1]

The increase in California's water demand is due primarily to the increase in population. According the California Water Plan Update 2005, under a baseline scenario following current trends in use and growth, water demand in California will increase by approximately 3.5 maf by 2030. If SCAG maintains its share of 12 percent of the state's water demand, the SCAG region could be expected to require an additional 500,000 af by 2030.

Demographics, Land Use, and Water Use

Water demand is influenced not only by population size, but also by socio-economic characteristics, geographical distribution of the population, and water conservation practices. The MWD estimates that average residential per capita use ranges from 97 gallons per person per day in coastal areas to 162 gallons per person per day in the desert areas.[2]

Water Conservation

The results of conservation in Los Angeles have been remarkable; the Los Angeles Department of Water and Power (DWP) reported in their *2005 Urban Water Management Plan* that "water conservation continues to play an important part in keeping the city's water use equivalent to levels seen 20 years ago." During this same period, DWP's service area grew in population by more than 750,000 people.[3]

Urban conservation measures include reducing landscape water use and installing low flow toilets and showerheads in new development. In September of 1991, during a state-wide drought, the MWD and other California water agencies signed a Memorandum of Understanding Regarding Urban Water Conservation Best Management Practices. Best

[1] Southern California Association of Governments, Draft 2008 RTP PEIR, January 2008, p. 3.15-15.
[2] *Ibid*, p. 3.15-16.
[3] *Ibid*, p. 3.15-17.

Management Practices (BMPs) to conserve water in commercial, institutional, and industrial uses could further reduce demand by an estimated three to five percent. Encouragement of the use of native and drought-proof plants, increased water conservation credits, funding for innovative conservation ideas in industry, tiered water rate structures, "smart" irrigation controllers and rebates for conservation hardware are all methods being implemented for increased conservation.

In the winter of 2006/2007, the district region received its lowest rainfall in recorded history. As a result of this drought, combined with ongoing drought in the Colorado River basin and unpredictability of future water supply due to global warming, conservation has shifted from a purely temporary measure to a long-term water management strategy. In 2007, the City of Long Beach passed a water conservation ordinance requiring individual reductions and behavioral changes regarding water use. According to the Long Beach Water Department, these measures are not intended to be temporary, but to form the basis for ongoing management of the city's water resources. Agricultural water conservation options are growing as irrigation techniques improve and as water transfer agreements create new pressures for more efficient water management and the growth of higher value and less water-intensive crops. As a result of these developments, DWR expects agricultural water consumption to decline materially by 2030 throughout the SCAQMD area.

Local Water Supply

Local sources of water account for approximately 25 percent of the total volume consumed annually in the SCAG region, which includes the district within its boundaries. Local sources include surface water runoff, groundwater and water reclamation.

<u>Local Surface Runoff (within each HU Region)</u>

The infiltration of surface runoff augments groundwater and surface water supplies. However, the regional water demand exceeds the current natural recharge of runoff water. The arid climate, summer drought and increased urbanization contribute to this reduction in natural recharge. Urban and agricultural runoff often contains pollutants that decrease the quality of local water supplies. Runoff captured in storage reservoirs varies widely from year to year depending on the amount of local precipitation. On average precipitation contributes 55,000 acre-feet per year (afy) within the MWD service area (not including San Diego County).[4] Within the desert regions, the amount is considerably less, owing to weather and the absence of surface storage facilities.

<u>Local Groundwater</u>

Groundwater represents most of the district region's fresh water supply, making up between 23 and 29 percent of total water use, depending on precipitation levels. In California, ground water typically provides 30 percent of the urban and agricultural water used. This proportion increases to 40 percent in dry years. The hydrologic regions vary in their dependence on groundwater for urban and agricultural uses. The California

[4] *Ibid*, p. 3.15-18.

Department of Water Resources estimates that the state has a groundwater overdraft of approximately 1 to 2 maf in average years.

Recent efforts to store recycled water and surplus water in groundwater basins for use during drought periods have proven successful. The Metropolitan Water District of Southern California (MWD) has entered into 19 agreements with various water agencies for groundwater storage, resulting in more than 87,000 af of added supply per year. A number of agencies within the region are also active in the recharge of surface water, including the Orange County Water District, Los Angeles County Department of Water and Power, Foothill Municipal Water District, San Bernardino County Water and Flood Control District, Coachella Valley Water District, the Water Replenishment District of Southern California and the San Gabriel Valley Municipal Water District.

Reclaimed/Recycled Water (Regional Wastewater management)

Water reclamation and recycling involves the secondary, and sometimes tertiary, treatment of polluted groundwater and wastewater effluent. Recycled water is used for three main purposes: ocean outfall, in-stream discharge, or reuse. Recycled water may be reused for many purposes, including landscape irrigation, surface water amenities in public places, including parks, industrial processes, groundwater recharge, and non-potable interior uses such as toilets. The use of recycled water for these various purposes augments the region's local water supplies and reduces reliance on water imports. According to MWD, current recycled water projects, either planned or in operation in the SCAG region, which includes the district region, account for approximately 355,000 af annually. The agency estimates that by 2025, this amount could be as high as 480,000 af, with an additional 130,000 af by 2050.

Recycled water could be a significant source of water for industry, which often needs highly processed, but non-potable water for industrial processes. Recycled water can also play a major role in replenishing saltwater intrusion barriers and other groundwater sources, but there are still significant hurdles to these uses with regards to health regulations, cost, and public acceptance of water recycling.

<u>Storage</u>

Water agencies in the region are also modifying existing reservoirs or creating new reservoirs to accommodate the expected future growth in water demand. MWD has recently completed filling Diamond Valley Lake near Hemet in Riverside County. This reservoir provides approximately 800,000 af of additional storage. In addition to surface storage, MWD is implementing various groundwater storage projects both within the district and in other areas of California. These "conjunctive use" projects store excess water during wet years in underground basins and can be accessed during dry years when surface water supplies are limited.

The SCAG region, which includes the district region, currently has more than 3.5 maf of storage capacity in all of its reservoirs; however, the anticipated increase in the region's population and growing uncertainty regarding water imports make increasing storage capacity a priority for the region. Increasing storage capacity can be a difficult process, with associated social and environmental impacts.

Imported Water

Imported sources of water (including the Colorado River Aqueduct, the State Water Project's California Aqueduct, and the Los Angeles Aqueduct) currently supply more than 6 maf of water to the SCAG region annually, accounting for nearly three quarters of the total water used in the region.

Since local supplies alone have not been sufficient to serve Southern California's rapidly growing population, imported water supplies have historically been developed to accommodate projected demands. Beginning with the completion of the Los Angeles Aqueduct in 1913, the region has imported water from other parts of the state to supplement local supplies.

The All-American Canal and Coachella Canal were completed in 1940, supplying water to irrigation districts in the Imperial and Coachella Valleys for agricultural operations. The Colorado River Aqueduct completed in 1941 by MWD brings Colorado River water to the urban coastal areas. The California Aqueduct completed in the 1970s delivers water from the Sacramento Delta to MWD for distribution to retail agencies throughout southern California.

Colorado River

The Colorado River is a major source of water for Southern California, and is imported via the Colorado River Aqueduct, owned and operated by MWD.

Under water delivery contracts with the United States for permanent service, California entities have enjoyed legal entitlements to Colorado River water since the early 20th century. There have been several compacts, treaties, and negotiations between the seven states that use Colorado River water, beginning with the 1922 Colorado River Compact. California was entitled to 4.4 maf per year, as well as half of any surplus, as defined by the Federal Department of the Interior. Typically the River's surplus has allowed California entities to take an additional 800,000 af annually.

However, with increased urbanization in the Colorado River Basin states and recent limitation agreements between those states, surplus water for California was eliminated; the State will gradually return its original allotment of 4.4 maf. Given these new terms, California water agencies are pursuing various strategies to offset this gradual, but certain loss of future water supply. Examples of these strategies include additional reservoir and storage agreements, new water transfers between agricultural and urban users, and more water conservation and recycling.[5]

[5] Southern California Association of Governments, Draft 2008 RTP PEIR, January 2008, p. 3.15-20.

State Water Project (SWP)

The SWP supplies water to Southern California via the California Aqueduct, with delivery points in Los Angeles, San Bernardino, and Riverside counties. SWP was constructed and is managed by DWR, and is the largest state-owned multi-purpose water project in the country. SWP has historically provided 25 to 50 percent of MWD's water, anywhere from 360,000 af to 1.3 maf annually.[6] Southern California's maximum SWP yield is about 2.0 maf per year. SWP provides water to approximately 23 million people and irrigation water for roughly 750,000 acres of agricultural lands annually.

In 2007, a federal judge ordered the pumps that bring water from the Sacramento Bay Delta into Southern California be shut off, to protect an endangered fish species, the Delta smelt. Although pumping later resumed, it did so at only two-thirds of capacity, reducing by one-third the amount of water coming into Southern California through that system. It is unclear when or even if full capacity pumping will resume. The situation in the Bay Delta highlights the uncertainty and vulnerability of the region's dependence on imported water. Although the situation in the Delta will eventually be resolved, it will likely be a matter of decades before a satisfactory new system is in place.

Los Angeles Aqueduct

The Los Angeles Aqueduct, originally built in 1913, carries water 233 miles south from Owens Valley to Los Angeles. The original aqueduct project was extended in 1940 to Mono Basin. The system was later supplemented by a second project, parallel to the first, completed in 1970. These two aqueducts have historically supplied an average of almost 500,000 afy in normal years, and as little as 150,000 afy in drier years.[7] Recent deliveries have been cut almost in half due to the dwindling Sierra snowpack and a court decision restricting the amount of water that can be removed from the Owens Valley and Mono Basin in order to restore their damaged ecosystems.

Transfers

In an effort to diversify water sources and reduce reliance on specific water imports, water agencies have engaged in water transfer agreements. These contractual agreements, made with irrigation districts, reduce water use on agricultural lands either through agricultural conservation or fallowing land. The water 'freed' by these reductions is transferred to a municipal water district, where it may be used or stored in aquifers for future use, a practice called *water banking*. Water banking is also done during wet years, when rainwater is collected and directed toward recharge facilities for future use.

Water Suppliers

Numerous wholesale and retail water suppliers serve the district; the largest of these regional suppliers is MWD. Created by the California State legislature in 1931, MWD

[6] Southern California Association of Governments, Draft 2008 RTP PEIR, January 2008, p. 3.15-21.
[7] *Ibid.*

serves the urbanized coastal plain from Ventura to the Mexican border in the west to parts of the rapidly urbanizing counties of San Bernardino and Riverside in the east. It provides water to about 90 percent of the urban population of Southern California. MWD is comprised of 26 member agencies, 12 of which wholesale water to retail agencies and other wholesalers, and 14 of which are individual cities which directly serve water to their residents. A list of major water suppliers operating within the district region is given in Table 3.9-2.

TABLE 3.9-2

Major Water Suppliers in the District Region

Water Agency	Land Area (square miles)	Sources of Water Supply
Antelope Valley and East Kern District	2,350	SWP, groundwater, reclaimed water
Bard Irrigation District (and Yuma Project Reservation Division)	23	Colorado River
Castaic Lake Water Agency	125	SWP
Coachella Valley Water District	974	SWP, Colorado River, and local
Crestline Lake Arrowhead	53	SWP
Desert Water Agency	324	SWP and groundwater
Imperial Irrigation District	1,658	Colorado River
Littlerock Creek Irrigation District	16	SWP, groundwater, and surface water
Metropolitan Water District of Southern California	5,200	SWP, Colorado River
Mojave Water Agency	4,900	SWP and groundwater
Palmdale Water Agency	187	SWP and groundwater
Palo Verde Irrigation District	188	Colorado River
San Bernardino Municipal Water	328	SWP and groundwater
San Gorgonio Pass Water Agency	214	Groundwater

Source: Draft 2008 RTP PEIR, January 2008 p. 3.15-22.

Water Quality

The quality of the district's surface waters, groundwater, and coastal waters are discussed below.

Surface Water

Surface water resources in the district (as shown in Table 3.9-1) include creeks and rivers, lakes and reservoirs, and the inland Salton Sea. Reservoirs serving flood control and water storage functions exist throughout the region. Because the climate of Southern California is predominantly arid, many of the natural rivers and creeks are intermittent or ephemeral, drying up in the summer or flowing only in reaction to precipitation. For example, annual rainfall amounts vary depending on elevation and proximity to the coast.

Some waterways such as Ballona Creek and the Los Angeles River maintain a perennial flow due to agricultural irrigation and urban landscape watering.

The Colorado River watershed includes seven states on the western slope of the Rocky Mountains, traversing the arid southwest to the Gulf of California in Mexico. The river supplies water to 25 million people in both the U.S. and Mexico. The Salton Sea, the largest inland body of water in California, was formed around 1906 when the Colorado River was accidentally diverted from its natural course. At present, the Sea is fed by agricultural runoff from the Imperial Valley and Mexico. The Salton Sea is also fed by the New River and Alamo River and would dry up entirely without agricultural runoff.

Other major natural surface waters in the district include the Santa Clara River, Los Angeles River, San Gabriel River, Santa Ana River and the San Jacinto River. The Santa Clara River flows through the center of Ventura County and remains in a relatively natural state. Threats to water quality include increasing development in floodplain areas, flood control measures such as channeling, erosion, and loss of habitat.

The Los Angeles River is a highly disturbed system due to the flood control features along much of its length. Due to the high urbanization in the area around the Los Angeles River, runoff from industrial and commercial sources as well as illegal dumping contribute to reduce the channel's water quality. The San Gabriel River is similarly altered with concrete flood control embankments and impacted by urban runoff.

The Santa Ana River drains the San Bernardino Mountains, cuts through the Santa Ana Mountains, and flows onto the Orange County coastal plain. Recent flood control projects along the river have established reinforced embankments for much of the river's path through urbanized Orange County. The Santa Margarita River begins in Riverside County, draining portions of the San Jacinto Mountains and flowing to the ocean through northern San Diego County.

Complete lists of surface water resources within the district region along with the beneficial uses associated with them are contained in each of the five Basin Plans prepared by the Regional Water Quality Control Boards of the region.

Non-Point Source Pollution

Portions of the Los Angeles River in Los Angeles County and the Santa Ana River in Orange County have been lined with concrete for flood control purposes. One of the effects of these projects has been to reduce the natural recharge of groundwater basins. A second has been to make these rivers conveyance systems that concentrate and transfer urban pollutants and waste to the ocean. With regard to the rivers themselves, the State's Water Quality Assessment Report estimated in 1992 that approximately two-thirds of California's water bodies were threatened or impaired by non-point sources of pollution.

Point source pollution refers to contaminants that enter a watershed, usually through a pipe. The location of the end of the pipe is documented and the flow out of that pipe is subject to a discharge permits issued by a Regional Water Quality Control Board. Examples of point source pollution are discharges from sewage treatment plants and industrial facilities. Because point sources are much easier to regulate than non-point sources, they were the initial focus of the 1972 Clean Water Act. Regulation of point sources since then has dramatically improved the water quality of many rivers and streams throughout the country.

In contrast to point source pollution, non-point source pollution, also known as "pollution runoff," is diffused. Non-point pollution comes from everywhere in a community and is significantly influenced by land uses. A driveway or the road in front of a house may be a source of pollution if spilled oil, leaves, pet waste or other contaminants leave the site and runoff into a storm drain.

> "A recent study in the City of Irvine showed that the use of automated irrigation controllers reduced dry season runoff by 50 percent. Notably, the decrease in runoff did not appear to increase the concentration of pollutants in the runoff. It therefore appears that a reduction in non-point source pollution can be achieved by increasing irrigation efficiency. See http://www.irwd.com/Conservation/water_conservation_research.php)"

Non-point source pollution is now considered one of the major water quality problems in the United States.

Runoff Pollutants

The problem of non-point source pollution is especially acute in urbanized areas where a combination of impermeable surfaces, landscape irrigation, highway runoff and illicit dumping increase the pollutant loads in stormwater. The California State Water Quality Control Board (SWQCB) has identified the following pollutants found in urban runoff as being a particular concern:

- *Sediment*. Excessive sediment loads in streams can interfere with photosynthesis, aquatic life respiration, growth, and reproduction.

- *Nutrients*. Nitrogen and phosphorus can result in eutrophication of receiving waters (excessive or accelerated growth of vegetation or algae), reducing oxygen levels in the water for other species.

- *Bacteria and viruses*. Pathogens introduced to receiving waters from animal excrement in the watershed and by septic systems can limit water contact activities.

- *Oxygen demanding substances*. Substances such as lawn clippings, animal excrement, and litter can reduce dissolved oxygen levels as they decompose.

- *Oil and grease*. Hydrocarbons resulting from automobile use are toxic to some aquatic life.

- *Metals*. Lead, zinc, cadmium, and copper are the heavy metals found most commonly in stormwater. Other metals introduced by the use of automobiles include chromium, iron, nickel and manganese. These metals can enter waterways through storm drains along with sediment, or as atmospheric deposition.

- *Toxic pollutants*. Pesticides, phenols, and polynuclear aromatic hydrocarbons (PAHs) are toxic organic chemicals found in stormwater.
- *Floatables*. Trash in waterways increases metals and toxic pollutant loads in addition to creating aesthetic impacts.

Salinity

The general quality of groundwater in the district region tends to be degraded as a result of land uses and water management practices. Fertilizers and pesticides typically used on agricultural lands infiltrate and degrade groundwater. Septic systems and leaking underground storage tanks can also impact groundwater. Over-pumping can result in saltwater intrusion from the ocean, further degrading groundwater quality. In addition, wastewater discharges in inland regions can result in salt buildup from fertilizer and dairy waste.

To address the salinity problem, an increasing number of water agencies are working with other water, groundwater and wastewater agencies, state and local government agencies and interested associations on researching and developing salinity management goals and action plans. Strategies currently in use include blending low and high salinity water and the desalination of brackish water.

Land Use and Water Quality

Buildings, roads, sidewalks, parking lots and other impervious surfaces define the urban landscape. But impervious surfaces also alter the natural hydrology and prevent the infiltration of water into the ground. Impervious surfaces change the flow of stormwater over the landscape. In underdeveloped areas, vegetation holds down soil, slows the flow of stormwater over land, and filters out some pollutants by both slowing the flow of the water and trapping some pollutants in the root system. Additionally, some stormwater filters through the soil, replenishing underground aquifers.

As land is converted to other uses such as commercial developments, many of these natural processes are eliminated as vegetation is cleared and soil is paved over. As more impervious surface coverage is added to the landscape, more stormwater flows faster off the land. The greater volume of stormwater increases the possibility of flooding, and the high flow rates of stormwater do not allow for pollutants to settle out, meaning that more pollution gets concentrated in the stormwater runoff.

Research on urban stream protection has found that stream degradation occurs at relatively low levels of imperviousness—in the range of 10 to 20 percent. Wetlands suffer impairment when impervious surface coverage surpasses 10 percent. Fish habitat, spawning and diversity suffer when imperviousness is greater than 10 to 12 percent. Wetland plants and amphibian populations diminish when impervious surfaces are greater than 10 percent. Generally, the higher the percentage of impervious surface, the greater the degradation in stream water quality. Based on this research, streams can be considered stressed in watersheds when the impervious coverage exceeds 10 to 15 percent.

The link between impervious surfaces and degraded water quality points to the need for careful comparisons between dispersed and compact development strategies. On a regional or watershed level, greater overall water quality protection is achieved through more concentrated or clustered development. Concentrated development protects the watershed by leaving a larger percentage of it in its natural condition.

Groundwater

The general quality of groundwater in the district region is degraded as a result of land uses and water management practices in the Basins. Fertilizers and pesticides typically used on agricultural lands infiltrate and degrade groundwater. Septic systems and leaking underground storage tanks can also impact groundwater quality. Urban runoff is also a significant source of pollutants. Pollutants in urban runoff include urban debris, suspended solids, bacteria, viruses, heavy metals, pesticides, petroleum hydrocarbons, and other organic compounds. In addition to these impairments, excessive groundwater pumping allows saltwater intrusion from the ocean to further degrade groundwater quality. Also of note, the impacts on groundwater caused by the natural infiltration of surface waters decrease with a growth in urban development and the creation of impervious surfaces.

Coastal Waters

Coastal waters in the region include bays, harbors, estuaries, beaches, and open ocean. Deep draft commercial harbors include the Los Angeles/Long Beach Harbor complex. Shallower small craft harbors are prevalent along the coast line including Dana Point Harbor, Newport Beach Harbor, Huntington Harbor, and Marina Del Rey Harbor. Several small estuaries and saltwater marshes exist along the coast and are generally considered sensitive ecological areas. These include Newport Bay, Bolsa Chica Wetlands, Ballona Wetlands, Malibu Lagoon, and Mugu Lagoon. These coastal waters are impacted by previously described wastewater discharges, non-point source runoff, dredging, bilge water discharges, illicit discharges, and spills.

Wastewater

Much of the urbanized areas of Los Angeles and Orange Counties are serviced by three large publicly owned treatment works (POTWs): the City of Los Angeles Bureau of Sanitation Hyperion Facility, the Joint Outfall System of the Los Angeles County Sanitation Districts, and the Orange County Sanitation District treatment plant. These three facilities handle more than 70 percent of the wastewater generated in the entire SCAG region, which encompasses the district region.

In addition to these large facilities, medium sized POTWs (greater than 10 mgd) and small treatment plants (less than 10 mgd) service smaller communities in southern Orange County and in the inland regions. Many of these treatment systems recycle their effluent through local landscape irrigation and groundwater recharge projects. Other treatment systems discharge to local creeks on a seasonal basis, effectively matching the natural conditions of ephemeral and intermittent stream habitats.

Many rural communities utilize individually owned and operated septic tanks rather than centralized treatment plants. The Regional Water Quality Control Board (RWQCB) generally delegates oversight of septic systems to local authorities. However, Water Discharge Requirements (WDRs) are generally required for multiple-dwelling units and in areas where groundwater is used for drinking water. These WDRs are only issued to properties greater than one acre and are not required for properties greater than five acres in size.

REGULATORY SETTING

Federal Agencies and Regulations

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (USEPA) is the federal agency responsible for water quality management and administration of the Clean Water Act (CWA). The USEPA has delegated most of the administration of the CWA in California to the SWRCB. Much of the responsibility for implementation of the SWRCB's policies is further delegated to the nine Regional Water Quality Control Boards (RWQCB), as described below. EPA conducts groundwater protection and contaminated site remediation programs, such as installation of groundwater cleanup systems in the San Gabriel Valley.

The SCAQMD district encompasses portions of five separate RWQCB's: Los Angeles Region #4, Lahontan Region #6 (a very small portion of the southern basin only), Colorado River Region #7 and Santa Ana Region #8, and the San Diego Region #9 (a very small portion of southeastern Orange County).

Clean Water Act

The Clean Water Act (CWA) (33 U.S.C Section 1251 et seq), formerly the Federal Water Pollution Control Act of 1972, was enacted it the intent of restoring and maintaining the chemical, physical, and biological integrity of the water of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source pollution and certain non-point source discharges to waters of the U.S. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). In California, NPDES permitting authority is delegated to, and administered by, the nine RWQCBs.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) ensures the quality of Americans' drinking water. The law requires actions to protect drinking water and its sources—rivers, lakes, reservoirs, springs and groundwater wells—and applies to public water systems serving 25 or more people. It authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants. In addition, it oversees the states, municipalities and water suppliers that implement the standards.

EPA standards are developed as a Maximum Contaminant Level (MCL) for each chemical or microbe. The MCL is the concentration that is not anticipated to produce adverse health effects after a lifetime of exposure, based upon toxicity data and risk assessment principles. EPA's goal in setting MCLs is to assure that even small violations for a period of time do not pose significant risk to the public's health over the long run. National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that limit the levels of contaminants in drinking water supplied by public water systems.

Secondary standards are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.[8]

U.S. Army Corps of Engineers

Section 404 of the CWA obligates the U.S. Army Corps of Engineers (USACE) to issue permits for the movement of dredge and fill material into and from "waters of the United States." Additionally, Section 404 requires permits for activities affecting hydrologically important areas. For example, alterations of wetlands, rivers, or ephemeral creek beds resulting from construction activities require Section 404 permits.

Federal Emergency Management Agency

The U.S. Congress passed the National Flood Insurance Act in 1968 and the Flood Disaster Protection Act in 1973 in order to restrict certain types of development on floodplains and provide for a national flood insurance program. The purpose of these programs is to reduce the need for large publicly funded flood control structures and disaster relief.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program and classifies flood hazard zones as follows:

- Zone A. Areas of 100-year flood. Base flood elevations and flood hazard factors are not determined (see Figure 3.9-3).
- Zone B. Areas between the limits of the 100-year flood and 500-year flood; or certain areas subject to the 100-year flooding with average depth of less than one

[8] Ibid, p. 3.15-31.

foot; or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood (see Figure 3.9-3).

- Zone C. Areas of minimal flooding not requiring flood insurance.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation (USBR) operates the Colorado River project, an extensive network of dams, canals and related facilities. USBR serves as Watermaster overseeing contentious water rights issues, and runs drought protection programs.

State Agencies and Regulations

California State Water Resources Control Board

As described above, the USEPA has delegated most of the administration of the CWA in California to the State Water Resources Control Board (SWRCB). In turn, much of the responsibility for implementation of the SWRCB's policies is delegated to the nine RWQCBs. The nine RWQCBs develop and enforce water quality objectives and implementation plans.

Section 303(d) of the CWA requires the SWRCB to list impaired water bodies in the State and determine total maximum daily loads (TMDLs) of pollutants or other stressors that are contributing excessively to these impaired waters. SWRCB is also responsible for granting water rights permits, approving water right transfers, investigating violations and may reconsider or amend water rights.

Five RWQCBs have jurisdiction within the district region, including the following:

- Los Angeles
- Lahontan
- Colorado River Basin
- Santa Ana
- San Diego

The Los Angeles, Lahontan and Colorado River Basin RWQCBs also have jurisdiction in counties outside the district region. The San Diego RWQCB has jurisdiction in portions of Orange County and Riverside County.

The federal CWA directs states to review water quality standards every three years and, as appropriate, modify and adopt new standards. CWA also regulates wastewater operation through state boards. CWA authorizes the EPA to administer requirements primarily to deal with the quality of effluent which may be discharged from treatment facilities, the recycling of residual solids generated in the process, the reuse of reclaimed water for irrigation and industrial uses to conserve potable water, and the nature of waste material (particularly industrial) discharged into the collection system.

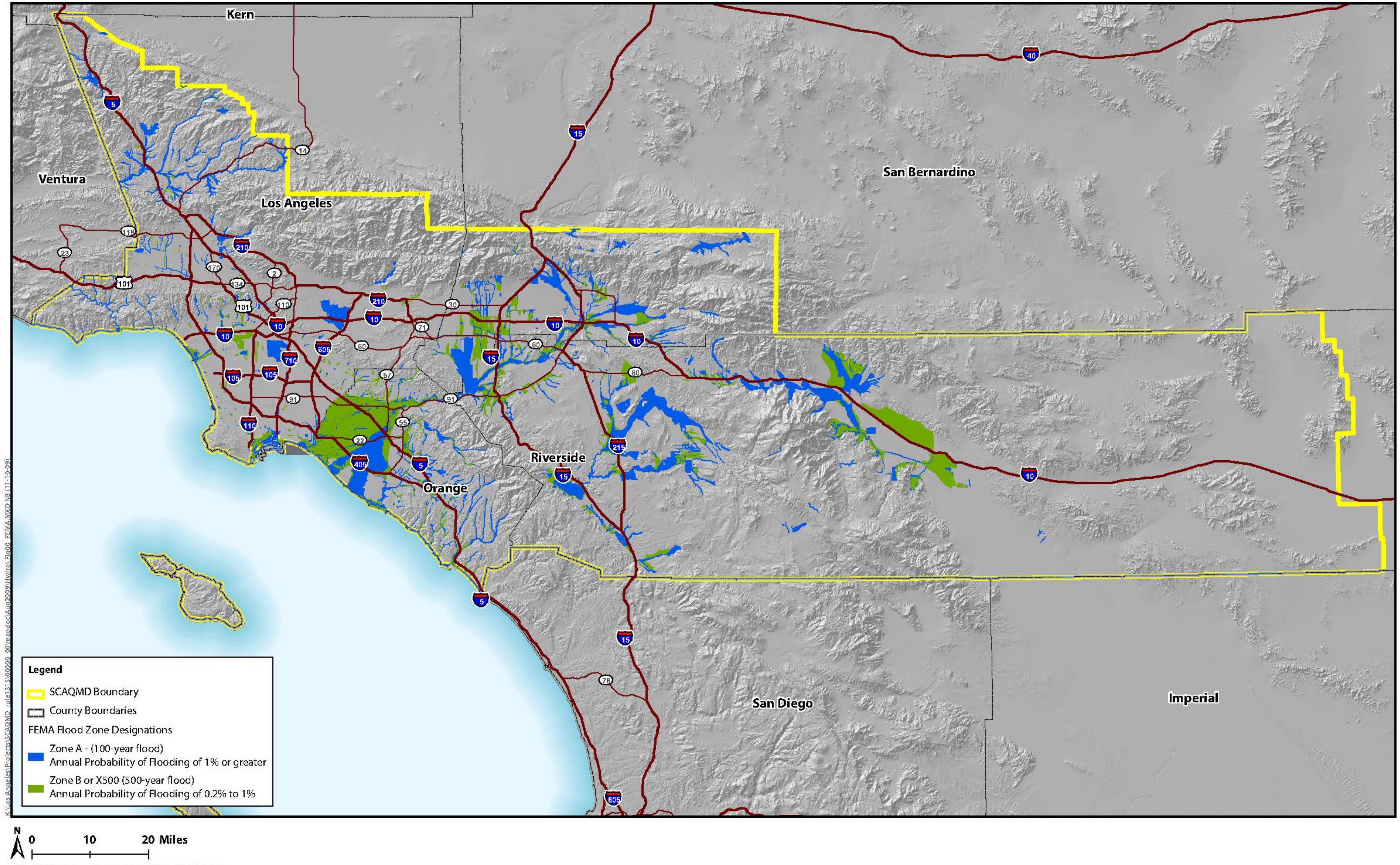


Figure 3.9-3
FEMA Flood Basins within the South Coast Air Quality Management District

Department of Water Resources

The Department of Water Resources (DWR) is responsible for the planning, construction and operation of State Water Project (SWP) facilities, including the California Aqueduct, and sets conditions on use of SWP facilities. In addition, DWR is responsible for statewide water planning, evaluating urban water management plans, overseeing dam safety and flood control, and transfer of certain water rights permits (e.g., pre-1914).

California Department of Public Health

The California Department of Public Health (DPH) implements the SDWA. In addition, it oversees the operational permitting and regulatory oversight of public water systems. DPH requires public water systems to perform routine monitoring for regulated contaminants that may be present in their drinking water supply. To meet water quality standards and comply with regulations, a water system with a contaminant exceeding an MCL must notify the public and remove the source from service or initiate a process and schedule to install treatment for removing the contaminant. Health violations occur when the contaminant amount exceeds the safety standard (MCL) or when water is not treated properly. In California, compliance is usually determined at the wellhead or the surface water intake. Monitoring violations involve failure to conduct or to report in a timely fashion the results of required monitoring.

In addition, DPH conducts water source assessments, oversees water recycling projects, permits water treatment devices, certifies water system employees, promotes water system security, and administers grants under the State Revolving Fund and State bonds for water system improvements.

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) is responsible for oversight of hazardous substances and remediation of contaminated sites, including in some cases water sources.

California Department of Fish and Game

The California Department of Fish and Game (CDFG) has jurisdiction over conservation and protection of fish, wildlife, plants and habitat. CDFG determines stream flow requirements in certain streams, acts as permitting agency for streambed alterations, presents evidence at water rights hearings on the needs of fish and wildlife, and enforces the California Endangered Species Act.

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967 (Water Code Section 13000 et seq.), requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative to the applicable and numerical water quality standards, and implementation procedures.

The Porter-Cologne Water Quality Control Act authorizes the state boards to adopt, review and revise policies for all waters of the state (including both surface and ground waters) and directs the regional boards to develop Basin Plans. The act also authorizes state boards to adopt Water Quality Control Plans. In the event of inconsistencies among state and regional board plans, the more stringent provisions apply.

Regional and Local Agencies and Regulations

Many water agencies within the district have master plans and conservation ordinances, which could apply to future projects. Table 3.9-3 presents a list of the major water agencies and the jurisdictions they serve within the district.

TABLE 3.9-3

Major Water Agencies and Service Areas in the District Region

Water Agency	Service Area
Central Basin Municipal Water District	Cities of Bell Gardens, Downey, Montebello, Norwalk, Vernon, La Habra Heights, La Mirada, Pico Rivera, Santa Fe Springs, Whittier, Bell, Commerce, Huntington Park, Maywood, Walnut Park, Cudahy, Monterey Park, Lynbrook, South Gate, Compton, Carson, Artesia, Bellflower, Cerritos, Hawaiian Gardens, Lakewood, Paramount, Signal Hill, and unincorporated County of Los Angeles areas of West Whittier-Los Nietos, South Whittier, and East Los Angeles
Desert Water Agency	Cities of Cathedral City, Desert Hot Springs, and Palm Springs
Eastern Municipal Water District	Cities of Hemet, Moreno Valley, Murrieta, Perris, San Jacinto, Temecula
East Valley Water District	Cities of San Bernardino and Highland and unincorporated areas of East San Bernardino County
Foothill Municipal Water District	City of La Canada-Flintridge and unincorporated County of Los Angeles areas of Altadena and La Crescenta
Inland Empire Utilities Agency	Cities of Chino, Chino Hills, Fontana, Montclair, Ontario, Rancho Cucamonga, and Upland
Metropolitan Water District of Southern California	Cities of Anaheim, Beverly Hills, Burbank, Compton, Fullerton, Glendale, Long Beach, Los Angeles, Pasadena, San Fernando, San Marino, Santa Ana, Santa Monica, and Torrance

TABLE 3.9-3 (Concluded)

Major Water Agencies and Service Areas in the District Region

Water Agency	Service Area
Municipal Water District of Orange County	Water Districts of East Orange County, El Toro, Emerald Bay, Irvine Ranch, Laguna Beach, Mesa Consolidated, Moulton Niguel, Orange County, Santa Margarita, Serrano, South Coast, Trabuco Canyon, Yorba Linda and the Cities of Brea, Buena Park, Fountain Valley, Garden Grove, Huntington Beach, La Habra, Orange, Newport Beach, San Clemente, San Juan Capistrano, Seal Beach, Tustin, and Westminster
San Bernardino Valley Municipal Water District	Cities and communities of San Bernardino, Colton, Loma Linda, Redlands, Rialto, Bloomington, Highland, East Highland, Mentone, Grand Terrace, and Yucaipa
Three Valleys Municipal Water District	Cities of Azusa, City of Industry, Covina, Claremont, Diamond Bar, Hacienda Heights, Glendora, La Puente, La Verne, Pomona, Rowland Heights, Walnut, and West Covina
Upper San Gabriel Valley Municipal Water District	Cities of Alhambra, Arcadia, Azusa, Monrovia, and South Pasadena
Western Municipal Water District	Cities of Corona, Norco, Riverside, and unincorporated Riverside County areas of El Sobrante, Eagle Valley, Temescal Creek, Woodcrest, Lake Mathews, and March Air Reserve Base
West Basin Municipal Water District	Cities of Carson, Culver City, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Malibu, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, and West Hollywood, and unincorporated Los Angeles County areas of Westmont, West Athens, Topanga Canyon, Del Aire, El Camino Village, Howard, Ross-Sexton, San Pedro, View Park, Windsor Hills, Lennox, Ladera Heights, and Alondra Park

Many of these counties and cities have elements within their general plans that address water use, water conservation, and other water-related topics. In general, each of the water agencies identified above has established goals and objectives, including, but not limited to the following:

- Ensure water reliability for the communities they serve;
- Deliver water that meets all required standards and to furnish water to their customers in a planned and timely manner that anticipates future needs; and

- Supplement and enhance local water supplies to meet customers' needs for high quality water in a cost-effective and environmentally sound manner.

SUBCHAPTER 3.10

EXISTING SETTING - LAND USE AND PLANNING

INTRODUCTION

The environmental setting describes the land uses that may be affected by the proposed project. The environmental setting addresses residential, commercial, industrial, and institutional land uses across the district.

ENVIRONMENTAL SETTING

The district is comprised of the non-desert portion of Los Angeles County, all of Orange County, a portion of southwestern San Bernardino County, and the Salton Sea Air Basin and Mojave Desert Air Basin portions of Riverside County amounting to a jurisdiction of approximately 10,473 square miles and a population of over 16 million. Bounded by the Pacific Ocean to the west; the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east; and San Diego and Imperial Counties to the south, the district contains a vast network of cities and towns, ranging from small rural developments of a few thousand residents to bustling metropolitan centers of several million residents, interspersed between large expanses of open space and undeveloped land.

Urban development in the district tends to cluster around a well-defined network of state and federal highways which connect the regional populations of the district with other regions in California and across the nation. While most urban development has historically been based in the coastal regions of Los Angeles County and Orange County, there has been considerable urban growth eastward to the mountain and valley regions of Riverside County and San Bernardino County. Downtown Los Angeles is the largest urbanized center within the district. Other urbanized areas in Los Angeles County include Long Beach, Burbank, Glendale, Pasadena and Pomona. Office-based commercial centers have emerged in Woodland Hills, Universal City, Westwood, around Los Angeles International Airport, and Century City. In the other three counties within the district, urban centers exist in the cities of Riverside, San Bernardino, Santa Ana, Anaheim, and Irvine. Much of the development in Riverside and San Bernardino Counties has taken place within unincorporated county land that both counties possess. Riverside County, in particular, has developed the Riverside County Integrated Project, which seeks to improve the quality of life for its citizens through a complimentary array of development projects and programs aimed at creating a balanced and sustainable environment. As a result of Riverside County's efforts, the valley and mountain regions of the County have quickly developed over the past 20 years from small rural settlements to relatively large suburban commuter cities.

Within the older cities and communities in the district, development has taken more of a revitalization outlook. Without a vast surplus of open space, developers in Los Angeles County and Orange County have turned to different types of housing and commercial developments, including townhouses, condominiums, apartments, and mixed-use developments that combine commercial and office uses. Older buildings are often renovated or converted to accommodate new residential or commercial uses, and land use patterns in major developed cities have generally shifted from the traditional single-use pattern to more of a mixed use approach, where residential and commercial land uses are often found adjacent to one another, or within the same building.

Land uses across the district can typically be categorized into six general categories -- residential, commercial, industrial, institutional, open space and agricultural. Agricultural is discussed separately in Section 3.2.

Los Angeles County

Residential

Los Angeles County is the most populated and economically robust region in the district. As a result, high demand for housing is a consistent concern for the County. Residential land use patterns in the County, as well as the district, are dependent upon geography. Major concentrations of residential uses are found in the Los Angeles Basin, which is bounded on the north by the transverse mountain ranges of the Santa Monica Mountains and the San Gabriel Mountains. From the foothills of the transverse mountain ranges, large urban and sub-urban cities blanket the Los Angeles Basin southward to the Santa Ana Mountains and the Orange County Coast, and eastward to the San Bernardino Mountains. The County contains most of the high and medium density housing in the district, which is concentrated primarily in urban and sub-urban population centers, such as Downtown Los Angeles, East Los Angeles, Glendale, Burbank, and Long Beach. Surrounding these population centers are lower density suburbs located on the eastern and southern reaches of Los Angeles County and extending into Orange County and San Bernardino County. With the Los Angeles Basin almost completely built-out, the County is now in the process of developing residential land uses, particularly single-family residences, in the Antelope and Santa Clarita Valleys to the north[1].

Commercial

In the same way that residential land use patterns are related to geography, commercial land use patterns tend to form around transportation facilities, such as highways, rail lines, and airports, particularly around major freeway intersections. Downtown Los Angeles, bounded in all directions by four different freeways, is the largest commercial and business center in the district, providing jobs to residents across the district. Other major commercial office centers in the County include the area surrounding the intersection of Interstate 5 (I-5) and Interstate 405 (I-405), known as the "El Toro Y", and the Westwood area near the University of California, Los Angeles.[2] The County also projects tremendous employment growth in northern Los Angeles County as housing and transportation development continues northward.

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[1] Los Angeles County Department of Regional Planning, Los Angeles County Draft General Plan, Land Use Element, 1980.

[2] SCAG 2008. Draft RTP Programmatic EIR. Section 3.8, Land Use, 2008.

Industrial

The largest concentration of industrial land uses and activities in the district is provided by the adjacent Ports of Los Angeles and Long Beach. Combined, the two ports handle approximately 40 percent of all imports to the United States and handle approximately 24 percent of all exports[3]. From the ports, industrial activity can be traced along cargo rail lines and major interstate highways, such as Interstate 110 and Interstate 710, north to downtown Los Angeles and east to the Cities of Industry and Commerce. Significant air cargo and associated industrial land uses also are located around Los Angeles International Airport. Oil extraction and refining industries are also found in northern Los Angeles County near the City of Santa Clarita and in southern Los Angeles County surrounding the City of Long Beach.

Institutional

Institutional land uses, which include large government and private operations, such as military bases, airports, and universities, encompass a considerable footprint in the district. In the Antelope Valley, a large portion of land is dedicated to airport uses at Palmdale Airport, while Los Angeles International Airport (LAX) is the largest airport land use. Bob Hope Airport and Long Beach Airport are the other commercial airports in Los Angeles County. In addition, the Los Angeles Air Force Base, located just south of LAX is the major military land use in the County. University and college campuses are located in every county of the district, the largest of which are part of the University of California system. In Los Angeles County, the University of California, Los Angeles (UCLA), California Polytechnic University at Pomona and the University of Southern California are some of the largest universities. There are also numerous California State Universities (Northridge and Los Angeles), as well as community colleges located throughout the County.

Open Space

Over half of the total geography of Los Angeles County is comprised of open space and rural land. Most rural land is located in the Palmdale – Lancaster desert region, which is just northeast of the district's boundaries. Most of the open space in the County is composed of the Angeles National Forest, which covers the entire northern region of the district. This land is administered by the National Forest Service and provides mainly outdoor recreation and wilderness conservation functions. Other major open space areas can be found in the Santa Monica Mountains and the Whittier Narrows located in the Puente Hills.

Orange County

The Orange County General Plan states as its first policy that urban land uses within the County must be planned with a balanced mix of residential, commercial, industrial and

[3] *Ibid.*

public land uses. Orange County comprises 34 cities and has a population of 2.94 million residents.[4]

Residential

In Orange County, residential development follows the coastline and is limited from inland expansion by the Santa Ana Mountains and the Cleveland National Forest. The major population centers in northern Orange County are the Cities of Huntington Beach, Garden Grove, and Fullerton, which tend to be extensions of housing and commercial development from southern Los Angeles County, catering to a large commuter population. From these border cities, high and medium density housing development continues south through the major commercial cities of Anaheim, Santa Ana, and Orange. To the south of these cities are the Cities of Costa Mesa, Newport Beach, Irvine, Lake Forest, and Laguna Niguel, which are less densely populated with primarily single-family medium to low density housing developments.[5] As such, residential land uses in the County can be described as following a similar pattern to that of Los Angeles County, where the major urban and sub-urban population centers align themselves with transportation resources, particularly Interstate 5, and natural features, such as the "South Coast" and the Santa Ana Mountains.

Commercial

Commercial land use in the County is divided into two types of designations; Community Commercial and Regional Commercial land uses. Community commercial land uses include general commercial facilities providing convenience goods and retail trade to individual communities of 20,000 persons.[6] Each city has its own community commercial developments, mainly located along major arterial highways such as Interstate 5 (I-5), Interstate 405 (I-405), State Route 22 (SR-22), State Route 55 (SR-55), and Beach Boulevard (SR-39). Regional commercial land uses are of a higher intensity and serve a larger regional population usually in the form of malls, such as the South Coast Plaza in Costa Mesa and commercial office buildings. Orange County's commercial office activity is centered around the intersection of I-5, SR-22, and State Route 57 (SR-57) known as the "Orange Crush," the area surrounding John Wayne Airport, and the area surrounding the University of California, at Irvine (UCI) known as the Irvine Spectrum.

Industrial

Relative to the district, Orange County has few industrial land uses. In fact, the County's General Plan does not distinguish industrial land uses from other employment providing land uses.[7] Fifty years ago, Orange County was primarily agricultural and the major industries were based in supporting the rich farming resources of the County. Today, much of Orange County's industrial land uses are located along the coast and focused on

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[4] County of Orange Resources and Development Management Department, Orange County General Plan, 2005.

[5] SCAG, Draft RTP Programmatic EIR, 2008.

[6] County of Orange Resources and Development Management Department, Orange County General Plan, 2005.

[7] *Ibid*.

oil extraction and refining, while most income in the County is provided by technical, aerospace, and information industries which are typically higher-paid white collar industries set in commercial office areas.

Institutional

The major military land uses in the County are the Seal Beach Naval Weapons Station and Los Alamitos Reserve Air Station. In addition, institutional land uses also include universities, such as UCI and California State University at Fullerton, John Wayne Airport, and three active regional landfills.

Open Space

The unincorporated territories of the County, consisting of approximately 321 square miles, are geographically diverse and spread throughout the County. The largest portion of unincorporated territory is mostly open space found in southeastern Orange County and includes the Cleveland National Forest, a number of planned communities, such as Coto de Caza, Las Flores, and Ladera Ranch, as well as large portions of undeveloped territory south of the Ortega Highway.[8]

Riverside County

Residential

In Riverside County, residential land uses are mainly located in the western valley portion of the county and makes up approximately 288 square miles of County land, of which 57 percent is located in unincorporated cities.[9] Medium to high density residential developments can be found in northwestern Riverside County mainly in the two major Cities of Riverside and Corona. Farther inland, beginning in the Coachella Valley, the County is comprised almost entirely of low density or rural housing. However, as circulation patterns and transportation resources connecting Riverside County to Los Angeles County and Orange County, medium density housing for an increasingly commuter based population will be in higher demand.[10]

Commercial

Commercial land uses account for approximately 15,675 acres of county land, and commercial development is generally less vigorous and on a smaller scale than in Los Angeles County or Orange County.[11] Commercial office developments would typically be found in the downtown areas of major cities, such as the City of Riverside. Other commercial developments in the County are typically large regional retail and convenience shopping centers typically located in major cities or along major highways such as Interstate 215 (I-215) and Interstate 10 (I-10).

[8] *Ibid.*

[9] County of Riverside, Riverside General Plan EIR, 2009.

[10] SCAG, Draft RTP Programmatic EIR, 2008.

[11] County of Riverside, Riverside General Plan EIR, 2009.

Industrial

A total of over 24,000 acres of the County are devoted to industrial uses, which may include heavy industry, warehousing, and mineral extraction. With the exception of land devoted to mineral extraction (89 percent of which is within unincorporated territories), the majority of industrial land is located within the cities of Riverside County. The major industries within the County are agricultural and mineral extraction industries, most of which are located in eastern Riverside County in the Coachella Valley and Salton Sea Basin. Recently, manufacturing industries, distribution centers, and warehouses have established businesses in Riverside County making it a major distribution center for goods in the region, as well as the state. Riverside County also houses a major wind energy generation site in the San Gorgonio Pass and the County should be poised for further development of wind, solar, and other green energies in the eastern portion of the County.

Institutional

Approximately 106 square miles of land are devoted to various public facilities (utilities, schools, government offices, police and fire facilities, correctional facilities, military installations, museums, convention centers, libraries, theater facilities, rehabilitation facilities, short-and long-term custodial facilities, cemeteries, etc.) through the County. Major military uses include the Naval Warfare Assessment Station in Corona and the Chocolate Mountains Aerial Gunnery Range. Other major institutional land uses are Palm Springs International Airport, March Inland Port, and the University of California at Riverside.

Open Space

A vast amount of land (1,313,073 acres or 28 percent of the County total) consists of open space use and provides for recreation, agriculture, scientific opportunity, and wild land preservation. The majority of open space in the County is located in eastern portion of the county in the Coachella Valley Air Basin and the Mojave Desert Air Basin, which house mostly agricultural and mineral extraction operations usually administered by the Bureau of Land Management and the California Department of Conservation. The largest major open space use in the County is the Joshua Tree National Park, which is administered by the National Parks Service and provides a variety of recreation and wild land preservation functions. Other major open space uses include the Coachella Valley National Wildlife Refuge, the southern reaches of the San Bernardino National Forest, and numerous golf courses located throughout the Coachella Valley and southern Riverside County.

San Bernardino County

Residential

Similar to Riverside County, residential land use in San Bernardino County is mainly concentrated in the western valley and high-desert region; however, the unincorporated areas of the desert and mountain regions are populated with dispersed low-density rural residences. The portion of San Bernardino County located within the district, also known as the Valley Region, is perhaps the most densely populated portion of the County as the two largest cities in the County, San Bernardino and Ontario, are both located in this region. Almost half of the 51,766 acres of unincorporated County land in the Valley Region is existing single and multifamily residential uses, occupying 24,236 acres.[12] Most of the residential uses in the Valley Region are medium to low density uses mostly located in the major cities of the region.

Commercial

Commercial uses occupy almost 2,155 acres of the Valley Region.[13] The Valley Region can be characterized as the center for Commerce in the County while the Desert Region assumes the role of industrial leader. Like other regions in the district, commercial land uses in San Bernardino County portion of the district tend to be retail and convenience shopping uses with some commercial office buildings located in downtown areas. Commercial uses follow similar land use patterns, usually located along major transportation corridors such as Interstate 15 (I-15), I-215, and State Route 60 (SR-60).

Industrial

The Valley Region has nearly 5,155 acres of industrial uses.[14] While most of San Bernardino County is geared toward agricultural and mineral extraction industries, the Valley Region is geared toward supporting the Los Angeles County and Orange County economies. Like Riverside County, western San Bernardino County has become a major distribution point for the region with many manufacturing and warehouse facilities being built throughout the County. Adding to the goods coming by highway and rail through San Bernardino County are goods coming to the county by air through several airports that cater to air cargo, primarily Ontario International Airport.

Institutional

Institutional land uses in the Valley Region account for 2,875 acres of the region and are limited when compared to the rest of the County, which houses numerous military facilities in its Desert Region.[15] Accordingly, the Valley Region does include the San Bernardino International Airport and the Ontario International Airport, as well as California State University at San Bernardino.

Open Space

While San Bernardino County has the largest amount of open space and mineral resource conservation areas, the Valley Region contains very few of these land uses. The single major open space land use in the San Bernardino County portion of the district is the San Bernardino National Forest, which forms the northern and eastern boundaries of the Valley Region.

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[12] County of San Bernardino, San Bernardino County General Plan, Final EIR, 2007.

[13] *Ibid*.

[14] *Ibid*.

[15] *Ibid*.

REGULATORY SETTING

Federal Agencies

United States Bureau of Land Management (BLM)

The BLM manages much of the undeveloped or unused land in the region, primarily in the eastern portion of the region. The California Desert Conservation Area Plan is used to manage BLM controlled areas. The BLM also implements biological resource management policies through its designation of Areas of Critical Environmental Concern.

National Park Service (NPS)

The NPS manages national parks and wilderness areas. One national park and one wilderness area are located in the district: Joshua Tree National Park and the Santa Monica Mountains National Recreation Area.

United States Fish and Wildlife Service (USFWS)

The USFWS administers the Federal Endangered Species Act (FESA) and designates critical habitat for endangered species. The USFWS manages the National Wildlife Refuges in the district such as the Seal Beach National Wildlife Refuge and the Coachella Valley National Wildlife Refuge.

United States Forest Service (USFS)

The USFS manages approximately 2.3 million acres of national forests in the district. The three national forests in the region are the Angeles National Forest, San Bernardino National Forest, and the Cleveland National Forest.

United States Army Corps of Engineers (USACOE)

Among its responsibilities, the USACOE administers Section 404 of the Clean Water Act (CWA), which governs specified activities in waters of the United States, including wetlands. In this role, the USACOE requires that a permit be obtained if a project would place structures, including dredged or filled materials, within navigable waters or wetlands, or result in alteration of such areas.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)

The NRCS maps soils and farmland uses to provide comprehensive information necessary for understanding, managing, conserving and sustaining the nation's limited soil resources. The NRCS manages the Farmland Protection Program, which provides funds to help purchase development rights to keep productive farmland in agricultural uses.

State Agencies

California Department of Conservation

In 1982, the State of California created the Farmland Mapping and Monitoring Program within the California Department of Conservation to carry on the mapping activity from the NRCS on a continuing basis. The California Department of Conservation administers the California Land Conservation Act of 1965, also known as the Williamson Act, for the conservation of farmland and other resource-oriented laws.

California Coastal Commission

The California Coastal Commission plans for and regulates development in the coastal zone consistent with the policies of the California Coastal Act. The Commission also administers the federal Coastal Zone Management Act in California. As part of the Coastal Act, cities and counties are required to prepare a local coastal program (LCP) for the portion of its jurisdiction within the coastal zone. With an approved LCP, cities and counties control coastal development that accords with the local coastal plan. If no local coastal plan has been approved, the Coastal Commission controls coastal development.

California Department of Transportation (Caltrans)

The Caltrans jurisdiction includes rights-of-way of state and interstate routes within California. Any work within the right-of-way of a federal or state transportation corridor is subject to Caltrans regulations governing allowable actions and modifications to the right-of-way. Caltrans includes the Division of Aeronautics, which is responsible for airport permitting and establishing a county Airport Land Use Commission (ALUC) for each county with one or more public airports. ALUCs are responsible for the preparation of land use plans for areas near aviation facilities.

California Department of Forestry and Fire Protection (CDF)

The CDF reviews and approves plans for timber harvesting on private lands. In addition, through its responsibility for fighting wildland fires, the CDF plays a role in planning development in forested areas.

California Department of Parks and Recreation (CDPR)

The CDPR manages and provides sites for a variety of recreational and outdoor activities. The CDPR is a trustee agency that owns and operates all state parks and participates in land use planning that affects state parkland.

California Department of Fish and Game (CDFG)

The land use mandate of the CDFG is to protect rare, threatened, and endangered species by managing habitat in legally designated ecological reserves or wildlife areas. CDFG reserves located in the district include the Bolsa Chica Ecological Reserve (Orange County), among others.

Regional and Local

Southern California Association of Governments (SCAG)

As related to land use, SCAG is authorized to undertake intergovernmental review for federal assistance and direct federal development pursuant to Presidential Executive Order 12,372. Pursuant to CEQA (Public Resource Code Sections 21083 and 21087 and CEQA Guidelines Sections (15206 and 15125(b)), SCAG reviews projects of regional significance for consistency with regional plans. SCAG is also responsible for preparation of the Regional Housing Needs Assessment (RHNA), pursuant to California Government Code Section 65584(a). SCAG's RHNA provides a tool for providing local affordable housing development strategies.

SCAG's current *Regional Comprehensive Plan and Guide (RCPG) 1996* is intended to provide a permissive framework for decision making by local governments regarding growth and development. The RCPG proposes strategies for local governments to use on a voluntary basis to reconcile local needs with state and federal planning requirements.

Local Agency Formation Commissions

The Local Agency Formation Commission (LAFCO) is the agency in each county that has the responsibility to create orderly local government boundaries, with the goal of encouraging "planned, well-ordered, efficient urban development patterns," the preservation of open-space lands, and the discouragement of urban sprawl. While LAFCOs have no direct land use authority, their actions determine which local government will be responsible for planning new areas. LAFCOs address a wide range of boundary actions, including creation of spheres of influence for cities, adjustments to boundaries of special districts, annexations, incorporations, detachments of areas from cities, and dissolution of cities.

General Plans

The most comprehensive land use planning for the district is provided by city and county general plans, which local governments are required by state law to prepare as a guide for future development. General plans contain goals and policies concerning topics that are mandated by state law or which the jurisdiction has chosen to include. Required topics are land use, circulation, housing, conservation, open space, noise, and safety. Other topics that local governments frequently choose to address include public facilities, parks and recreation, community design, sustainability and growth management, among others. These plans provide general definitions and implementation methods for each land use designation in the district. City and county general plans must be consistent with each other. County general plans must cover areas not included by city general plans (i.e., unincorporated areas).

Specific and Master Plans

A city or county may also provide land use planning by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan.

Zoning and Land Use Permits

City and county zoning codes are the set of detailed requirements that implement the general plan policies at the level of the individual parcel. The zoning code presents standards for different uses and identifies which uses are allowed in the various zoning districts of the jurisdiction. Since 1971, state law has required the city or county zoning code to be consistent with the jurisdiction's general plan. Cities and counties typically implement their zoning codes through highly individualized land use ordinances that differ from jurisdiction to jurisdiction.

SUBCHAPTER 3.11

EXISTING SETTING - MINERAL RESOURCES

Introduction

Environmental Setting

Regulatory Setting

INTRODUCTION

The existing setting includes mineral resources, including known or locally-important mineral resources.

ENVIRONMENTAL SETTING

Mineral resource extraction occurs in various portions of California but is generally limited to non-urban areas. Each county's general plan is required to identify significant mineral resource areas and apply appropriate land use designations to ensure their future availability. Most of the comprehensive mineral resource mapping in California has been completed for urban areas, where there is a high probability that converted land uses would be incompatible with mining. Gold, sand, and gravel are the primary mineral resources still extracted throughout the SCAG region.[1] The SCAQMD region, which includes portions of Los Angeles, Orange, Riverside and San Bernardino counties, comprises a portion of the larger SCAG region; therefore, the following discussion focuses on these counties.

The Surface Mining Reclamation Area Act (SMARA) mandates the classification of valuable lands in order to protect mineral resources within the State of California subject to urban expansion or other irreversible actions. SMARA also allows the state to designate lands containing mineral deposits of regional or statewide significance. SMARA addresses the need for a continuing supply of mineral resources and to prevent or minimize the negative impacts of surface mining to public health, property and the environment. The Act applies to anyone, including government agencies, engaged in surface mining operations in California, including federally managed lands that disturb more than one acre or remove more than 1,000 cubic yards of material cumulatively from one site. This includes, but is not limited to, prospecting and exploratory activities, dredging and quarrying, streambed skimming, borrow pitting, and the stockpiling of mined materials.

Mineral Resource Zones

The California Department of Conservation's Division of Mines and Geology Mineral Land Classification Project provides mineral resource maps, which are used in land use planning and mineral conservation. The Division of Mines and Geology identifies lands with the potential for mineral resource recovery and identifies new mineral resource areas to help ensure their preservation. The programs produce maps of Mineral Resource Zones (MRZ) that designate known or suspected economic mineral deposits.

The classifications used by the state to define MRZs are as follows:

- **MRZ-1**: Areas where the available geologic information indicates no significant mineral deposits or a minimal likelihood of significant mineral deposits.

[1] Southern California Association of Governments, Draft 2008 RTP PEIR, January 2008.

- **MRZ-2a**: Areas where the available geologic information indicates that there are significant mineral deposits.

- **MRZ-2b**: Areas where the available geologic information indicates that there is a likelihood of significant mineral deposits.

- **MRZ-3a**: Areas where the available geologic information indicates that mineral deposits are likely to exist; however, the significance of the deposit is undetermined.

- **MRZ-4**: Areas where there is not enough information available to determine the presence or absence of mineral deposits.

Los Angeles County

According to the County of Los Angeles General Plan, the majority of southern California's on-shore oil deposits are located in Los Angeles County. Additionally, the greater Los Angeles area is considered the nation's leading produces of sand and gravel for its geographic size. Los Angeles County has several deposits of sand and gravel which are located close to the market and available at low costs. Uses of these products include the following:

- Portland cement concrete aggregate;

- Asphaltic concrete aggregate;

- Base and sub-base aggregate; and

- Clean fill.[2]

Major sand and gravel extraction sites are found in the alluvial fans of the Big Tujunga Wash in the San Fernando Valley and in the San Gabriel River (Irwindale and adjacent areas.) Other sites are in the Santa Clara River and Little Rock and Big Rock washes in northern portions of the County.[3]

Orange County

In 1982, the State Mining and Geology Board adopted the Classification Report for Orange County. The designation of mineral lands of regional significance occurred in April 1983. Since that time, some of the aggregate resources have become unavailable due to urban development. Approximately 20 percent of the identified aggregate

[2] County of Los Angeles, *County of Los Angeles General Plan Conservation and Open Space Element,* http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf, accessed August 9, 2009.
[3] *Ibid*.

resources in designated areas have undergone land use changes that preclude mining. Most of the areas urbanized were developed for housing or industrial parks.[4]

Significant sand and gravel resources located in Orange County are located in portions of the Santa Ana River, Santiago Creek, San Juan Creek, Arroyo Trabuco, including a few other areas. Table 3.11-1 shows the aggregate resources of the Orange County region.[5]

TABLE 3.11-1
Aggregate Resources of the Orange County Region

Resource Area	Million Short Tons
Santa Ana River	42
Lower Santiago Creek	187
Upper Santiago Creek	26
San Juan Creek	120
Arroyo Trabuco	78
TOTAL	**453**

Source: County of Riverside General Plan,
http://www.rctlma.org/genplan/content/gp/chapter05.html Accessed August 9, 2009

Aggregate resources in Orange County include reserves, as well as potentially usable aggregate materials that may be mined in the future, but for which no permits allowing mining have been granted on for which marketability has not been established.[6]

Riverside County

Mineral deposits in Riverside County are important to many industries, including construction, transportation and chemical processing. The value of mineral deposits within Riverside County is enhanced by their close proximity to urban areas. However, these mineral deposits are endangered by the same urbanization that enhances their value.[7]

According to the County of Riverside General Plan Mineral Resources Map, a large portion of the eastern portion of the County is designated MRZ-4. Additionally, there is a large portion of County land that is designated unstudied. The western portion of the County is largely designated MRZ-3, while there are pockets of smaller areas designated

[4] County of Orange, Resources and Development Management Department, *County of Orange General Plan Resources Element*, http://www.ocplanning.net/docs/GeneralPlan2005/Chapter_VI_Resources.pdf, accessed August 9, 2009.
[5] *Ibid*.
[6] Riverside County Transportation and Land Management Agency, *County of Riverside General Plan*, http://www.rctlma.org/genplan/content/gp/chapter05.html, accessed August 9, 2009.
[7] *Ibid*.

MRZ-2. A tiny area located in the southwestern portion of the County is a State-Designated Aggregate Resource Area.[8]

San Bernardino County

According to the San Bernardino County General Plan Final EIR, mineral resources are an integral part of development and the economic well being of the County. The conservation, extraction and processing of those mineral resources is essential to meeting the needs of society. In San Bernardino County, minerals are a foremost natural resource, with the Desert Planning Area accounting for over 90 percent of all County mining activities. There are 92 mines within the County. There are several large calcium carbonate mining operations in San Bernardino County. The County is home to the largest cement producer in the state. It also has the largest rare earth mine in North America. Extensive aggregate mining is also a major component of the mining industry within the County.

San Bernardino County requires mining operations to have approved Mining/Reclamation Plans in compliance with the applicable sections of the Public Resources Code; SMARA; the State Administrative Code, Natural Resources, Mining and Geology; State Mining and Geology Board; and the San Bernardino County General Plan and Development Code prior to the start of mining operations. Before a mining project is approved, a reclamation plan must be prepared and approved by the County. The plan must include the following information:

- Maximum anticipated depth of extraction;
- A description of the reclamation land use;
- A description of the manner in which affected streambed channels and stream banks will be rehabilitated to a condition minimizing erosion;
- Final slope stability;
- Removal of improvements and actions to reduce compaction of areas sited for roads, buildings, or other improvements; and
- Revegetation methods to reestablish wildlife habitat and provide long-term soil stabilization.

The plan also includes performance standards for:

- Revegetation;
- Drainages and erosion control;
- Reclamation of prime agricultural land and other agricultural land;
- Stream protection, including protection of surface water and groundwater;
- Topsoil salvage; and
- Slope stability.

[8] *Ibid*.

REGULATORY SETTING

State

Surface Mining Area Reclamation Act (SMARA)

In 1975, SMARA was enacted by the California Legislature to address the need for a continuing supply of mineral resources, and to prevent or minimize the negative impacts of surface mining to public health, property and the environment. SMARA mandates the California Geological Survey (CGS) to provide objective economic-geologic expertise to assist in the protection and development of mineral resources through the land-use planning process. The primary products are mineral land classification maps and reports for urban and non-urban areas of the state. Local agencies are required to use the classification information when developing land-use plans and when making land-use decisions.[9]

Counties and Cities

The geographic area encompassed by the district includes numerous cities and unincorporated communities in the counties of Los Angeles, Orange, San Bernardino, and Riverside. Each of these counties and incorporated cities has prepared a general plan, which is the primary document that establishes local land use policies and goals. Many of these general plans also establish local policies related to mineral resources extraction within their communities or sub-planning areas. Below are applicable goals and policies from each of the four counties:

Los Angeles County

The Conservation and Open Space Element[10] of the Los Angeles County General Plan contains several objectives related to conservation. To fulfill the objective to protect mineral resources, the following policy was established:

- Protect and conserve existing mineral resources, evaluate the extent and value of additional deposits, and require future reclamation of depleted sites.

Orange County

The Orange County General Plan includes the goal to promote the wise management of agricultural and mineral resources in order to protect these resources for existing and future needs. To fulfill that goal, the following policies have been created:

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[9] Southern California Association of Governments, *Draft 2008 RTP PEIR,* January 2008.
[10] County of Los Angeles Department of Regional Planning, Conservation and Open Space Element, Los Angeles County General Plan, http://planning.lacounty.gov/assets/upl/project/gp_web80-conservation-and-open-space.pdf. (page 25.), accessed August 16, 2009.

- To ensure the efficient use of all mineral lands consistent with sound resource management practices.
- To ensure opportunities for the extraction of minerals in the County and to protect the environment during and after these minerals are being extracted.

Riverside County

The Riverside County General Plan includes the following policies related to mineral resources:

- Require that the operation and reclamation of surface mines be consistent with the State Surface Mining and Reclamation Act (SMARA) and County Development Code provisions.
- Restrict incompatible land uses within the impact area of existing or potential surface mining areas.
- Restrict land uses incompatible with mineral resource recovery within areas designated Open Space-Mineral Resources.
- Impose conditions as necessary on mining operations to minimize or eliminate the potential adverse impact of mining operations on surrounding properties, and environmental resources.
- Require that new non-mining land uses adjacent to existing mining operations be designed to provide a buffer between the new development and the mining operations. The buffer distance shall be based on an evaluation of noise, aesthetics, drainage, operating conditions, biological resources, topography, lighting, traffic, operating hours, and air quality.

San Bernardino County

The County of San Bernardino General Plan includes the goal to protect the current and future extraction of mineral resources that are important to the County's economy while minimizing impacts of this use on the public and the environment. To fulfill that goal, the following policies have been created:

- In areas containing valuable mineral resources, establish and implement conditions, criteria, and standards that are designed to protect the access to, and economic use of, these resources, provided that the mineral extraction does not result in significant adverse environmental effects and that open space uses have been considered for the area once mining operations cease.
- Implement the following state Mineral Resource Zone (MRZ) designations to establish a system that identifies mineral potential and economically viable reserves:

  - ✓ Zone 1: Adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This designation will be applied where well-developed lines of reasoning, based upon economic geologic principles and adequate data, demonstrate that the likelihood for occurrence of significant mineral deposits is nil or slight.

  - ✓ Zone 2: Adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists. This designation will be applied to known mineral deposits or where well developed lines of reasoning, based upon economic geologic principles and adequate data, demonstrate that the likelihood for occurrence of significant mineral deposits is high.

  - ✓ Zone 3: Contains deposits whose significance cannot be evaluated from available data.

  - ✓ Zone 4: Available information is inadequate for assignment to any other MRZ zone.

- Other MRZ designations include the following, respectively, a scientific resource zone (SZ) and identified resource areas (IRA):

  - ✓ Areas containing unique or rare occurrences of rocks, minerals, or fossils that are of outstanding scientific significance will be classified in this zone.

  - ✓ San Bernardino County or State Division of Mines and Geology Identified Resource Areas where adequate production and information indicates that significant minerals are present.

- Mining operators/owners will provide buffers between mineral resources (including access routes) and abutting incompatible land uses. New mineral and non-mineral development in these zones will be designed and reviewed according to the compatibility criteria specified in this policy.

- Review land development and mining proposals near potentially incompatible land uses with the goal of achieving land use compatibility between potentially incompatible uses.

- Protect existing mining access routes by giving them priority over proposed alterations to the land, or by accommodating the mining operations with as good or better alternate access, provided the alternate access does not adversely impact proposed open space areas or trail alignment.

- Provide for the monitoring of mining operations for compliance with the established operating guidelines, conditions of approval and the reclamation plan.

SUBCHAPTER 3.12

EXISTING SETTING - NOISE

INTRODUCTION

The environmental setting section describes the noise, and noise sources in the Southern California Association of Governments (SCAG) region.[1] The SCAQMD is encompassed within the SCAG region and includes Orange County and portions of Los Angeles, Riverside and San Bernardino Counties.

ENVIRONMENTAL SETTING

Noise Descriptors

Sound waves, traveling outward from a source, exert a sound pressure level (commonly called "sound level"), measured in decibels (dB). "Noise" is often defined as unwanted sound, and environmental noise is usually measured in "A-weighted" decibels, which is a decibel corrected for the variation in frequency response of the typical human ear at commonly-encountered noise levels. All noise levels discussed herein reflect A-weighted decibels. In general, people can perceive a 2- to 3-dB difference in noise levels; a difference of 10 dB is perceived as a doubling of loudness.

Environmental noise levels typically fluctuate across time of day; different types of noise descriptors are used to account for this variability, and different types of descriptors have been developed to differentiate between cumulative noise over a given period and single noise events. Cumulative noise descriptors include the energy-equivalent noise level (L_{eq}), Day-Night Average Noise Level (DNL), and Community Noise Equivalent Level (CNEL). The L_{eq} is the actual time-averaged, equivalent steady-state sound level, which, in a stated period, contains the same acoustic energy as the time-varying sound level during the same period. DNL and CNEL values result from the averaging of L_{eq} values (based on A-weighted decibels) over a 24-hour period, with weighting factors applied to different periods of the day and night to account for their perceived relative annoyance. For DNL, noise that occurs during the nighttime period (10:00 p.m. to 7:00 a.m.) is "penalized" by 10 dB. CNEL is similar to DNL, except that it also includes a "penalty" of approximately 5 dB for noise that occurs during the evening period (7:00 p.m. to 10:00 p.m.). Cumulative noise descriptors, DNL and CNEL, are well correlated with public annoyance due to transportation noise sources. Table 3.12-1 shows the compatibility between various land uses and CNEL.

Individual noise events, such as train pass-bys or aircraft overflights, are further described using single-event and cumulative noise descriptors. For single events, the maximum measured noise level (L_{max}) is often cited, as is the Sound Exposure Level (SEL). The SEL is the energy-based sum of a noise event of given duration that has been

[1] Draft 2008 Regional Transportation Plan (RTP) Program Environmental Impact Report (PEIR). Southern California Association of Governments (SCAG). January 2008.

"squeezed" into a reference duration of one second and is typically a value that is 5 to 10 dB higher than the L_{max}.

Vibration Measuring and Reporting

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment. Several different methods are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. The decibel notation, VdB, is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.[2]

High levels of vibration may cause physical personal injury or damage to buildings. However, groundborne vibration levels rarely affect human health. Instead, most people consider groundborne vibration to be an annoyance that may affect concentration or disturb sleep. In addition, high levels of groundborne vibration may damage fragile buildings or interfere with equipment that is highly sensitive to groundborne vibration (e.g., electron microscopes). To counter the effects of groundborne vibration, the Federal Railway Administration (FRA) and the Federal Transit Administration (FTA) have published guidance relative to vibration impacts. According to FRA, fragile buildings can be exposed to groundborne vibration levels of 0.5 PPV without experiencing structural damage.[3] The FTA has identified the human annoyance response to vibration levels as 80 VdB.[4]

[2] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, April 1995.

[3] Federal Railway Administration, High-Speed Ground Transportation Noise and Vibration Impact Assessment, December 1998.

[4] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, April 1995.

TABLE 3.12-1
Noise Land Use Compatibility Matrix

Land Use	Annual Community Noise Equivalent Level (CNEL) in Decibels				
	55	60	65	70	75
Outdoor Amphitheatres					
Nature preserves, wildlife preserves, livestock farming; neighborhood and playgrounds					
Schools, preschools, libraries		45			
Residential- single family and multiple family, mobile homes, residential hotels, retirement homes, intermediate care facilities, hospitals, nursing homes		45			
Hotels and motels, other transient lodging; auditoriums, concert halls, indoor arenas, churches		45	45		
Office buildings- business, educational, professional and personal services; R&D offices and laboratories			50		
Riding stables, water recreation facilities, regional parks and athletic fields, cemeteries; outdoor spectator sports, golf courses					
Commercial- retail; shopping centers, restaurants, movie theatres			50	50	
Commercial- wholesale; industrial; manufacturing					
Agriculture (except residences and livestock), extractive industry, fishing, utilities, and public R-O-W					

	Compatible: The outdoor community noise equivalent level is sufficiently attenuated by conventional construction that the indoor noise level is acceptable, and both indoor and outdoor activities associated with the land use may be carried out.
45	**Conditionally Compatible:** The outdoor community noise equivalent level will be attenuated to the indoor level shown, and the outdoor noise level is acceptable for associated outdoor activities.
	Incompatible: The community noise equivalent level is severe. Although extensive mitigation techniques could make the indoor environment acceptable for performance of activities the outdoor environment would be intolerable for outdoor activities associated with the land use.

Source: Southern California Association of Governments, Draft 2008 RTP PEIR, January 2008, p. 3.9-2

In contrast to noise, groundborne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans, which is around 65 VdB. Most perceptible indoor vibration is caused by sources within buildings, such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

Sensitive Receptors

Some land uses are considered more sensitive to ambient noise levels than others due to the amount of noise exposure (in terms of both exposure time and "insulation" from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas are generally more sensitive to noise than are commercial and industrial land uses. Consequently, the noise standards for sensitive land uses are more stringent than those for less sensitive uses, such as commercial and industrial.

To protect various human activities and sensitive land uses (e.g., residences, schools, and hospitals) lower noise levels are needed. A noise level of 55 to 60 dB DNL outdoors is the upper limit for intelligible speech communication inside a typical home. In addition, social surveys and case studies have shown that complaints and community annoyance in residential areas begin to occur at 55 dB DNL. Sporadic complaints associated with the 55 to 60 dB DNL range give way to widespread complaints and individual threats of legal action within the 60 to 70 dB DNL range. At 70 dB DNL and above, residential community reaction typically involves threats of legal action and strong appeals to local officials to stop the noise.

Noise Sources

Many principal noise generators within the district are associated with transportation (e.g., airports, freeways, arterial roadways, seaports, and railroads). Additional noise generators include stationary sources, such as industrial manufacturing plants and construction sites. Local collector streets are not considered to be a significant source of noise since traffic volume and speed are generally much lower than for freeways and arterial roadways. Generally, transportation-related noise sources characterize the ambient noise environment of an area.

Airports

The SCAG region contains six established airports, including Los Angeles International (LAX), Bob Hope (formerly Burbank), John Wayne, Long Beach, Ontario, and Palm Springs. There are also four new and emerging airports in the Inland Empire and North Los Angeles County. These include San Bernardino International Airport (formerly Norton Air Force Base [AFB]), March Inland Port (joint use with March Air Reserve

Base), Southern California Logistics Airport (formerly George AFB), and Palmdale Airport (joint use with Air Force Plant 42).

Freeways and Arterial Roadways

The SCAG region has over 20,717 centerline (route) miles and over 64,771 lane-miles of roadways, including one of the most extensive High-Occupancy Vehicle (HOV) lane systems in the country.[5] Additionally, the SCAG region has a growing network of tolled lanes and High-Occupancy Toll (HOT) lanes. Regionally significant arterials provide access to the freeway system and often serve as parallel alternate routes; in some cases, they are the only major system of transportation available to travelers.

The extent to which traffic noise levels affect sensitive land uses depends upon a number of factors. These include whether the roadway itself is elevated above grade or depressed below grade, whether there are intervening structures or terrain between the roadway and the sensitive uses, and the distance between the roadway and such uses. For example, measurements show that depressing a freeway by approximately 12 feet yields a reduction in traffic noise relative to an at-grade freeway of 7 to 10 dB at all distances from the freeway. Traffic noise from an elevated freeway is typically 2 to 10 dB less than the noise from an equivalent at-grade facility within 300 feet of the freeway, but beyond 300 feet, the noise radiated by an elevated and at-grade freeway (assuming equal traffic volumes, fleet mix, and vehicle speed) is the same.[6]

Additionally, the SCAG region has an enormous number of arterial roadways. Typical arterial roadways have one or two lanes of traffic in each direction, with some containing as many as four lanes in each direction. Noise from these sources can be a significant environmental concern where buffers (e.g., buildings, landscaping, etc.) are inadequate or where the distance from centerline to sensitive uses is relatively small. Given typical daily traffic volumes of 10,000 to 40,000 vehicle trips, noise levels along arterial roadways typically range from 65 to 70 dB DNL at a distance of 50 feet from the roadway centerlines.

Railroad Operations

Railroad operations generate high, relatively brief, intermittent noise events. These noise events are an environmental concern for sensitive uses located along rail lines and in the vicinities of switching yards. Locomotive engines and the interaction of steel wheels and rails primarily generate rail noise. The latter source creates three types of noise: 1) rolling noise due to continuous rolling contact, 2) impact noise when a wheel encounters a rail joint, turnout or crossover, and 3) squeal generated by friction on tight curves. For very high speed rail vehicles, air turbulence can be a significant source of noise as well. In addition, use of air horns and crossing bell gates contribute to noise levels in the vicinity of grade crossings.[7]

[5] *Ibid.*, p. 3.9-4.
[6] *Ibid.*
[7] *Ibid.*, p. 3.9-5.

Freight Trains

Noise levels generated by freight train pass-by events reflect locomotive engine noise and rail car wheel rail interaction. The former depends upon track grade conditions (i.e., uphill versus downhill) and is largely independent of speed, whereas the latter is highly speed dependent, increasing approximately 6 dB for each doubling of train velocity.[8] In addition to noise, freight trains also generate substantial amounts of ground-borne noise and vibration in the vicinity of the tracks. Ground-borne noise and vibration is a function of both the quality of the track and the operating speed of the vehicles.

The SCAG region has an extensive network of railroad lines belonging primarily to two major railroads: Union Pacific Railroad (Union Pacific) and Burlington Northern Santa Fe Railway (BNSF). SCAG's Inland Empire Railroad Main Line Study suggest that the number of freight trains on most BNSF and UP lines will more than double between 2000 and 2025 in response to a tripling of container volume at the San Pedro Bay Ports. A rail line supporting 40 freight trains per day generates approximately 75 dB DNL at 200 feet from the tracks. BNSF rail lines extend south from switching yards in eastern Los Angeles to the Los Angeles and Long Beach ports complex and east to Arizona and points beyond via San Bernardino County. BNSF generates approximately 75 dB DNL at a distance of 200 feet from the tracks. [9]

Commuter and Inter-City Passenger Trains

In general, the noise generated by commuter rail facilities (powered by either diesel or electric locomotives) is from the locomotives themselves. In the district, there are two commuter and inter-city passenger train operators: AMTRAK and the Southern California Regional Rail Authority/Metrolink. AMTRAK operates trains with destinations in Seattle, Chicago, Orlando, San Diego, and San Luis Obispo. A typical AMTRAK pass-by event generates 107 dB SEL at 50 feet[10]; two such events during the daytime or evening periods generate approximately 61 dB DNL at 50 feet and approximately 52 dB DNL at 200 feet. Nine such events generate approximately 67 dB DNL at 50 feet and 58 dB DNL at 200 feet.

The Southern California Regional Rail Authority operates the Metrolink commuter rail system. This system currently includes seven rail lines, with destinations in Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties. Noise levels generated by Metrolink are similar to those associated with AMTRAK.

Steel Wheel Urban Rail Transit

Heavy rail is generally defined as electrified rapid transit trains with dedicated guideway, and light rail as electrified transit trains that do not require dedicated guideway. In general, noise increases with speed and train length. Sensitivity to rail noise generally

[8] *Ibid.*
[9] *Ibid.*, p. 3.9-6.
[10] *Ibid.*

arises when there is less than 50 feet between the rail and sensitive receptors. A significant percentage of complaints about noise can be attributed to the proximity of switches, rough or corrugated track, or wheel flats. Within the district, the Los Angeles County Metropolitan Transit Authority (Metro) provides urban rail transit service on four lines within Los Angeles County. The Blue Line extends from Long Beach to the 7th Street Metro Center in downtown Los Angeles. The Red Line connects Union Station with North Hollywood via the Metro Center, the Gold Line connects Union Station with Pasadena, and the Green Line extends from Redondo Beach to Norwalk. Other Metro operated urban transit systems include the Orange Line which connects with the northern terminus of the Red Line in North Hollywood and serves much of the northwestern portion of Los Angeles County, and the Eastside Gold Line Extension, which provides rail transit service to East Los Angeles.

Port Operations

The Ports of Long Beach and Los Angeles are major regional economic development centers. These ports currently handle approximately 40 percent of the volume imported into the country and approximately 24 percent of the nation's exports. Noise is generated from four sources: ships using the port facilities, equipment associated with cargo activity within the port, and truck and rail traffic moving cargo to and from the ports. All sources affect the ambient noise levels in the port areas. Residential areas in San Pedro (City of Los Angeles) and West Long Beach are affected most by truck and rail traffic related to the ports.

The Alameda Corridor provides a substantial long-term reduction in noise and vibration associated with rail operations in the vicinities of the Ports of Long Beach and Los Angeles. The Alameda Corridor consolidates the operations of UP and BNSF on 90 miles of existing branch line tracks into one 20-mile corridor along Alameda Street. This corridor provides a direct connection between the ports of Long Beach and Los Angeles and the UP and BSNF switching yards in eastern Los Angeles. The Alameda Corridor includes four overpasses and three underpasses at intersections south of State Route 91 (SR-91) that allow vehicles to pass above the trains. North of SR-91, trains pass through a 10-mile, 33-foot-deep trench. The construction of tracks in a below-grade trench, track construction on new base materials, and the use of continuous welded track reduce noise impacts on adjacent uses from freight trains associated with the ports. Also, the Alameda Corridor includes sound walls in certain locations to mitigate vehicle noise along Alameda Street in residential neighborhoods and other sensitive areas.

Industrial, Manufacturing, and Construction

Noise from industrial complexes, manufacturing plants, and construction sites are characterized as stationary, or point, sources of noise even though they may include mobile sources, such as forklifts and graders. Local governments typically regulate noise from industrial, manufacturing, and construction equipment and activities through enforcement of noise ordinance standards, implementation of general plan policies, and imposition of conditions of approval for building or grading permits.

Industrial complexes and manufacturing plants are generally located away from sensitive land uses, and, as such, noise generated from these sources generally has less effect on the local community. In contrast to industrial and manufacturing plants, construction sites are located throughout the region and are often located within, or adjacent to, residential districts. In general, construction activities generate high noise levels intermittently on and adjacent to the construction sites, and the related noise impacts are short-term in nature. The dominant source of noise from most construction equipment is the engine, usually a diesel engine, with inadequate muffling. However, in a few cases, such as impact pile driving or pavement breaking, noise generated by the process dominates. Construction equipment can be considered to operate in two modes, stationary and mobile. Stationary equipment operates in one location for one or more days at a time, with either a fixed-power operation (pumps, generators, compressors) or a variable noise operation (pile drivers, pavement breakers). Mobile equipment moves around the construction site with power applied in cyclic fashion (bulldozers, loaders), or movement to and from the site (trucks).[11]

Construction-related noise levels generally fluctuate depending on the construction phase, equipment type and duration of use, distance between noise source and receptor, and presence or absence of barriers between noise source and receptor. Noise levels decrease by approximately 6 dB with each doubling of distance from the construction site (e.g., noise levels from excavation might be approximately 83 dB at 100 feet from the site, and about 77 dB at 200 feet from the site). Interior noise levels from construction are approximately 10 dB (open windows) to 20 dB (closed windows) less than exterior noise levels due to the attenuation provided by building facades.[12]

Existing Vibration Sources

Similar to the environmental setting for noise, the vibration environment is typically dominated by traffic from nearby roadways and activity on construction sites. Heavy trucks can generate groundborne vibrations that vary depending on vehicle type, weight, and pavement conditions. Heavy trucks typically operate on major streets. Nonetheless, vibration levels adjacent to roadways are typically not perceptible.

REGULATORY SETTING

The federal government sets noise standards for transportation-related noise sources that are closely linked to interstate commerce, such as aircraft, locomotives, and trucks, and, for those noise sources, the state government is preempted from establishing more stringent standards. The state government sets noise standards for those transportation noise sources that are not preempted from regulation, such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies.

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[11] *Ibid.*, p. 3.9-8.
[12] *Ibid.*

Federal Agencies and Regulations

Code of Federal Regulations (CFR)

Federal regulations for railroad noise are contained in 40 CFR, Part 201 and 49 CFR, Part 210. The regulations set noise limits for locomotives and are implemented through regulatory controls on locomotive manufacturers.

Federal regulations also establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 CFR, Part 205, Subpart B. The federal truck pass-by noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers. The FHWA regulations for noise abatement must be considered for federal or federally-funded projects involving the construction of a new highway or significant modification of an existing freeway when the project would result in a substantial noise increase or when the predicted noise levels approach or exceed the "Noise Abatement Criteria."

Under the regulations, a "substantial increase" is defined as an increase in L_{eq} of 12 dB during the peak hour of traffic noise. For sensitive uses, such as residences, schools, churches, parks, and playgrounds, the Noise Abatement Criteria for interior and exterior spaces is L_{eq} 57 and 66 dB, respectively, during the peak hour of traffic noise.

Federal Aviation Administration (FAA)

Aircraft operated in the U.S. are subject to certain federal requirements regarding noise emissions levels. These requirements are set forth in Title 14 of the *Code of Federal Regulations* (14 CFR), Part 36. Part 36 establishes maximum acceptable noise levels for specific aircraft types, taking into account the model year, aircraft weight, and number of engines. Pursuant to the federal Airport Noise and Capacity Act of 1990, the FAA established a schedule for complete transition to Part 36 "Stage 3" standards by year 2000. This transition schedule applies to jet aircraft with a maximum takeoff weight in excess of 75,000 pounds and, thus, applies to passenger and cargo airlines but not to operators of business jets or other general aviation aircraft.

Federal Vibration Policies

The FRA and FTA have published guidance relative to vibration impacts. According to the FRA, fragile buildings can be exposed to groundborne vibration levels of 0.5 PPV without experiencing structural damage. The FTA has identified the human annoyance response to vibration levels as 80 VdB.[13]

[13] *Ibid.*, p. 3.9-10.

State Agencies and Regulations

California's Airport Noise Standards

The State of California's Airport Noise Standards, found in Title 21 of the *California Code of Regulations*, identify a noise exposure level of CNEL 65 dB as the noise impact boundary around airports. Within the noise impact boundary, airport proprietors are required to ensure that all land uses are compatible with the aircraft noise environment or the airport proprietor must secure a variance from the California Department of Transportation.

California Department of Transportation (Caltrans)

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the state pass-by standard is consistent with the federal limit of 80 dB. The state pass-by standard for light trucks and passenger cars (less than 4.5 tons gross vehicle rating) is also 80 dB at 15 meters from the centerline. For new roadway projects, Caltrans employs the Noise Abatement Criteria, discussed above in connection with the FHWA.

California Noise Insulation Standards

The California Noise Insulation Standards found in the *California Code of Regulations*, Title 24, set requirements for new multi-family residential units, hotels, and motels that may be subject to relatively high levels of transportation-related noise. For exterior noise, the noise insulation standard is DNL 45 dB in any habitable room and requires an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than DNL 60 dB.

State Vibration Policies

There are no adopted state policies or standards for ground-borne vibration. However, Caltrans recommends that extreme care be taken when sustained pile driving occurs within 7.5 meters (25 feet) of any building, and 15 to 30 meters (50 to 100 feet) of a historic building or a building in poor condition.

Local Agencies and Regulations

To identify, appraise, and remedy noise problems in the local community, each county and city within the district has adopted a noise element as part of its General Plan. Each noise element is required to analyze and quantify current and projected noise levels associated with local noise sources, including, but not limited to, highways and freeways, primary arterials and major local streets, rail operations, air traffic associated with the airports, local industrial plants, and other ground stationary sources that contribute to the community noise environment. Beyond statutory requirements, local jurisdictions are free to adopt their own goals and policies in their noise elements, although most jurisdictions have chosen to adopt noise/land use compatibility guidelines that are similar to those recommended by the state. The overlapping DNL ranges (see Table 3.12-1) indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

In addition to regulating noise through noise element policies, local jurisdictions regulate noise through enforcement of local ordinance standards. These standards generally relate to noisy activities (e.g., use of loudspeakers and construction) and stationary noise sources and facilities (e.g., air conditioning units and industrial activities). Two cities within the district, Los Angeles and Long Beach, operate port facilities. Noise from the Ports of Los Angeles and Long Beach are regulated by the noise ordinances and noise elements of the Los Angeles and Long Beach General Plans.

In terms of airport noise, some of the actions that airport proprietors have been allowed to take to address local community noise concerns include runway use and flight routing changes, aircraft operational procedure changes, and engine run-up restrictions. These actions generally are subject to approval by the FAA, which has the authority and responsibility to control aircraft noise sources, implement and enforce flight operational procedures, and manage the air traffic control system.

SUBCHAPTER 3.13

EXISTING SETTING – POPULATION AND HOUSING

INTRODUCTION

The environmental setting section describes population, housing, and employment in the SCAQMD region.

ENVIRONMENTAL SETTING

This section presents county, city, and census tract data for population, employment, and housing gathered from the U.S. Census Bureau web site for 2000 and 2005 and projections produced by SCAG and California Department of Finance (DOF). The 2000 census gives detailed demographic, socioeconomic, and housing data both at the individual and household level for different geographic levels for 2000 and 2005. Law mandates that the U.S. Census Bureau collect and publish data for each decade (U.S. Census Bureau 2000). SCAG, the region's federally designated metropolitan planning organization, is responsible for preparing projections regarding population, employment, and housing at the regional, county, subregional, jurisdictional, census tract, and transportation analysis zone levels.

The district is encompassed within the SCAG region and includes Orange County and portions of Los Angeles, Riverside and San Bernardino Counties. For the purposes of this section, due to the limited nature of some available information, all of Los Angeles, Riverside, and San Bernardino counties are included in the discussion of growth trends within the SCAQMD region.

Population and Households

Current population information is presented in Table 3.13-1. Household information is presented in Table 3.13-2. Census data indicate that the four-county area (including the SCAQMD region) had a total population of 15,620,448 in 2000, with 5,103,873 households. The population within the four-county area grew by 5.83 percent in 2005 to 16,531,369,[1] and according to DOF estimates the population in the four-county area grew by 6.50 percent from 2005 to 2009, to 17,700,805[2].

[1] American Community Survey, 2005.
[2] DOF, 2009, Table E-1: City/County Population Estimates with Annual Percent Change.

TABLE 3.13-1
Population Trends

	Los Angeles	Orange	San Bernardino	Riverside	Total
2000[a]	9,519,338	2,846,289	1,709,434	1,545,387	15,620,448
2005[b]	9,758,886	2,944,537	1,916,665	1,911,281	16,531,369
2009[c]	10,393,185	3,139,017	2,060,950	2,107,653	17,700,805
2010[d]	10,615,730	3,314,948	2,182,049	2,242,745	18,355,472
2015[d]	10,971,602	3,451,755	2,385,748	2,509,330	19,318,435
2020[d]	11,329,829	3,533,935	2,582,765	2,809,003	20,255,532
2025[d]	11,678,552	3,586,283	2,773,945	3,089,999	21,128,779
2030[d]	12,015,889	3,629,539	2,957,753	3,343,777	21,946,958
2035[d]	12,338,620	3,653,990	3,133,801	3,596,680	22,723,091
Growth Percentage					
2000-2005	2.52	3.45	12.12	23.68	5.83
2005-2009	6.5	6.6	7.53	10.27	7.07
2009-2015	5.57	9.96	15.76	19.06	9.14
2009-2025	12.37	14.25	34.6	46.61	19.37
2009-2035	18.72	16.41	52.06	70.65	28.37

[a] Census, 2000.
[b] American Community Survey, 2005.
[c] DOF estimates for 2009.
[d] Regional Transportation Plan 2008, Population, Housing, and Employment Projects, SCAG.

TABLE 3.13-2
Household Trends

	Los Angeles	Orange	San Bernardino	Riverside	Total
2000[a]	3,133,774	935,287	528,594	506,218	5,103,873
2005[b]	3,184,396	969,916	588,218	623,711	5,366,241
2010[c]	3,357,798	1,039,201	637,250	720,531	5,754,780
2015[c]	3,509,580	1,071,810	718,602	811,486	6,111,478
2020[c]	3,666,631	1,088,375	787,142	913,207	6,455,355
2025[c]	3,788,732	1,102,370	852,986	1,008,909	6,752,997

TABLE 3.13-2 (Concluded)
Household Trends

	Los Angeles	Orange	San Bernardino	Riverside	Total
2030[c]	3,906,851	1,110,659	914,577	1,097,950	7,030,037
2035[c]	4,003,501	1,118,490	972,561	1,183,097	7,277,649
Growth Percentage					
2000-2005	1.62	3.7	11.28	23.21	5.14
2005-2015	10.21	10.51	22.17	30.11	13.89
2005-2025	18.98	13.66	45.01	61.76	25.84
2005-2035	25.72	15.32	65.34	89.69	35.62

[a] Census, 2000.
[b] American Community Survey, 2005.
[c] Regional Transportation Plan 2008, Population, Housing, and Employment Projects, SCAG.

According to the U.S. Census Bureau, the population in the County of Los Angeles was 9,519,338 in 2000,[3] compared to 9,758,886 in 2005,[4] representing an increase of 2.52 percent. During this same time period, the population in the County of Orange grew by 3.45 percent, from 2,846,289 in 2000 to 2,944,537 in 2005. The County of Riverside grew from 1,545,387 in 2000 to 1,911,281 in 2005; an increase of 23.68 percent. The population of San Bernardino County grew from 1,709,434 in 2000 to 1,916,665 in 2005, an increase of 12.12 percent.

According to the DOF, the population in the County of Los Angeles was 10,393,185 in 2009,[5] representing an increase of 6.50 percent from 2005 to 2009. During this same time period, the population in the County of Orange grew by 6.60 percent to 3,139,017 in 2009. The County of Riverside grew to 2,107,653 persons in 2009; an increase of 10.27 percent. The population of San Bernardino County grew to 2,060,950 in 2009; an increase of 7.53 percent.

According to the U.S. Census Bureau, the number of households in the County of Los Angeles was 3,133,774 in 2000,[6] compared to 3,184,396 in 2005,[7] representing an increase of 1.62 percent. During this same time period, the number of households in the County of Orange grew by 3.70 percent, from 935,287 in 2000 to 969,916 in 2005. The County of Riverside grew from 506,218 households in 2000 to 623,711 households in

[3] Census, 2000.
[4] DOF, 2009, Table E-1: City/County Population Estimates with Annual Percent Change.
[5] American Community Survey, 2005.
[6] Census, 2000.
[7] American Community Survey, 2005.

2005; an increase of 23.21 percent while the number of households in San Bernardino County grew from 528,594 in 2000 to 588,218 in 2005, an increase of 11.28 percent.

Projected Trends

According to SCAG projections, the 2015 population of the four-county region would be 19,318,435 persons, an increase of 9.14 percent over 2009 estimates from DOF. The 2025 population would be 21,128,779 persons, while 2035 population would be 22,723,091 persons. These numbers represent an increase of 19.37 percent from 2009 to 2025 and an increase of 28.37 percent from 2009 to 2035 for the four-county region (see Table 3.13-1).

Amongst the four counties within the district, the County of Riverside and San Bernardino County are expected to have a high growth in population. The population of the County of Riverside would increase by 70.65 percent from 2009 to 2035, while the population of San Bernardino County would increase by 52.06 percent during the same time period. Comparatively, the county of Los Angeles would only grow by 18.72 percent from 2009 to 2035 and the County of Orange would grow by 16.41 percent from 2009 to 2035.

Housing

Current housing information is presented in Table 3.13-3. Census data indicate that the four-county area had a total 5,426,436 housing units in 2000. This number grew by 5.21 percent in 2005 to 5,709,258 housing units[8], and according to DOF estimates the total number of housing units in four-county area grew by 3.77 percent from 2005 to 2009 to 5,924,535.[9]

TABLE 3.13-3
Housing Trends

	Los Angeles	Orange	San Bernardino	Riverside	Total
2000[a]	3,270,909	969,484	601,369	584,674	5,426,436
2005[b]	3,339,763	1,017,219	652,802	699,474	5,709,258
2009[c]	3,418,698	1,035,491	690,234	780,112	5,924,535
Growth Percentage					
2000-2005	2.11	4.92	8.55	19.63	5.21
2005-2009	2.36	1.80	5.73	11.53	3.77

[a] Census, 2000.
[b] American Community Survey, 2005.
[c] DOF estimates for 2009.

[8] American Community Survey, 2005.
[9] DOF, 2009, Table E-1: City/County Population Estimates with Annual Percent Change.

According to the U.S. Census Bureau, the number of housing units in the County of Los Angeles was 3,339,763 in 2005,[10] compared to 3,270,909in 2000,[11] representing an increase of 2.11 percent. During this same time period, the number of housing units in the County of Orange grew by 4.92 percent, from 969,484 in 2000 to 1,017,219 in 2005. The number of housing units in the County of Riverside grew from 584,674 in 2000 to 699,474 in 2005; an increase of 19.63 percent. The number of housing units in San Bernardino County grew from 601,369 in 2000 to 652,802 in 2005, an increase of 8.55 percent.

According to the DOF, the number of housing units in the County of Los Angeles was 3,418,698 in 2009,[12] representing an increase of 2.36 percent from 2005 to 2009. During this same time period, the number of housing units in the County of Orange grew by 1.80 percent to 1,035,491 in 2009. The County of Riverside grew to 780,112 housing units in 2009; an increase of 11.53 percent. The number of housing units in San Bernardino County grew to 690,234 in 2009, an increase of 5.73 percent.

Employment

Current employment information is presented in Table 3.13-4. Census data indicate that the four-county area had a total of 6,579,726 employed people in 2000. According to California Economic Development Department (CEDD) estimates, the number grew by 17.17 percent in 2005 to 7,709,500 people.[13] The employment in the four county region decreased by 3.45 percent to 7,443,300 in 2009, likely due to the current economic downturn.

TABLE 3.13-4

Employment Trends

	Los Angeles	Orange	San Bernardino	Riverside	Total
2000[a]	3,957,917	1,340,842	675,676	605,291	6,579,726
2005[b]	4,552,800	1,534,400	811,300	811,000	7,709,500
2009[c]	4,411,200	1,477,700	761,400	793,000	7,443,300
2010[d]	4,552,398	1,755,167	810,233	784,998	7,902,796
2015[d]	4,675,875	1,837,771	897,489	911,381	8,322,516
2020[d]	4,754,731	1,897,352	965,778	1,042,145	8,660,006
2025[d]	4,847,436	1,933,058	1,045,480	1,168,769	8,994,743
2030[d]	4,946,420	1,960,633	1,134,960	1,295,487	9,337,500
2035[d]	5,041,172	1,981,901	1,254,749	1,413,522	9,691,344

[10] *Ibid.*
[11] Census, 2000.
[12] American Community Survey, 2005.
[13] Labor market information, CEDD, 2009.

TABLE 3.13-4 (Concluded)
Employment Trends

Growth Percentage					
2000-2005	15.03	14.44	20.07	33.99	17.17
2005-2009	(3.11)	(3.70)	(6.15)	(2.22)	(3.45)
2009-2015	6.00	24.37	17.87	14.93	11.81
2009-2025	9.89	30.82	37.31	47.39	20.84
2009-2035	14.28	34.12	64.79	78.25	30.20

[a] Census, 2000.
[b] American Community Survey, 2005.
[c] DOF estimates for 2009.
[d] Regional Transportation Plan 2008, Population, Housing, and Employment Projects, SCAG.

According to the CEDD, the employment in the County of Los Angeles was 4,552,800 in 2005,[14] compared to 3,957,917 in 2000,[15] representing an increase of 15.03 percent. During this same time period, the number of employed people in the County of Orange grew by 14.44 percent, from 1,340,842 in 2000 to 1,534,400 in 2005. Employment in the County of Riverside grew from 605,291 in 2000 to 811,000 in 2005; an increase of 33.99 percent. While the employment in San Bernardino County grew from 675,676 in 2000 to 811,300 in 2005, an increase of 20.07 percent.

The employment in the County of Los Angeles was 4,411,200 in 2009,[16] representing a decrease of 3.11 percent from 2005 to 2009. During this same time period, the number of employed people in the County of Orange decreased by 3.70 percent to 1,477,700 in 2009. Employment in the County of Riverside decreased to 793,000 in 2009; a decrease of 2.22 percent. Employment in San Bernardino County decreased to 761,400 in 2009, a decrease of 6.15 percent.

Projected Trends

According to SCAG projections, the 2015 employment of the four-county region would be 7,902,796, an increase of 11.81 percent over 2009 estimates from DOF. The 2025 employment would be 8,994,743, while 2035 employment would be 9,691,344. These numbers represent an increase of 20.84 percent from 2009 to 2025 and an increase of 30.20 percent from 2009 to 2035 for the four-county region (see Table 3.13-4).

Amongst the four counties within the district, Riverside County and San Bernardino Counties are expected to have a high growth in employment. Employment in the County of Riverside would increase by 78.25 percent from 2009 to 2035, while employment in San Bernardino County would increase by 64.79 percent during the same time period. Comparatively, Los Angeles County would only grow by 14.28 percent from 2009 to 2035 and Orange County would grow by 34.12 percent from 2009-2035. These

[14] *Ibid.*
[15] Census, 2000.
[16] American Community Survey, 2005.

projections, however, do not take into account the employment losses due to recent economic downturn.

REGULATORY SETTING

Regional Agencies Regulations

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is responsible for preparing the Regional Comprehensive Plan (RCP) and the Regional Transportation Plan (RTP). The RCP serves as a guide for local governments in addressing regional issues and developing local goals and objectives. Adopted in 2008, the RCP establishes a broad set of goals for the region and identifies strategies for agencies at all levels to use in guiding growth decisions. Adopted in 2008, the RTP contains a set of existing socioeconomic projections that are used as the basis for SCAG's transportation planning efforts. They include projections of population, housing, and employment at the regional, county, subregional, jurisdictional, census tract, and transportation analysis zone levels. The RTP includes policies and regulations set forth to ensure that development within the SCAG regional area is within planned and forecast future socioeconomic projections. SCAG information is useful in socioeconomic analyses in that it provides consistent existing and projected demographic data across multiple jurisdictional boundaries.

The Regional Housing Needs Assessment (RHNA) is mandated by State Housing Law as part of the periodic process of updating local housing elements of the General Plan. The RHNA quantifies the need for housing within each jurisdiction during specified planning periods. Communities use the RHNA in land use planning, prioritizing local resource allocation, and in deciding how to address identified existing and future housing needs resulting from population, employment and household growth. The RHNA does not necessarily encourage or promote growth, but rather allows communities to anticipate growth, so that collectively the region and subregion can grow in ways that enhance quality of life, improve access to jobs, promotes transportation mobility, and addresses social equity, fair share housing needs.

Local Agency Regulations

General Plans and Housing Element

City and county governments typically develop as part of their housing elements that identify goals, objectives, and specific actions to accommodate growth and housing within their jurisdiction. Similarly, general plans also provide policies and programs to promote economic growth in the area and create jobs within their jurisdiction.

SUBCHAPTER 3.14

EXISTING SETTING - PUBLIC SERVICES

INTRODUCTION

This section describes the public services that are available within the district and to the individual facilities, which qualify to receive emissions offsets available from the district's internal offset accounts.

ENVIRONMENTAL SETTING

The environmental setting describes the public services that may be affected by the proposed project. The environmental setting addresses police protection services, fire protection services, education facilities and urban transportation features within the district.

Police Protection Services

Law enforcement within the district takes into account a variety of federal, state, county, city, and other local law enforcement agencies. Primary law enforcement is at the community level, with City Police and County Sheriff's Departments providing this service. Additionally, there are more specialized law enforcement agencies that assist in law enforcement at the community or resource level in the region. These specialized agencies include, but are not limited to the California Highway Patrol (CHP), School Police, Airport and Harbor Police, Transit Police, Tribal Police, Park Rangers (federal, state, county, and city), and a wide variety of federal agencies (Federal Bureau of Investigation [FBI], Bureau of Alcohol, Tobacco, Firearms and Explosives [ATF], etc.). Each agency has its own responsibilities, some of which may overlap with other law enforcement agencies. State Park Rangers may call upon County Sheriff's Deputies for assistance. Transit Police might call upon City Police to aid them. In general, law enforcement agencies provide first response to all emergencies, perform preliminary investigations, and provide basic patrol services in their service area. Table 3.14-1, below, shows the breakdown of law enforcement agencies at the county and city level. County service is for both unincorporated areas and cities that contract with the county for law enforcement services.

TABLE 3.14-1

Summary of Police Service Providers by County within the District[a]

County	Number of Jurisdictions Served	
	County Sheriff's Departments[b]	***City Police Departments[c]***
Los Angeles	41	48
Orange	13	22
Riverside	12	13
San Bernardino	15	10

NOTES:

[a] Does not include specialty police agencies, such as School Districts, Airports, Ports, etc.

[b] Includes cities and unincorporated county areas served by County Sheriff's Departments.

[c] Includes cities that contract with other cities for police services (i.e., Yorba Linda with Brea, Santa Fe Springs with Whittier, etc.).

Source: SCAG, Draft 2008 RTP PEIR, January 2008, p. 3.12-2.

Fire Protection Services

Fire protection within the district involves a number of federal, state, county, city, and other local fire protection agencies. As with police services, primary fire protection services occur at the community level, with city and county fire departments and fire protection districts providing this service. Also providing fire protection services are a variety of volunteer fire companies. There are fire protection agencies that also provide fire protection services within state and federal lands. These agencies include, but are not limited to, federal fire agencies (Bureau of Land Management, National Park Service, National Forest Service, Department of Defense, etc.), state forestry department, tribal fire departments, airport and harbor fire departments, and in some instances business-sponsored fire departments (e.g., refineries, etc.). Each agency provides fire services within its own area of responsibilities, but each of them can call upon other agencies for fire support through mutual aid agreements. Generally, fire departments take proactive and preventative measures to provide fire suppression and emergency response services for all private, institutional, and public facilities within their area of responsibility. Table 3.14-2, below, shows the breakdown of fire prevention agencies at the county and city levels. County service is for unincorporated areas, cities that contract with the county for fire protection service, and independent fire protection districts.

TABLE 3.14-2

Summary of Fire Protection Service Providers by County within the District[a]

County	Jurisdictions Served By		
	County Fire Departments [b]	***City Fire Departments***	***Fire Protection Districts or Other Independent Fire Agencies***
Los Angeles	59	30	1[c]
Orange	23	10	1[c]
Riverside	18	8	5
San Bernardino [d]	7	13	15[e]

NOTES:

[a] Numbers do not include various federal, state, and specialty fire departments, such as Bureau of Land Management, National Park Service, Department of Defense, California Forestry Department (wild lands), private or public airport fire departments, business fire departments (e.g., refineries, Indian Tribal lands, etc.) that might aid county, city, and independent fire departments through mutual aid agreements, and vice versa.

[b] Includes cities and unincorporated county areas served by county fire departments/authorities.

[c] City of La Habra served by the Los Angeles County Fire Department.

[d] Some districts service city and adjoining unincorporated areas.

[e] Five cities (Apple Valley, Barstow, Chino, Chino Hills, 29 Palms) served by independent fire protection districts.

Source: SCAG, Draft 2008 RTP PEIR, January 2008, p. 3.12-3.

Educational Facilities

There are almost 3 million students enrolled from kindergarten to twelfth grade in the counties within the district. Nearly 140,000 teachers serve these students. Table 3.14-3 lists the student and teacher totals by county.

TABLE 3.14-3

Kindergarten through Grade 12 Enrollment and Teachers in Counties within the District for the 2008-2009 School Year

County	Enrollment Kindergarten-Grade 12	Teachers
Los Angeles	1,632,191	78,852
Orange	503,524	22,541
Riverside	420,147	19,247
San Bernardino	420,127	19,184
District Counties	**2,975,989**	**139,824**
California	6,251,618	306,887

Source: California Department of Education Educational Demographics Office, California Public Schools - County Report, http://dq.cde.ca.gov/dataquest/, updated May 26, 2009.

Urban Transportation Features

Elements of the transportation infrastructure, including roadways, freeways, bridges, and railroads, among others, are a large component of the urban environment and affect public services. A discussion of urban transportation features is included below.

<u>Freeways, Highways, and Roadways</u>

On public roadways, there is a constant need for emergency services, including police, fire, and paramedic services. Safety and a constant flow of traffic are maintained by the aforementioned public services on all freeways, highways, and roadways within the district and help facilitate efficient emergency response. In addition, the major ports, airports and shipping centers described below all require police, fire and emergency services to operate efficiently.

<u>Rail</u>

Rail operations within the district can be broken down into two categories, passenger or freight. Passenger operations include Amtrak, Metrolink, and Los Angeles County Metropolitan Transportation Agency (Metro) operated light and heavy rail lines.

Freight service generally includes those operated by BNSF, formally known as Burlington Northern Santa Fe Railway and Union Pacific Railroad (UP). Railyard facilities within the region are predominately located within industrial areas, including the Port of Los Angeles, the Port of Long Beach, East Los Angeles, City of Industry (Los Angeles County), and West Colton. Additional freight facilities are also located in less densely populated areas, such as Barstow and Yermo (San Bernardino County).

<u>Airports</u>

The counties within the district include numerous airports serving both commercial and private airplane flights. Major commercial airports in these counties include the Los Angeles International Airport (LAX), Bob Hope Airport (BUR), and Long Beach Airport (LGB) in Los Angeles County; John Wayne Airport (SNA) in Orange County; Ontario International Airport (ONT) in San Bernardino County; and Palm Springs International Airport (PSP) in Riverside County. Airports with both passenger and cargo capability in the region include LAX, BUR, LGB, and Palmdale Regional Airport (PMD) in Los Angeles County; SNA in Orange County; ONT in San Bernardino County; and PSP in Riverside County. San Bernardino International Airport (SBD) and Southern California Logistics Airport (VCV) in San Bernardino County and March Inland Port (RIV) in Riverside County operate as cargo only airports.

<u>Ports</u>

The shipping ports of Los Angeles and Long Beach represent the major shipping location within the district and also one of the most important shipping locations along the western United States. Ports require public services for the safety and well being of workers and visitors.

REGULATORY SETTING

Each jurisdiction (i.e., city, county, or special district) within the district is directed by internal standards and policies that guide the provision of public service to its customers. Each agency charged with protecting or providing services to the public (e.g., fire department or agency, police or sheriff's department, schools) maintains specific standards, such as response times, levels of service, school site size, and enrollment capacities, that must be adhered to during construction and operation of a project.

Federal

There are no federal regulations related to public services that are applicable to the proposed project.

State

California Fire Code

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, which include regulations concerning building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices, such as extinguishers and smoke alarms, high-rise building, and childcare facility standards, and fire suppression training.

California Building Code

Title 24, Part 6 of the California's Building Code contains fire-safety–related building standards referenced in other parts of Title 24. This Code is preassembled with the 2006 International Fire Code by the International Code Council. Title 24 requires building according to fire safety standards for all new construction, including new buildings, additions, alterations, and, in nonresidential buildings, repairs.

California State Assembly Bill 2926 (AB 2926)—School Facilities Act of 1986

In 1986, AB 2926 was enacted by the state and added to the California Government Code (Section 65995) to authorize school districts to collect development fees based on demonstrated need and generate revenue for school districts for capital acquisitions and improvements. It also established that the maximum fees (adjustable for inflation), which may be collected under this and any other school fee authorization are $1.50 per square foot of residential development and $0.25 per square foot of commercial and industrial space.

AB 2926, entitled the "School Facilities Act of 1986," was then expanded and revised in 1987 through the passage of AB 1600, which added Section 66000 et seq. of the Government Code. Under this statute, payment of statutory fees by developers would serve as total CEQA mitigation to satisfy the impact of development on school facilities. However, further subsequent legislative actions have alternatively expanded and contracted the limits placed on school fees by AB 2926.

California Senate Bill 50 (SB 50)

As part of the further refinement of the legislation enacted under AB 2926, the passage of SB 50 in 1998 defined the Needs Analysis process in Government Code Sections 65995.5–65998. Under the provisions of SB 50, school districts may collect fees to offset the costs associated with increasing school capacity as a result of development. School districts must demonstrate to the state their long-term facilities needs and costs based on long-term population growth in order to qualify for this source of funding.

Local

Fire Protection and Prevention Plan

Fire prevention, fire protection, and emergency medical services within the district operate under the applicable fire codes, municipal codes, and General Plan elements of each jurisdiction (i.e., city or county), which set forth policies and standards for fire station distribution and location, fire suppression water-flow (or fire flow), fire hydrant standards and locations, firefighting equipment access, emergency ambulance services, and fire prevention activities.

General Plans

The most comprehensive land use planning for the district is provided by city and county general plans, which local governments are required by state law to prepare as a guide for future development. The geographic area encompassed by the district includes numerous cities and unincorporated communities in the counties of Los Angeles, Orange, San Bernardino, and Riverside. Each of these counties and incorporated cities has prepared a general plan, which is the primary document that establishes local land use policies and goals. Many of these general plans also establish local policies related to public services, such as those typically found in the Safety Element of a general plan.

SUBCHAPTER 3.15

EXISTING SETTING - RECREATION

INTRODUCTION

This section describes the recreational resources that are available within the district.

ENVIRONMENTAL SETTING

Federal and State Parks

Federal and state designated open space lands comprise the majority of recreational resources available in the district. These lands provide natural outdoor settings for various recreational activities and can include United States Forest Service (USFS) designated national forests, such as the Angeles National Forest, Cleveland National Forest, and the San Bernardino National Forest; or National Parks Service (NPS) designated parks, such as Joshua Tree National Park and the Santa Monica Mountains Recreation Area. Within these open space areas, responsible federal agencies provide a variety of recreational facilities and infrastructure, including trail designations, campgrounds, scenic outlooks, educational and informative visitors' center facilities, and law enforcement personnel to protect and maintain the natural and recreational resources contained in these federal lands. In addition, the NPS National Register of Historic Places and National Historic Landmarks Program oversee the preservation of approximately 667 historic places and landmarks in the district. These historic resources are often open to the public and provide educational as well as recreational opportunities, usually in the form of a museum, to residents and visitors of California.[1] Other than the USFS and NPS, the Bureau of Land Management (BLM) often works cooperatively with state, regional, and local agencies in the district to manage protected wildlife and habitat resources such as the Coachella Valley National Wildlife Refuge and the Seal Beach National Wildlife Refuge. These refuges offer similar types of recreation to national parks and forests, as well as wildlife viewing opportunities.

There are approximately 40 state parks located within the district, which are under management of the California State Parks Department. State parks include a variety of recreational resources not just limited to wilderness or open space uses. Some of these uses include California historic resources and museums, such as the Antelope Valley Indian Museum; scenic beach areas, such as Bolsa Chica State Beach; and other land-intensive recreational uses, such as the Hungry Valley State Vehicular Recreation Area. The California Office of Historic Preservation (OHP) and the State Historical Resources Commission (SHRC), as part of the State Parks Department, oversee the designation of state park status for various important California Historic resources and Points of Interest. Currently, SHRC has registered and oversees the preservation of approximately 276 California Historic Resources in the district.[2]

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[1] SCAG 2008. Draft RTP Programmatic EIR. Section 3.4 Cultural Resources. Note: Imperial and Ventura Counties omitted from estimates to provide more accurate account of the district.
[2] *Ibid*.

Regional and Local Parks

The southern California region contains a varied landscape with large urban and sub-urban centers interspersed between vast expanses of rural and wilderness areas. While federal and state agencies are perhaps best for the development of wilderness recreation resources, regional and local agencies concentrate their efforts on providing outdoor and public recreation facilities within urban centers isolated from the wilderness resources surrounding them. Table 3.15-1 provides an overview of the approximate size and distribution of the various outdoor recreation uses in the district.

TABLE 3.15-1

Regional and Local Open Space and Recreation Uses by Region (Acres)[a]

Land Use Category (Acres)	Los Angeles County	Orange County	Western Riverside County	San Bernardino County	Coachella Valley	Total
Beach Parks	1,840	1,350	-	-	-	3,190
Developed Local Parks and Recreation	11,705	6,525	2,978	3,341	805	25,354
Developed Regional Parks and Recreation	3,455	1,409	977	1,139	280	7,260
Golf Courses	12,216	7,307	6,234	4,462	15,412	45,631
Other Open Space and Recreation	3,916	1,185	2,364	4,548	1,245	13,258
Specimen Gardens and Arboreta	627	26	14	18	2	687
Undeveloped Local Parks and Recreation	284	4	9	7	78	382
Undeveloped Regional Parks and Recreation	11,482	-	23,681	122,074	673,204	830,441
Wildlife Preserves and Sanctuaries	1,228	1,009	3,058	17	1,171	6,483
Totals	46,750	18,814	39,315	135,607	692,197	932,683

[a] Data is taken from SCAG data for the SCAG district. Some data have been omitted to more accurately define the SCAQMD region. The SCAG region encompasses a larger area of Southern California than SCAQMD and as such, data provided for San Bernardino County may be over-representative of the actual portion of the county comprised within the SCAQMD. Similarly, data for Western Riverside County may be over- or under-representative of the actual SCAQMD.

Source: Southern California Association of Governments (SCAG) 2005 Land Use Inventory (2006)

Generally, each region has its own standards and implementation methods for designating and maintaining recreational space. As a general guideline, the National Recreation and Parks Association (NRPA) has developed standards for regional and local recreational land as shown below in Table 3.15-2.

TABLE 3.15-2
National Recreation and Parks Association Guidelines for Regional and Local Parks

Type of Park[a]	Service Area	Desirable Size	Acres/1,000 Population
Mini-Park	>0.25 mile radius	1 acre or less	.25 to .50
Neighborhood Park/Playground	0.25-0.5 mile radius per 5,000 people	15+ acres	1.0 to 2.0
Community Park	1-2 mile radius	25+ acres	5.0 to 8.0
Regional Park	Several communities, within 1-hour drive time	200+ acres	5.0 to 10.0
NRPA Park Acreage/ Population Standar	---	---	6.25-10.5

[a] NPRA also has developed standards for sports facilities (see NRPA 1996).

Source: National Recreation and Parks Association, Park, Recreation, Open Space and Greenway Guidelines, 1996.

Los Angeles County. Despite continuing economic and population growth, Los Angeles County has maintained its abundant natural resources. A large percentage of the County's natural and wilderness areas are found in the northern region of the County where the Angeles National Forest meets with the unincorporated lands surrounding Santa Clarita, Antelope Valley, and San Fernando Valley. Other areas in the County have fewer open space and wilderness resources available for recreation due to the highly urbanized environment that defines most of Los Angeles County. The County Department of Parks and Recreation oversees local and community parks in both incorporated and unincorporated County areas. In addition, the County operates several large, regional parks and recreation areas, such as Castaic Lake Recreation Area, Frank G. Bonelli Regional Park, the Kenneth Hahn Recreation Area, and four arboreta and botanic gardens, as well as many natural areas and wildlife sanctuaries. The Department of Parks and Recreation also has jurisdiction over 19 public golf courses on 17 sites located throughout the County and maintains over 300 miles of multipurpose riding and hiking trails.

The County standard for the provision of parkland is four acres of local parkland per 1,000 residents of the County's unincorporated population, and six acres of regional parkland per 1,000 residents of the County's total population. In 2004, having recognized a growing need in the County for open space and recreational resources, the County Department of Parks and Recreation produced the Strategic Asset Management Plan (SAMP) for 2020. The SAMP report found that by 2020, the County would be short of the desired four acres/1,000 residents goal by a difference of about 4,600 acres. Despite having over 800,000 acres of recreational land and 650 acres of local parkland available in the unincorporated areas of the County, there are continuing shortages of recreational resources available to urban areas due to accessibility issues and limited availability of land. As such, the County is actively pursuing innovative means of achieving County goals for recreational resources. Such non-traditional forms of parkland include landscaped medians for jogging and walking, athletic fields that double as seasonal flood management areas, creating rooftop gardens, planning for biking, hiking, and equestrian trails, and integrating open space into redevelopment projects.

Orange County. Orange County, unlike Los Angeles County, has a strong mix of developed urban centers and undeveloped or unused lands that present opportunities for expanding recreational resources. Most of the existing recreational parklands in the County are found along the County's scenic coastline and wetlands, the Santa Ana Mountains, and the canyons and hillsides of the Laguna and Newport coasts, collectively known as the South Coast. The regional government of Orange County is committed to a "balanced community" planning strategy that emphasizes the development of balanced land use plans in unincorporated areas. As a result, Orange County has higher proportions of recreational land available to the population than other counties in the district.

OC Parks manages nearly 40,000 acres of parks, historical and coastal facilities and open space for County of Orange as part of the Orange County Community Resources Department. OC Parks includes roughly 32,000 acres in 25 urban and wilderness parks, 7 miles of beaches and other coastal facilities and 7,000 acres of open space lands. It also encompasses 150 miles of existing bike trails and nearly 350 miles of existing and proposed dirt trails, as well as significant historical landmarks.[3] As an instructive example of the relative wealth in recreational land available to Orange County residents, the 2007 SCAG case study of southern California cities notes that the City of Irvine, located in west-central Orange County, has the highest park acres/1,000 people ratio of any city included in the survey.[4] Furthermore, Irvine had over three times as many acres per 1,000 people of any city surveyed within the district. Orange County's regional recreation facilities include regional harbors, beaches, parks, and historic sites and comprise approximately 27,000 acres of existing developed parks. Of the existing 27,000 acres, there are 25 existing regional parks, 19 existing county beaches, 3 county harbors, and 6 regional historic sites or parks. According to the Orange County General Plan Recreation Element, the County also has over 24,000 acres planned for new regional recreation facilities. Additionally, the County has 63 developed local parks with 20 additional parks, which have been accepted under the Orange County General Plan but are yet to be developed. The County's local park policy has a goal of 2.5 acres of local park space per 1,000 county residents. The regional County trail network 348 miles of existing and proposed trails.[5]

San Bernardino County. The County of San Bernardino has an abundance of outdoor recreational opportunities. Within the County there are water sports; hiking, bicycling, and equestrian activities; off-road vehicle recreation; fishing, camping and hunting; passive recreation and enjoyment of the natural setting; and developed parks. The major providers of outdoor recreation in the County are the Bureau of Land Management (BLM), the United States Forest Service (USFS), State Department of Parks and

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[3] County of Orange, *Welcome to OC Parks*, OC Parks website, available at http://www.ocparks.com/, accessed August 2009.
[4] Southern California Association of Governments (SCAG) 2008, Draft RTP Programmatic EIR, Chapter 3.10 Open Space.
[5] County of Orange, Orange County General Plan, Recreation Element.

Recreation, National Parks Service, County Regional Parks Department, and local City Parks Departments. BLM manages approximately 6,076,378 acres the County's public land in the Desert Region, which is located outside the district. The largest recreational development in the district is the San Bernardino National Forest, which is managed by the USFS and Department of Agriculture, which manage the majority of the geographic area within the Mountain Regions of the County totaling over 671,000 acres in the San Bernardino Mountains and a portion of the San Gabriel Mountains. The national forests are managed by the USFS for multiple uses including recreation, watershed protection, grazing, and forest stand management within the Cucamonga Wilderness, San Gorgonio Wilderness, and Big Horn Mountain Wilderness.

There are also nine regional parks in the County. Regional parks generally encompass 100 or more acres and are designed to serve a population of 100,000 residents. In addition to the regional parks, there are 17 community parks within the County. Community parks serve a two- to four-mile radius with a population of 50,000 to 80,000. The size of these parks is generally from 15 to 20 acres. There are also four designated off-road recreation areas for the use of all-terrain vehicles and motorcycles. Community, municipal and neighborhood park facilities are provided by self-governed park districts within the unincorporated portions of the County and by cities and towns within the unincorporated areas. These facilities typically include playgrounds, sports fields, and senior citizen centers.

The County standard for regional park area is 2.5 acres of park area for each 1,000 population. The County population total (incorporated and unincorporated) is approximately 1,716,166. Using the County standard of 2.5 acres per 1,000 populations, the County needs approximately 4,290 acres of parkland. The total parkland in all three planning regions is 9,647 acres, which exceeds the County standard of 2.5 acres per 1,000 County residents.

Riverside County. The County of Riverside currently maintains 35 regional parks, encompassing approximately 22,317 acres. More than half of these parks are located in the western portion of the County, with other facilities scattered in the desert, mountains, and Colorado River regions. Riverside County also contains four park and recreation districts. These four park districts provide approximately 27 neighborhood and community parks accounting for approximately 275 acres of parkland. The largest recreational development in the County, as well as the district, is Joshua Tree National Park, which is approximately 1,017,748 acres in size, of which 794,000 acres are used for recreational uses. Other recreation and park lands in the County's unincorporated land include seven State Parks, accounting for 39,423 acres of County land; 35 regional parks, accounting for 22,317 acres of County land; and 27 community parks between the four park planning districts, accounting for approximately 275 acres of County land. In addition to unincorporated land, cities within the County of Riverside maintain approximately 215 local parks, accounting for approximately 1,543 acres of city land. Other recreational uses in the County include private recreation facilities, such as tennis and basketball courts, swimming pools, playgrounds, and golf courses. The County standard for regional park area is three acres of park area for each 1,000 County residents.

REGULATORY SETTING

Federal

United States Bureau of Land Management (BLM)

The BLM manages nearly 10 million acres of the district, primarily in the eastern portion of the region. The BLM also implements biological resource management policies through its designation of Areas of Critical Environmental Concern.

United States Fish and Wildlife Service (USFWS)

The USFWS administers the Federal Endangered Species Act (FESA) and designates critical habitat for endangered species. The USFWS also manages the National Wildlife Refuges in the district, such as the Seal Beach Wildlife Refuge.

National Park Service (NPS)

The NPS manages national parks and wilderness areas. Two national parks and one wilderness area are located in the SCAG region – Joshua Tree National Park and the Santa Monica Mountains National Recreation Area.

United States Forest Service (USFS)

The USFS manages approximately 2.3 million acres of national forests in the Southern California region. The two national forests in the district are the Angeles National Forest and the San Bernardino National Forest

State

California Department of Forestry and Fire Protection (CDF)

The CDF through its responsibility for fighting wildland fires, the CDF plays a role in planning development in forested areas.

California Department of Parks and Recreation (CDPR)

The CDPR manages and provides sites for a variety of recreational and outdoor activities. The CDPR is a trustee agency that owns and operates all state parks and participates in land use planning that affects state parkland.

California Department of Fish and Game (CDFG)

The land use mandate of the CDFG is to protect rare, threatened, and endangered species by managing habitat in legally designated ecological reserves or wildlife areas. CDFG reserves located in the district include the Bolsa Chica Ecological Reserve (Orange County).

Coastal Conservancy

Since its establishment in 1976, the Coastal Conservancy has undertaken approximately 1,000 projects over 1,100 miles of California coastline and the San Francisco Bay. Over 600 projects have been completed and over 300 projects currently active. These projects include construction of trails and other public access facilities, restoration and enhancement of wetlands and other wildlife habitat, restoration of public piers and urban waterfronts, preservation of farmland, and other projects in line with the goals of California's Coastal Act.

Local

City and County General Plans

The most comprehensive land use planning for the district is provided by city and county general plans, which local governments are required by state law to prepare as a guide for future development. The geographic area encompassed by the District includes numerous cities and unincorporated communities in the counties of Los Angeles, Orange, San Bernardino, and Riverside. Each of these counties and incorporated cities has prepared a general plan, which is the primary document that establishes local land use policies and goals. General plans must include seven mandatory elements including a land use, open space and conservation element. Generally, within these elements of the general plans, cities and counties establish local policies related to recreation and parks.

Specific and Master Plans

A city or county may also provide land use planning by developing community or specific plans for smaller, more specific areas within their jurisdiction. These more localized plans provide for focused guidance for developing a specific area, with development standards tailored to the area, as well as systematic implementation of the general plan.

SUBCHAPTER 3.16

EXISTING SETTING - SOLID/HAZARDOUS WASTE

INTRODUCTION

This section describes the existing generation of solid/hazardous wastes and the associated risks to the environment within the district.

ENVIRONMENTAL SETTING

Solid Waste Disposal and Transfer facilities

Over the past ten years, disposal tonnage has decreased significantly within the district as the emphasis on recycling to meet the requirements of Assembly Bill (AB) 939 has served to divert tonnage from landfills and conserve landfill capacity. Table 3.16-1 shows data from the California Integrated Waste Management Board (CIWMB) regarding the number of tons disposed in the year 2008 for each county within the district.

TABLE 3.16-1

Solid Waste Disposed of in the District Region – CY 2008

County	Total Tonnage
Imperial	237,874
Los Angeles	8,149,429
Orange	4,010,688
Riverside	3,237,067
San Bernardino	1,542,476
District Region	**17,177,534**
California	35,641,429

Source: California Integrated Waste Management Board Landfill Tonnage Reports. Retrieved July 15, 2009: from: http://www.ciwmb.ca.gov/Landfills/Tonnages/

In viewing facilities on a county-by-county basis, it is important to note that landfills in one county may import waste generated elsewhere. Currently, Orange County offers capacity to out-of-county waste at a “tipping fee” low enough to attract waste from Los Angeles and San Bernardino Counties. In Riverside County, the El Sobrante Landfill is licensed to accept up to 10,000 tons of out-of-county waste per day. Table 3.16-2 provides detailed information on permitted active or planned solid waste landfills in the counties within the district.

TABLE 3.16-2

Permitted Active or Planned Solid Waste Landfills within the District

Solid Waste Landfill	County	Closure Date	Daily Disposal (Tons/Day)	Remaining Capacity (Cu. Yds.)	Maximum Capacity (Cu. Yds.)
Scholl Canyon Sanitary Landfill	Los Angeles	1/1/2019	3,400	10,804,900	69,200,000
Burbank Landfill Site No. 3	Los Angeles	1/1/2053	240	5,107,465	5,933,365
Lancaster Landfill and Recycling Center	Los Angeles	8/2/2012	1,700	19,088,739	26,665,000
Chiquita Canyon Sanitary Landfill	Los Angeles	11/24/2019	6,000	35,800,000	63,900,000
Puente Hills Landfill	Los Angeles	10/13/2013	13,200	49,348,500	106,400,000
Calabasas Sanitary Landfill	Los Angeles	1/1/2028	3,500	16,900,400	69,700,000
Pebbly Beach (Avalon) Disposal Site	Los Angeles	1/1/2033	49	104,100	143,142
San Clemente Island Landfill	Los Angeles	1/1/2032	10	209,816	235,459
Sunshine Canyon SLF County Extension	Los Angeles	1/1/2013	6,600	17,015,625	37,315,352
Savage Canyon Landfill	Los Angeles	1/1/2025	350	7,419,580	8,119,412
Sunshine Canyon City Landfill Unit 2	Los Angeles	unknown	5,000	13,441,300	13,441,300
Prima Deshecha Sanitary Landfill	Orange	12/31/2067	4,000	87,384,799	172,900,000
Olinda Alpha Sanitary Landfill	Orange	12/31/2013	8,000	38,587,383	74,900,000
Frank R. Bowerman Sanitary LF	Orange	12/31/2022	8,500	59,411,872	127,000,000
Badlands Sanitary Landfill	Riverside	1/1/2016	4,000	21,866,092	30,386,332
Lamb Canyon Disposal Site	Riverside	1/1/2023	3,000	20,908,171	34,292,000
Oasis Sanitary Landfill	Riverside	2021	400	75,727	870,000
Desert Center Landfill	Riverside	1/1/2011	60	23,246	117,032
Blythe Sanitary Landfill	Riverside	5/31/2034	400	2,289,139	4,633,000
El Sobrante Landfill	Riverside	1/1/2030	10,000	158,857,914	184,930,000
California Street Landfill	San Bernardino	1/1/2031	829	6,800,000	10,000,000
Victorville Refuse Disposal Site	San Bernardino	10/1/2047	3,000	82,200,000	83,200,000
Barstow Refuse Disposal Site	San Bernardino	5/1/2012	750	924,401	3,584,500
Mid-Valley Sanitary Landfill [a]	San Bernardino	4/1/2033	7,500	62,000,000	71,500,000
Landers Disposal Site	San Bernardino	1/1/2013	1,200	1,300,000	3,080,000
USMC - 29 Palms Disposal Site	San Bernardino	1/1/2076	100	10,821,000	10,945,000
Fort Irwin Sanitary Landfill	San Bernardino	1/1/2045	100	18,935,202	19,000,000
Mitsubishi Cement Plant Cushenbury L.F.	San Bernardino	1/1/2034	40	227,000	520,400
San Timoteo Solid Waste Disposal Site	San Bernardino	5/1/2016	1,000	9,491,163	20,400,000

[a] Values for Maximum Capacity and Remaining Capacity are what are shown on web site. They may have been transposed.

Source: Draft 2008 RTP PEIR, January 2008 p. 3.12-5-6.

Hazardous Waste Management

Hazardous material, as defined in 40 CFR 261.20 and 22 CCR Article 9, is disposed of in Class I landfills. California has enacted strict legislation for regulating Class I landfills. The California Health and Safety Code requires Class I landfills to be equipped with liners, a leachate collection and removal system, and a ground water monitoring system.

There are no hazardous waste disposal sites within the jurisdiction of the district. Hazardous waste generated at area facilities, which is not reused on-site, or recycled off-site, is disposed of at a licensed in-state hazardous waste disposal facility. Two such facilities are the Chemical Waste Management Inc. (CWMI) Kettleman Hills facility in King's County, and the Clean Harbors (formerly Safety-Kleen) facility in Buttonwillow (Kern County). Kettleman Hills has an estimated 2.5 million cubic yard capacity and expects to continue receiving wastes for approximately 3-4 years. The facility is in the process of permitting a landfill expansion which would increase the landfill's life by another five years. The facility operators would then seek a permit for development of a new landfill that would create another 15 years of life.[1] Buttonwillow receives approximately 960 tons of hazardous waste per day and has an approximate remaining capacity of approximately nine million cubic yards. The expectant life of the Buttonwillow Landfill is approximately 40 years.[2]

Hazardous waste also can be transported to permitted facilities outside of California. The nearest out-of-state landfills are U.S. Ecology, Inc., located in Beatty, Nevada; USPCI, Inc., in Murray, Utah; and Envirosafe Services of Idaho, Inc., in Mountain Home, Idaho. Incineration is provided at the following out-of-state facilities: Aptus, located in Aragonite, Utah; Aptus, located in Coffeyville, Kansas; Rollins Environmental Services, Inc., located in Deer Park, Texas and Baton Rouge, Louisiana; Chemical Waste Management, Inc., in Port Arthur, Texas; and Waste Research & Reclamation Co., Eau Claire, Wisconsin.

About 1.5 million tons of hazardous waste were generated in 2005 in the four counties that comprise the district and about three million tons of hazardous waste were generated in California (see Table 3.16-3). The most common types of hazardous waste generated in the district include waste oil, inorganic solid waste, contaminated soils, organic solids, asbestos-containing waste, and unspecified oil-containing wastes. Because of the population and economic base in southern California, a large portion of hazardous waste is generated within the district. Not all wastes are disposed of in a hazardous waste facility or incinerator. Many of the wastes generated, including waste oil, are recycled within the district.

[1] Personal Communication, Fred Paap, Chemical Waste Management Inc., December 2006
[2] Personal Communication, Marianna Buoni, Clean Harbors Buttonwillow, Inc., December 2006; Clean Harbors, http://www.cleanharbors.com/Sites/Trans_Dspsl/facility_template.asp?location=53, 2006

TABLE 3.16-3
Hazardous Waste Generation in the District - 2005 (tons per year)

Waste Name	Los Angeles County	Orange County	San Bernardino County	Riverside County	Total Waste Generated in the Counties in the district[a]	Total Waste Generated In California
Waste Oil	404,053	21,601	94,746	4,405	524,805	931,938
Inorganic Solid Waste	218,746	34,694	6,585	2,140	262,165	482,294
Contaminated Soils	204,774	64,536	5,152	5,551	280,013	754,488
Organic Solids	111,168	9,165	27,373	3,116	150,822	231,969
Asbestos Waste	57,585	11,574	10,594	4,557	84,310	279,074
Oil-Containing Waste	53,590	3,435	17,136	1,511	75,672	100,719
Unspecified Aqueous Solution	36,439	2,073	3,733	1,252	43,497	56,120
Unspecified Solvent Mixture	32,505	1,526	1,109	453	35,593	57,230
Aqueous Solvent with Organic Residues	32,889	2,232	7,209	1,275	43,605	80,121
TOTALS					**1,500,482**	**2,973,953**

[a] The data presented is for the entire county and not limited to the portion of the county within the SCAQMD jurisdiction.

Source: U.S. Federal Department of Toxic Substances Control, 2006.

REGULATORY SETTING

Federal Agencies and Regulations

The United States Environmental Protection Agency (EPA) is the primary federal agency charged with protecting human health and with safeguarding the natural environment: air, water, and land. EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance.

Since 1970, Congress has enacted numerous environmental laws including the Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and the Toxic Substances Control Act (TSCA).

The Hazardous Materials Transportation Act is the federal legislation regulating the transportation of hazardous wastes. The primary regulatory authorities are the U.S. DOT, the Federal Highway Administration, and the Federal Railroad Administration. The Hazardous Materials Transportation Act requires that carriers report accidental releases of hazardous materials to the Department of Transportation at the earliest practicable moment (49 CFR Subchapter C, Part 171).

40 CFR, Part 258 Subtitle D of the Resource Conservation and Recovery Act (RCRA) establishes minimum location standards for siting municipal solid waste landfills. Because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the USEPA has delegated the enforcement responsibility to the State of California. California laws and regulations governing these facilities are summarized below.

State Agencies and Regulations

The Department of Toxic Substances Control (DTSC) is responsible for the permitting of transfer, disposal, and storage facilities. The DTSC conducts annual inspections of hazardous waste facilities. Other inspections can occur on an as-needed basis.

With regard to solid non-hazardous wastes, the California Integrated Waste Management Act of 1989 (AB 939), as amended, requires each county to prepare a countywide siting element which identifies how the county and the cities within the county will address the need for 15 years of disposal (landfill and/or transformation i.e., waste-to energy facilities) capacity to safely handle solid waste generated in the county, which remains after recycling, composting, and other waste diversion activities. AB 939 has recognized that landfills and transformation facilities are necessary components of any integrated solid waste management system and an essential component of the waste management hierarchy. AB 939 establishes a hierarchy of waste management practices in the following order and priority: (1) source reduction; (2) recycling and composting; and (3) environmentally safe transformation/land disposal.

California Integrated Waste Management Act

As many of the landfills in the state are approaching capacity and the siting of new landfills becomes increasingly difficult, the need for source reduction, recycling, and composting has become readily apparent. In response to this increasing solid waste problem, in September 1989 the Legislature passed AB 939, known as the California Integrated Waste Management Act. The Act requires every city and county in the state to prepare a Source Reduction and Recycling Element (SRRE) with its Solid Waste

Management Plan. The purpose of AB 939 is to facilitate the reduction, recycling, and re-use of solid waste to the greatest extent possible.

Department of Resources Recycling and Recovery (CalRecycle) (formerly known as California Integrated Waste Management Board (CIWMB))

CalRecycle has numerous responsibilities in implementing the federal and state regulations summarized above. CalRecycle is the state agency responsible for permitting, enforcing and monitoring solid waste landfills, transfer stations, material recovery facilities (MRFs), and composting facilities within California. Permitted facilities are issued Solid Waste Facility Permits (SWFPs) by CalRecycle. CalRecycle also certifies and appoints Local Enforcement Agencies (LEAs), county or city agencies which monitor and enforce compliance with the provisions of SWFPs. CalRecycle is also responsible for monitoring implementation of AB 939 by the cities and counties. In addition to these responsibilities, CalRecycle also manages the Recycled-Content Materials Marketing Program to increase the understanding of and commitment to using specific recycled-content products in road applications, public works projects and landscaping. These products include recycled aggregate, tire-derived aggregate (TDA), rubberized asphalt concrete (RAC), and organic materials.

As discussed above AB 939 requires that each county in the state of California prepare a Countywide Integrated Waste Management Plan (CIWMP). The CIWMP is a countywide planning document that describes the programs to be implemented in unincorporated and incorporated areas of the county that will effectively manage solid waste, and promote and implement the hierarchy of the Integrated Waste Management Act. The CIWMPs consists of a Summary Plan (SP), a Source Reduction and Recycling Element (SRRE), a Household Hazardous Waste Element (HHWE), a Non-Disposal Facility Element (NDFE), and a Countywide Siting Element (CSE).[3]

California Department of Transportation (Caltrans)

Caltrans sets standards for trucks transporting hazardous wastes in California. The regulations are enforced by the CHP. Trucks transporting hazardous wastes are required to maintain a hazardous waste manifest. The manifest is required to describe the contents of the material within the truck so that wastes can readily be identified in the event of a spill.

Local Agencies and Regulations

Each county within the district has created a CIWMP in accordance with AB 939. Below is a brief description of recent updates to these plans by county.

[3] California Integrated Waste Management Board, Countywide Integrated Waste Management Plan Enforcement, Retrieved November 8, 2007 from http://www.ciwmb.ca.gov/LgLibrary/Policy/CIWMPEnforce/Default.htm#Table

Los Angeles County

The County prepares an annual CIWMP report that details the revision process, assesses remaining permitted capacity for a mandated 15-year planning horizon. Typically the report outlines different disposal capacity scenarios. The report outlines county solid waste management challenges, including a shortage of processing capacity in the county, insufficient markets for recovered materials, necessary updates to the Disposal Reporting System to incorporate all recommendations made by the legislature, and steps to promote and develop conversion technologies. Los Angeles County is revising its SP and CSE to reflect changes in the County's policies and goals, including promotion of conversion technologies, formation of the Los Angeles Regional Agency, update of countywide jurisdiction assistance programs to meet diversion goals, expansion of existing disposal facilities, and development of additional non-disposal facilities for the use of out-of-county disposal facilities.

The 2007 CIWMP found that all existing local landfills and all currently planned landfill expansions would be inadequate to meet future refuse disposal demands, with a shortfall expected to be experienced by 2015. In order to address this shortfall, a number of recommendations are made, including additional capacity expansions at existing landfills, new conversion technologies (recycling, reuse, composting, incineration, etc), and new transfer and waste transport systems (including waste-by-rail) to out of county areas.[4]

Orange County

Orange County completed the first 5-year review of its CIWMP in April 2003. It found sufficient disposal capacity for the 15-year planning horizon but identified other challenges, including the lack of an operational materials recovery facility in the southern portion of the county, changes in records management to comply with the Disposal Recovery System, and determination of accurate base year data.

In addition to the CIWMP, Orange County's Integrated Waste Management Department has initiated a long-term strategic planning project—the Regional Landfill Options for Orange County (RELOOC)—which assesses the solid waste disposal needs of Orange County for the next 40 years. RELOOC's 2005 Strategic Plan Update summarizes progress to maximize capacity at existing landfills, assess alternative technologies and potential out-of-county disposal sites, and expand the Frank R. Bowerman and Olinda Alpha landfills.[5]

[4] Los Angeles Countywide Integrated Waste Management Board, Countywide Integrated Waste Management Plan, 2007 Annual Report, Retrieved July 12, 2009 from http://dpw.lacounty.gov/swims/Upload/2007%20CIWMP%20Annual%20Report_5343.pdf

[5] Draft 2008 RTP PEIR, January 2008 p. 3.12-12.

Riverside County

Riverside County's CIWMP was approved in 1996, and its 2004 5-year review found the original plan remained applicable; accordingly, no comprehensive update was required at that time. The most recent 5-year review report was due in September 2008[6], but is not currently available. The Non-Disposal Facility Element was updated in 2006 to include amendments to one transfer and processing facility and one recycling facility. It also includes plans for two proposed composting facilities and one transfer station/materials recovery facility, pending permit approval. At the time of the 2004 Annual Report, it was observed that by utilizing current programs and facilities, Riverside County had 19 years of disposal capacity remaining.

San Bernardino County

San Bernardino County CIWMP reflects updates to the county's goals and policies, changes to its disposal facilities, and assesses disposal capacity for the mandated 15-year planning horizon. Updated policies include programs to help jurisdictions reach diversion goals, such as additional recycling and composting programs and the development of regional material recovery facilities. An expansion of the Barstow Landfill site would add an additional 59.7 million tons to county-wide refuse capacity, and approval for this expansion was granted in 2008. Accordingly, with the inclusion of this planned expansion, the 2007 CIWMP found sufficient disposal capacity for the following 38 years.[7]

Cities

Cities are responsible for working with each county's Local Task Force to create Source Reduction and Recycling Element (SRREs) and Household Hazardous Waste Elements (HHWEs) for inclusion in the county plan. The SRRE details how the jurisdiction will comply with the diversion rates mandated by the state, and the HHWE details how the jurisdiction will handle household hazardous waste. These elements are reviewed every five years and updated when necessary.

Regional Water Quality Control Boards (RWQCB)

New or expanded landfills must submit Reports of Waste Discharge to the RWQCBs prior to landfill operations. In conjunction with the CIWMB approval of SWFPs,

[6] California Integrated Waste Management Board, Countywide Integrated Waste Management Plan Enforcement, Five-Year Revision Due Dates, Retrieved July 12, 2009 from http://www.ciwmb.ca.gov/LGlibrary/Policy/5YrReview/RevisDueDate.htm

[7] San Bernardino Countywide Integrated Waste Management Plan, Five-Year Review. December 2007, published January 2008. Retrieved July 12, 2009 from http://www.sbcounty.gov/dpw/solidwaste/PDFs/20080729_dpw_swmd_ciwmb_2007_5_year_review_optimized_20080723.pdf

RWQCBs issue Waste Discharge Orders, which regulate the liner, leachate control and removal, and groundwater monitoring systems at Class III landfills.

SCAQMD

The SCAQMD regulates emissions from landfills. Landfill owners/operators must obtain permits to construct and operate landfill flares, cogeneration facilities or other facilities used to combust landfill gas. Owner/operators also are subject to the provisions of SCAQMD Rule 1150.1 (Control of Gaseous Emissions from Landfills). This rule requires the submittal of a compliance plan for implementation of a landfill gas control system, periodic ambient monitoring of surface emissions, and the installation of probes to detect the lateral migration of landfill gas.

SUBCHAPTER 3.17

EXISTING SETTING – TRANSPORTATION/TRAFFIC

INTRODUCTION

This section describes the current transportation system in the district.

ENVIRONMENTAL SETTING

The transportation system within the district consists of roads and highways, public transit (paratransit[1], bus and rail), freight railroads, airports, marine ports and intermodal terminals. The regional roadway system consists of an interconnected network of local streets, arterial streets, freeways, carpool lanes, and toll roads. This roadway network allows for the operation of automobiles, carpools, motorcycles, private and public buses, and trucks. Non-motorized transportation modes, such as bicycles, share many of these facilities. The regional public transit system includes local shuttles, municipal and area-wide public bus operations, rail rapid transit operations, regional commuter rail services, and inter-regional passenger rail service. The freight railroad network includes an extensive system of private railroads and several publicly-owned freight rail lines serving industrial cargo and goods. The region's ports (i.e., Port of Long Beach and Port of Los Angeles) support substantial international and interregional freight movement and tourist travel. Intermodal terminals consisting of freight processing facilities serve the function of transfer, storage and distribution of goods. The airport system consists of commercial, general, and military aviation facilities serving passenger, freight, business, recreational, and defense needs.

The regional transportation system is currently operating at capacity during peak periods. The roadway system shows substantial freeway congestion in the morning and evening peak period, with random episodes of incident-related (e.g., accident, construction repair and maintenance, etc.) congestion throughout the day. The transit system is experiencing substantial overcrowding on a number of core urban bus routes with significant excess capacity on most off-peak and peripheral routes. Rail transit and commuter rail services are at or near capacity during peak hours, especially in the routes serving the downtown Los Angeles area.

Regional Freeway and Highway System

The regional freeway and highway system (e.g., interstate highways, U.S. highways, and state routes) shown in Figure 3.17-1 is the primary means of person and freight movement for the region. This system provides for direct auto, bus, and truck access to employment, services, and goods. The network of freeways and state highways serves as the backbone of the system offering very high capacity limited-access travel and serving

[1] An auxiliary transit service without fixed routes or schedules, usually serving the disabled.

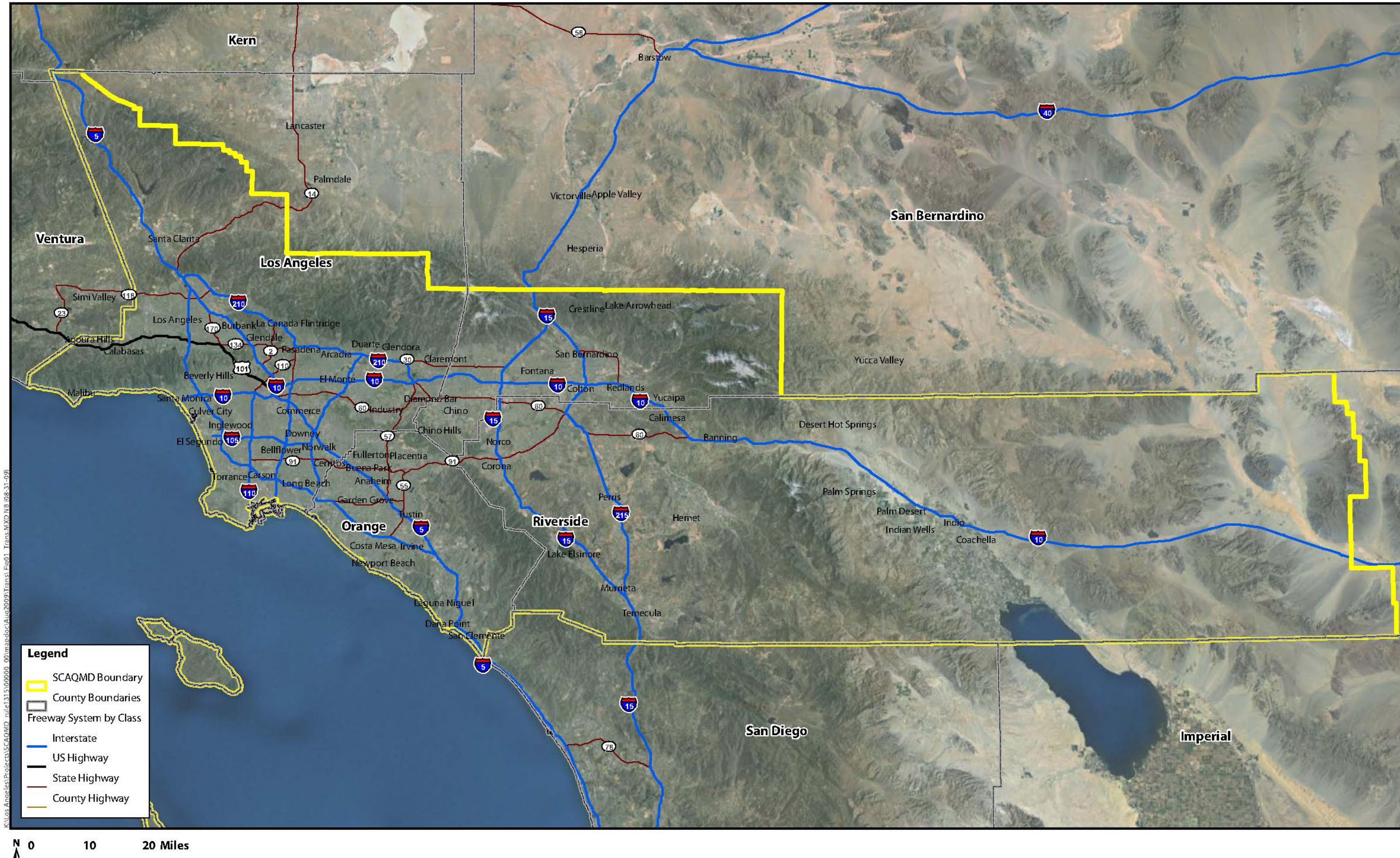
as the primary heavy-duty truck route system. These freeways are a sub-set of the state highway system.

The California Department of Transportation (Caltrans) is responsible for maintaining the state highway system through a rehabilitation program and a maintenance program. Pavement rehabilitation improves the roadway and is designed to extend its service life an additional 10 years. Maintenance activities keep the roadway safe and serviceable until rehabilitation is needed. Pavement maintenance activities include routine maintenance (day-to-day maintenance of roadway), major maintenance (planned work that is generally done under contract), and preventive maintenance (treatments applied when pavement distress is minimal to extend its period of usefulness). Roadway maintenance is primarily funded through the state's tax on the sale of gasoline.

Regional High-Occupancy Vehicle (HOV) System and Park-and-Ride System

The regional HOV system consists of exclusive lanes on freeways and arterials, as well as busways and exclusive rights-of-way dedicated to the use of high-occupancy vehicles. It includes lanes on freeways, ramps, and freeway-to-freeway connectors. The regional HOV system is designed to maximize the person-carrying capacity of the freeway system through the encouragement of shared ride travel modes. HOV lanes operate at a minimum occupancy threshold of either 2 or 3 persons. Many include on-line and off-line park-and-ride facilities, and several HOV lanes are full "transit-ways," including on-line and off-line stations for buses to board passengers.

Park-and-ride facilities are generally located at the urban fringe along heavily-traveled freeway and transit corridors and support shared-ride trips, either by transit, by carpool, or vanpool. Most rail transit stations have park-and-ride lots nearby.



Source: SCAQMD(2009), ICF Jones and Stokes(2009), ESRI Imagery(2008)

Figure 3.17-1
Major Freeway Routes within South Coast Air Quality Management District

Local Roadway System

The local roadway system comprises roads that are under the jurisdiction of a particular city or county public works department. Local roads provide access to adjacent parcels and also provide a route for traffic from the urbanized areas of the county onto the state highway system.

The primary source of funding for roadway maintenance is also through the state's tax on the sale of gasoline; however, other funding sources, such as local taxes (e.g., property taxes), may be allocated for roadway maintenance. Additionally, projects that involve the generation of large volumes of truck traffic on local roadways may be required to contribute a fee that is applied to maintenance costs, resulting from the additional traffic's damage to the roadway surface.

Arterial Street System

The local street system provides access for local businesses and residents. Arterials account for bulk of the total road network and carry a high percentage of total traffic. The arterial network provides high levels of signalized street capacity and serves as a feeder system for the regional freeways. These streets also provide an integral part of the regional transportation system, particularly for shorter trips, acting as alternative routes to freeway driving. Peak period congestion on the arterial street system occurs generally in the vicinity of activity centers, at bottleneck intersections and near many freeway interchanges.

Public Transit

Within the district, public transit service is comprised of local and express buses, rapid bus, urban rail, including subway and light rail principally centered in the core of Los Angeles County, commuter rail that spans five counties, and shuttles/circulators that feed all transportation modes and activity centers. Local service is supplemented by municipal lines and shuttle services.

The largest provider of public transit service in Los Angeles County is the Los Angeles County Metropolitan Transportation Authority (Metro). Metro operates a comprehensive network of fixed-route bus routes and an urban rail system (Metro Rail).

The largest provider of public transit service in Orange County is the Orange County Transportation Authority (OCTA), which operates more than 400 buses on over 70 local and express routes throughout the urbanized portions of Orange County.

The largest provider of public transit service in Riverside County is the Riverside Transit Agency (RTA), which is the primary provider of fixed-route and paratransit services throughout a 2,500-square-mile service area in the western portion of Riverside County. It operates buses on approximately 40 local and express routes.

The largest provider of public transit service in San Bernardino County is Omnitrans, which provides bus and paratransit services in a 480-square-mile area in the San Bernardino Valley in the western portion of the county. It operates a fleet of more than 218 buses over approximately 35 routes.

Regional Commuter Rail

Commuter rail service is operated by the Southern California Regional Rail Authority (SCRRA). In October of 1992, the SCRRA began initial operation of the Metrolink commuter rail system on four lines. Service on the initial system was greatly expanded after the 1994 Northridge earthquake. Currently (2009), SCRRA operates seven routes, including six from downtown Los Angeles to Oxnard, Lancaster, San Bernardino, Riverside, and Oceanside, from San Bernardino to Irvine, and from Riverside via Fullerton to downtown Los Angeles.

Amtrak provides significant regional and inter-regional service on the San Diego to San Luis Obispo corridor (also known as Amtrak's Pacific Surfliner corridor), operating 30 trains (combined weekday and weekend service) from Los Angeles Union Station. Additionally, Amtrak operates three interstate routes within the region (Coast Starlight between Los Angeles and Seattle, Sunset Limited – between California and Louisiana, and Southwest Chief – between Los Angeles and Chicago operating an average of four trains per day.

Goods Movement

Goods movement includes trucking, rail freight, air cargo, marine cargo, and both domestic and international freight, the latter entering the U.S. via the marine ports, airports, and the international border with Mexico. Additionally, many cargo movements are intermodal (e.g., sea to truck, sea to rail, air to truck, or truck to rail). The goods movement system includes not only highways, railroads, sea lanes, and airways but also intermodal terminals, truck terminals, railyards, warehousing, freight consolidation/de-consolidation terminals, freight forwarding, package express, customs inspection stations, truck stops, and truck queuing areas.

Railroads

The District is served by two main line commercial freight railroads - the Burlington Northern and Santa Fe Railway Co. (BNSF) and the Union Pacific Railroad (UP). These railroads link southern California with other U.S. regions, Mexico, and Canada either directly or via their connections with other railroads. They also provide freight rail service within California.

REGULATORY FRAMEWORK

State and Federal Requirements

The Transportation Equity Act for the 21st Century (TEA-21), signed into law in 1998, provides the regulatory framework at the federal level for transportation planning in urban areas. This legislation requires that Metropolitan Planning Organizations (MPO) prepare long-range transportation plans. In federally designated air quality nonattainment and maintenance areas, the long-range transportation plan is to be updated every three years. The State of California has additional regulations for the preparation of long-range transportation plans.

Regional Requirements

Regional Transportation Plan and Regional Transportation Improvement Program

Southern California Association of Governments (SCAG) is the MPO within the district and is responsible for the preparation of the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP) in order to meet state and federal certification requirements. The 2008 RTP presents the transportation vision through the year 2035 and provides a long-term investment framework for addressing the region's transportation and related challenges. The 2008 RTIP is a capital listing of all the transportation projects proposed over a six-year period for the SCAG region to implement projects and programs listed in the RTP. The projects include highway improvements, transit, rail and bus facilities, HOV lanes, signal synchronization, intersection improvements, freeway ramps, etc. County Transportation Commissions have the responsibility under state law of proposing county projects, using the current RTP's policies, programs, and projects as a guide, from among submittals by cities and local agencies.

Congestion Management Program

In order to meet federal certification requirements, SCAG and the county Congestion Management Agencies (CMAs) have to work together to develop a Congestion Management System (CMS) process for the region. In the SCAG region, the CMS is comprised of the combined activities of the RTP, the state Congestion Management Program (CMP), and the RTIP.

Under state law, CMPs are prepared and maintained by the CMAs. Metro, OCTA, the Riverside County Transportation Commission (RCTC), and the San Bernardino Associated Governments (SANBAG) are the designated CMAs of each county and are subject to state requirements. Because the magnitude of congestion and degree of urbanization differ among the counties, each CMP differs in form and local procedure. By state law, all CMAs perform the monitoring and management functions for highway performance, multi-modal performance, transportation demand management (TDM), land use programs and analysis, capital improvement programs, and deficiency planning. These monitoring and management functions would also fulfill the federal CMP requirements. All projects should conform to the CMP requirements of the respective county.

Local

General Plans

Under state planning law, every city and county must adopt a General Plan that sets forth the goals, policies and implementation measures for future growth and development. General plans must include seven elements, among which is a circulation element. The circulation element must describe the existing transportation network and describes all planned future transportation improvements. Many local transportation elements, or their implementing ordinances, include criteria for measuring the functionality of current and future roadways, typically through a level-of-service (LOS) measurement system, a volume-to-capacity (VC) ratio, or other such approaches.

CHAPTER 4

DIRECT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Methodology

Air Quality

Visibility

Climate Change

SUBCHAPTER 4.0

DIRECT ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES - METHODOLOGY

INTRODUCTION

CEQA Guidelines §15126.2(a) requires environmental documents to identify significant environmental effects that may result from a proposed project, with consideration given to both short- and long-term impacts. If significant adverse environmental impacts are identified, CEQA Guidelines §15126.4 requires a discussion of feasible measures that could either avoid or substantially reduce any adverse environmental impacts.

As explained in more detail in Chapter 2, the proposed project consists of adopting a revised version of SCAQMD Rule 1315. The rule would establish procedures for tracking emissions offsets that would be maintained in the SCAQMD internal offset accounts. The SCAQMD would be able to rely upon the offsets from its internal accounts when permitting a new or modified stationary source under Rule 1304 (exempt sources) or Rule 1309.1 (Priority Reserve). By conducting such tracking, the SCAQMD ensures that emissions increases from new or modified major federal sources permitted under Rules 1304 and 1309.1 are offset by equivalent emissions reductions.

Proposed Rule 1315 would not authorize any particular sources to be permitted and operated. The rules that authorize such permitting, in the context of Rule 1315, are Rules 1304 and 1309.1. This PEA assumes that a direct consequence of adopting Rule 1315 would be to enable continued issuance of permits under Rules 1304 and 1309.1. The emissions associated with industry source categories potentially eligible to receive permits under those rules are the emissions attributed to the proposed project. Accordingly, this Chapter addresses the following direct effects relating to emissions, as specified under CEQA Guidelines:

<u>Air Quality Impacts</u>

- **Conflict with Air Quality Management Plan.** Whether the proposed project would conflict with or obstruct implementation of the SCAQMD 2007 Air Quality Management Plan.

- **Mass Emissions and Modeled Concentrations of Criteria Pollutants.** Whether mass emissions or modeled concentrations of criteria pollutant emissions would violate any air quality standard or contribute to an existing or projected air quality violation.

- **Health Effects of Criteria Pollutant Emissions and Toxic Air Contaminants.** Whether emissions would expose sensitive populations to substantial pollutant concentrations.

- **Odors.** Whether emissions would create objectionable odors affecting a substantial number of people.

Visibility Impacts

- **Visibility.** Whether emissions would have a substantial effect on a scenic vista, or otherwise substantially degrade the existing visual character or quality of the affected region.

Climate Change Impacts

- **Greenhouse Gas Emissions.** Whether the proposed project would result in greenhouse gas emissions that may have a significant effect on the environment.

These effects are evaluated on a project and cumulative basis. In addition, this chapter also includes a discussion of indirect air quality impacts.

In addition to the criteria identified above, Appendix G to the State Resource Agency's CEQA Guidelines provides a sample checklist that asks whether a project would conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. No adopted plan, policy or regulation pertaining to greenhouse gases directly applies to proposed Rule 1315. Accordingly, this suggested standard is not addressed further.

DIRECT IMPACTS METHODOLOGY – Air Quality

CEQA Baseline

CEQA Guidelines §15125(a) describes the concept of "baseline" as follows: "An EIR must include a discussion of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, …from both a local and regional perspective. The environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant."

This guideline does not mean that the existing environmental setting is always the appropriate CEQA baseline. As stated by a well-known treatise, "…by using the word 'normally', the Resources Agency has implicitly recognized that, at least in some circumstances, a 'past' or 'future' baseline might be appropriate." *Remy, et al., Guide to CEQA, California Environmental Quality Act, 11th Ed. 2007, page 199*.

The analysis in this PEA assumes Rule 1315 will remain in effect through the year 2030 resulting in the emission of air pollutants from sources obtaining permits under Rule 1304 and 1309.1 in reliance on the SCAQMD internal account offsets over a twenty-year period. This assumption is consistent with subdivision (j) of the proposed rule, which specifies a sunset date of January 1, 2031. Because the project will be carried out over the next twenty years, a "future" baseline is appropriate for assessing the project's direct emissions-related effects. Sources obtaining permits in reliance on Rule

1304 and 1309.1 make up a portion of the regional growth analyzed in the 2007 AQMP. During this twenty-year time frame, the 2007 AQMP forecasts that the total amount of regional emissions of all pollutants will be dropping substantially, due to the effect of pollution control rules and regulations adopted by SCAQMD, EPA, and CARB. The overall reduction in emissions from these regulatory controls will be greater than the increase in emissions associated with regional growth. As a result, if total regional emissions under the proposed project were compared to the level of emissions existing at the time the notice of preparation for this PEA was published, the comparison would show pollution levels for all pollutants that would be lower than they are today. Such an analysis would not give a full picture of the effect of the proposed project for purposes of CEQA.

Accordingly, to ensure that the decision-makers and the public are provided with sufficient information about the emissions-related effects of the proposed project, this PEA compares forecasts of future emissions with the proposed project in place to forecasts of future emissions without the proposed project. The analysis assumes that if the project were not approved, a portion of the regional growth projected in the AQMP would not occur and future regional emissions without the project would be lower than they would be with the project. The project's impacts and their significance are thus determined based upon the incremental emissions attributed to the proposed project in comparison to conditions without the project.

The conditions projected to exist without the project represent reduced levels of growth in the region, resulting in lower levels of emissions which in turn would equate to potential improvements to air quality beyond the improvements forecasted to occur under the AQMP. In this context, the consequence of approving the proposed project would be to forego such potential additional improvements. Stated differently, the impact analysis asks the questions: Without the proposed project, how much cleaner would the air be? Also, would the region attain the relevant standards sooner without the proposed project? And how much lower would greenhouse gas emissions be without the project?

Analysis Years

The SCAQMD has adopted several plans that demonstrate that the national ambient air quality standard for PM10 has already been attained in the Basin and in the Coachella Valley, and that the currently-existing standards for ozone and PM2.5 will be attained in the time required by the Clean Air Act. The air quality analysis is presented for the years in which emission reductions are required to be in place in order for the Basin to attain the NAAQS, as well as for the project end year of 2030. The years modeled are 2014 for a 2015 PM2.5 attainment date, 2023 for a 2024 ozone attainment date, and 2030 for the project end date. 2030 is also expected to be approximately the year the Basin will be required to attain the proposed future new 8-hour ozone standard, expected to be finalized by EPA in 2010. The Coachella Valley is required to attain the existing ozone standard by 2018.

The analysis focuses on the Basin and the Coachella Valley, which are the two areas within the SCAQMD's jurisdiction that are designated as federal nonattainment regions under the CAA. The Riverside County portion of the MDAB, which is also within the SCAQMD's jurisdiction, is designated as a nonattainment region only with respect to the state standards (CAAQS) for ozone and PM_{10}. Unlike the Basin and the Coachella Valley, this area of the SCAQMD's jurisdiction does not have a monitoring station to allow for the modeling of concentration-based impacts. This area of the district has very few stationary sources, and is unlikely to be significantly impacted by the proposed project. However, it is conservatively assumed for purposes of the environmental analysis that any significant impact identified for the Coachella Valley would apply equally to this area of the MDAB.

Mass Emissions of Criteria Pollutants

As explained in more detail in Chapter 3, the federal Clean Air Act and state counterpart (or state air quality laws) require the SCAQMD to attain numeric air quality standards for ozone, PM10, PM2.5, NO_2, SO_2, CO and lead. Ozone is caused by emissions of VOC and NOx. PM2.5 is caused by direct emissions of PM2.5, as well as emissions of SOx and NOx. Accordingly, the following pollutants are considered to be criteria pollutants: VOC, NOx including NO_2, SOx including SO_2, PM10, PM2.5, CO, and lead.

For criteria pollutants, the analysis of project impacts was performed by first determining the total quantities of future emissions of each criteria pollutant that are expected to occur under the proposed project. Next, staff determined the future emissions of each criteria pollutant under future conditions without the project. The incremental difference between emissions under project conditions and emissions without the project was used to quantify and assess project impacts.

Future Emissions Under the Proposed Project

Proposed Rule 1315 includes a mechanism that imposes air pollutant-specific caps on the cumulative net emissions increase that can occur from the rule's implementation. Those caps are based upon the growth forecasts in the 2007 AQMP for the categories of sources potentially eligible to receive permits under Rules 1304 and 1309.1. The caps apply to both major and non-major sources that qualify for Priority Reserve offsets under Rule 1309.1 or are eligible for offset exemptions under Rule 1304. Because of the caps, net stationary source emissions from the proposed project would not be expected to exceed the emissions analyzed in this PEA.

For the purposes of this analysis, an additional 15 percent has been added to the emission projections for each pollutant, in order to ensure the CEQA analysis captures a reasonable worst-case scenario (the 15 percent factor is not added to the caps in the proposed rule).

Future Emissions Without The Proposed Project

The difference in emissions between the project conditions and the without project conditions has two components. The first component is the amount of net growth in emissions forecasted in the 2007 AQMP for the categories of sources that are potentially eligible for permits issued under Rules 1309.1 and Rule 1304. This PEA assumes that without the project, no new permits resulting in increased emissions would be issued under Rules 1309.1 and 1304. The second component is the emissions from existing sources that relied on offsets from the SCAQMD internal accounts for permits issued prior to July 2010 and that would shut down during the twenty year analysis timeframe. Under the without project scenario, this PEA assumes that emissions from such existing sources could not be replaced, which would constitute an additional deduction from the future project conditions, to arrive at conditions without the project.

Growth in Emissions from New Permits Relying on Offsets from SCAQMD Internal Accounts: The 2007 AQMP includes forecasts of future annual net emissions in 2014 and 2020 from all existing and new sources in the district, including sources permitted under Rules 1304 and 1309.1 in reliance upon the SCAQMD internal account offsets. Appendix III to the 2007 AQMP describes the methodology used for the emissions forecasts in the AQMP. In brief, the 2007 AQMP includes an inventory of 2002 emissions by source category and industry. Growth rates were forecasted for each industry based on SCAG's 2004 Regional Transportation Plan (RTP), adjusted with the most recent data from Bureau of Labor Statistics, California Department of Finance, California Employment Development Department and U.S. Census Bureau.[1] SCAG developed socioeconomic forecasts for the RTP and the same forecasts were used in the AQMP. Industrial growth, job growth, and population growth will affect transportation patterns so therefore, they all are part of overall forecasts. Appendix III to the 2007 AQMP identifies the growth rate used for each industry and source category, and explains how the resulting growth in emissions was geographically distributed by county.

Under the without project condition, the PEA assumes that, after July 2010, none of the 2007 AQMP's projected growth in stationary source emissions from industry categories potentially eligible to receive permits under Rules 1304 and 1309.1 would occur. Because it includes all growth in the industry categories, this methodological assumption necessarily overstates emissions attributable to the project to some degree. Growth in emissions from stationary sources has three components: increased emissions from existing sources for which no new or modified permits are needed or from non-permitted sources; increased emissions from sources receiving permits based upon private-market emission reduction credits (ERCs); and increased emissions from sources receiving permits issued under Rules 1304 and 1309.1 in reliance upon the SCAQMD internal account offsets. Only this third component would be affected by the proposed project.

SCAQMD staff considered whether the fraction of the future forecasted emissions growth attributable solely to permits issued under Rules 1304 and 1309.1 could be accurately estimated. However, it is not possible to ascertain the quantity of past emissions that have been due to sources for which no new or modified permits were obtained. By contrast, it is possible to determine the historic split between emissions increases from new or modified sources permitted using ERCs, as compared to emissions

[1] 2007 AQMP, Ch. 2, p. III-2-4.

increases from new or modified sources permitted under Rules 1304 and 1309.1. Table 4.0-1 below presents the relative shares in emissions for the industry categories potentially eligible to receive permits under Rules 1304 and 1309.1.

TABLE 4.0-1

Historic Share of Increases in Potential Emissions From Sources Permitted Under Rules 1304 and 1309.1 as Compared To Increases in Potential Emissions From Sources Permitted Under Other New Source Rules (September 2006 through October 2008)

	VOC	NOx	SOx	PM10
Potential Emissions Increases from Sources Permitted Under Rules 1304 and 1309.1	94%	100%	99%	97%
Potential Emissions Increases from Sources Permitted Using ERCs	6%	0%	1%	3%

Source: The data is based on SCAQMD permit data from 9/8/06-11/4/08 and excludes RECLAIM pollutants at RECLAIM facilities.

Based upon the historic data, emissions from sources permitted under Rules 1304 and 1309.1 represent the vast majority (well over ninety percent) of the emissions increases from permitted, stationary sources for all pollutants.

Given the uncertainty in determining the share of stationary source emissions increases from non-permitted sources, and the proportion of increased emissions from sources permitted under Rules 1304 and 1309.1 as compared with sources permitted in reliance on ERCs, SCAQMD determined that it was reasonable to assume that all increased permitted stationary source emissions from the relevant industry categories would be attributable to the proposed project.

SCAQMD staff also considered whether to propose caps on cumulative net emissions increases from sources permitted under Rules 1304 and 1309.1 that would be substantially lower than the forecasted growth in stationary source emissions from the relevant industry categories. The potential benefits of such a limitation on emissions are evaluated in the alternatives analysis in Chapter 6 of this PEA and will be considered by the SCAQMD Board. It bears noting, however, that capping growth permitted under Rules 1304 and 1309.1 could result in lengthening the life of previously permitted sources, allowing continued emissions at higher levels. Because new or modified sources are fitted with the best available control technologies, it may be detrimental to direct emissions toward older sources, with less effective controls.

Emissions From Shutdown of Existing Sources That Could Not Be Replaced: The second component of the difference in emissions between the project conditions and the without project conditions is that without the project, some of the sources permitted under Rules 1304 and 1309.1 prior to July 2010 would shut down, but the emissions from those sources would not be replaced by permitting new or modified sources relying on proposed Rule 1315. This would constitute further reduction in future annual emissions compared with the project conditions.

The 2007 AQMP projects that, in addition to growth in sources permitted under Rules 1304 and 1309.1, sources that previously received permits under these rules would continue to exist, and those that shut down would be replaced by other sources. Under project conditions, shutdowns of such sources would result in credits to the SCAQMD internal offset accounts because sources permitted under these rules are not eligible to bank credits as ERCs when they shut down. Some of the credits in the SCAQMD internal accounts would then be relied upon when the SCAQMD approves new or modified sources under Rules 1304 and 1309.1.

Under the without project scenario, however, no sources permitted after July 2010 would obtain their permits by relying on the SCAQMD internal account offsets under the proposed project. Accordingly, the analysis assumes that when the existing sources that previously received permits under Rules 1304 and 1309.2 shut down, the emissions from those sources would not result in credits that would be available for replacement.

In order to quantify the emissions reductions that are expected to occur from these shutdowns under the without project scenario, the SCAQMD reviewed historic data to determine the percentage of previously approved sources that would be likely to shut down during the time frame of the analysis. Of the sources receiving offsets from the SCAQMD's internal accounts, the most likely to shut down during the 20-year analysis period would be facilities with less than four tons per year of emissions that had been permitted under Rule 1304(d). Essential public services permitted under Rule 1309.1 are unlikely to shut down once built or expanded to serve population growth. Moreover, other larger sources permitted under Rules 1304 and 1309.1 typically remain in the economy for many years. These conclusions were verified by an examination of actual records of sources of credits to the SCAQMD's internal offset accounts from 2001 through 2006.

Rule 1304(d) Offsets: In order to determine the extent of orphan shutdowns that would occur during the analysis period without the project, it was necessary to determine (1) how many offsets have historically been issued to Rule 1304(d) facilities, and (2) the length of time before the permitted equipment relying on the Rule 1304(d) offsets shut down. With this information, it is possible to calculate the shutdown emissions reductions for each year of the analysis period.

Staff evaluated five years' worth of permitting data (August 2001 through December 2006) for Rule 1304/Rule 1309.1 permitting activity to determine the percentage of total permitted emissions attributable to Rule 1304(d) sources for VOC and NOx (see Table 4.0-2).

In order to estimate the percent of emissions that is attributable to sources under four tons per year for SOx, staff assumed that the percentage would be the same as it is for NOx. This is because both are combustion-related pollutants. For PM10, August 2001 through

July 2002 permitting data, which included permits for facilities below 15 tons per year, was used to calculate the percentage.

TABLE 4.0-2

Percentage of Total SCAQMD Internal Account Offsets Provided to Rule 1304(d) Facilities

	VOC	NOx	SOx	PM10
Percent of SCAQMD's Internal Account Offsets Provided to Rule 1304(d) Facilities	89%	24%	24%	7%

Operational Life of Facilities: The next step in the analysis was to determine how many of the Rule 1304(d) sources would likely shut down during the analysis period, and when they would do so. Staff conducted an analysis of permits issued from 1990 through 2009 under Rule 1304(d) and determined that approximately half of such individual sources (permit units) had shut down.

The analysis showed that, of the sources that had shut down (one-half the total), the sources had an average lifespan of six years. Therefore, on average, the Rule 1304(d) sources that would shut down during the CEQA analysis period under the conditions without the project would correspond to approximately half of the sources with permits issued under Rule 1304(d) from July 2004 through June 2010. This does not mean that exactly half of the sources with permits issued between July 2004 and June 2010 will shutdown, nor does it mean that no sources with permits issued before July 2004 will shut down during the life of the proposed project. It simply means that this averaging approach can be used to predict the overall numbers of shutdowns that will occur on average each year under the conditions without the project.

It is likely that the rate of shutdowns would be slower without the project than it has been in the past with the SCAQMD internal offset accounts operating. This is because without the SCAQMD internal account offsets, there would be fewer new sources receiving permits, so there would be less competition from new sources, and existing sources would be expected to stay in operation longer to meet demand. However, this effect cannot be quantified so the rate was held constant.

To further provide a conservative estimate, staff assumed that there may still be some additional shutdowns of sources that were permitted under Rule 1309.1 or under the provisions of Rule 1304. Therefore, staff added an additional 10 percent to the emission reductions from shut downs for NOx, SOx, and PM10, as a safety margin. In addition, since VOC ERCs on the private market have a relatively low market value compared to the other pollutants, growth of VOC projects would not be limited to the same extent as growth from sources needing offsets of other pollutants. There would be more competition from new VOC sources than from new sources of other pollutants so sources emitting VOC projects would not be expected to stay in operation longer to meet demand. As a result, there may be additional shutdowns of VOC sources. Accordingly the total VOC projected from shutdowns was increased by 20 percent rather than 10 percent.

Quantification of Incremental Difference in Emissions

To quantify the difference in emissions between future conditions with and without the project, the emissions of each criteria pollutant under the without project scenario are subtracted from emissions of each criteria pollutant under the proposed project. The quantities of emissions are then compared to the applicable significance criteria in Chapter 4.1.

Quantification of Cumulative Emissions

CEQA requires an analysis of cumulative impacts to consider past, present, and reasonably foreseeable probable future projects. For this analysis, cumulative impacts associated with emissions of criteria pollutants are assessed in two ways. First, emissions from other sources approved pursuant to permits that have relied or foreseeably may rely on SCAQMD internal account offsets are quantified and added to the incremental project emissions to assess the combined effect of all sources relying on the SCAQMD internal account offsets. Second, the analysis of cumulative impacts also assesses the impacts under the proposed project in the context of all emissions forecasted in the 2007 AQMP.

Combined Emissions from Permits Issued in Reliance Upon SCAQMD Internal Account Offsets: Two categories of permits have and, in the future, may rely on the SCAQMD's internal account offsets for permitting, independent of whether the proposed project is approved: (1) permits issued under Rules 1304 and 1309.1 pursuant to the prior version of rule 1315 and to SB 827; and (2) three power plant projects for which the legislature has or may enact legislation requiring use of the SCAQMD internal account offsets. As explained in more detail in Chapter 2, the SCAQMD adopted Rule 1315 in September, 2006, and thereafter commenced issuing permits in reliance on the SCAQMD internal account offsets. In July 2008, the Los Angeles County Superior Court enjoined the SCAQMD from taking further action to implement Rule 1315. In response to the court order invalidating Rule 1315, and the resulting Permit Moratorium, the California Legislature enacted SB 827, which requires the SCAQMD to use its internal account offsets for facilities exempt from offsets pursuant to Rule 1304 and Priority Reserve Projects pursuant to Rule 1309.1. The bill became effective on January 1, 2010 and sunsets in May 2012. The proposed project will not result in issuance of permits under SB 827 but these permits are considered to contribute to cumulative impacts. The project analysis conservatively assumes that sources with increased emissions that are approved under Rules 1304 and 1309.1 after July 2010 would be approved under re-adopted Rule 1315, even though SB 827 will not sunset until May 2012.

To quantify emissions from sources permitted under Rules 1304 and 1309.1in reliance upon the prior version of Rule 1315 and SB 827, the approach is the same as that used to quantify the incremental difference between conditions with and without the proposed project.

The second category of permits analyzed for cumulative impacts is permits for power plants for which the State Legislature has required or may require reliance upon the SCAQMD internal account offsets and that have a long-term supply contract with Southern California Edison or are wholly owned by a municipality. Chapter 2 explains that, when preparation of this PEA commenced, under Assembly Bill (AB) 1318 and Senate Bill (SB) 388 and other possible legislation, it was reasonably foreseeable that the SCAQMD may be required to provide offsets to three power plants from the SCAQMD's internal accounts regardless of whether SCAQMD adopts a modified Rule 1315: CPV Sentinel; Walnut Creek Mission Energy: and the El Segundo Power Redevelopment Project. The El Segundo Project has since received a permit under Rule 1304 in reliance on SB 827.

The three power plant projects were evaluated by the California Energy Commission (CEC) in separate Final Staff Assessments (FSAs). The FSAs were reviewed as part of this analysis to obtain the environmental impact analyses and determinations of significance made by the lead agency (CEC).

The FSAs prepared by the CEC for all three power plants calculated the criteria pollutant emissions from both the construction and operation phases of the projects. The only criteria pollutant not calculated in the FSAs prepared by the CEC for the El Segundo and Walnut Creek projects is PM2.5 emissions. The FSA for the Sentinel project did include PM2.5 emissions from the construction phase of the project but did not include PM2.5 mass emissions from the operation of the project. However, PM10 emissions from construction and operational phases of all three power plant projects were calculated in the FSAs prepared by the CEC. Using the established standards[2] in determining the percentage of PM10 that is PM2.5, construction and operational PM2.5 emissions from El Segundo and Walnut Creek, and operational PM2.5 emissions from all three power projects were calculated. Pursuant to AB 1318, CPV Sentinel will be paying a mitigation fee for SOx and PM10 offsets that will be spent on emission reduction projects. For this analysis, the mitigation fee is based on a previously proposed mitigation fee imposed on electric generating facilities based on the location of the facility as set forth in Rule 1309.1 as adopted August 3, 2007. This analysis estimates the amount of mitigation fees that will be collected from the CPV Sentinel Project by multiplying the quantities of offsets expected to be provided by SCAQMD's offset accounts by the pollutant-specific mitigation fees in dollars per pound. The fees are expected to finance emission reductions projects having costs based on current incremental BACT cost effectiveness, which is the dollar cost to reduce one ton of emissions. SOx and PM10 emissions reduced by the emission reduction projects funded by the mitigation fee to be paid by CPV Sentinel have been estimated, based on current incremental BACT cost

[2] "Final –Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds" (SCAQMD, October, 2006). For example, 89 percent of PM10 from off-road equipment are PM2.5 emissions; 21 percent of fugitive PM10 emissions from construction and demolition are PM2.5 emissions; and 99 percent of PM10 from combustion of stationary sources are PM2.5 emissions.

effectiveness values, and the 10-year life of the project necessary to apply a capital recovery factor. Current incremental BACT cost-effectiveness refers to the maximum cost per ton of emission reductions for a given pollutant specified in SCAQMD's BACT Guidelines. The use of the maximum cost effectiveness values reduces the estimated emission reductions from the projects funded by the mitigation fee as compared to use of the average cost effectiveness. Thus, the emission reductions from the implementation of projects funded by the CPV Sentinel mitigation fee estimated for the purposes of this analysis are considered to be reasonable and conservative. Nevertheless, it is not possible to determine exactly what will be the cost of emission reduction obtained in the future.

A quantified cumulative impact analysis is provided for the combined direct emissions from the proposed project, plus the direct emissions from other sources receiving permits under Rules 1304 and 1309.1 in reliance upon the prior version of Rule 1315 and SB 827, plus all emissions from the three power plants. The quantities of combined emissions are compared to the applicable significance criteria in Chapter 4.1.

Combined Emissions Under the 2007 AQMP. The analysis of cumulative impacts also assesses the impacts under the proposed project in the context of all emissions forecasted in the 2007 AQMP.

Modeled Concentrations of Criteria Pollutant Emissions

Region-wide Simulation Model

After quantifying the incremental difference in mass emissions of each criteria pollutant under the project and without project conditions, staff then used air quality modeling to determine the resulting changes in concentration levels (micrograms per cubic meter for PM2.5 and PM10, and parts per billion (ppb) for ozone) for the three primary criteria pollutants: ozone, PM2.5 and PM10. The modeling used the same methods as were used in the 2007 AQMP. A discussion of modeling methods, regional air quality impacts analysis, and further information can be found in Appendix V of the 2007 AQMP, available at http://www.aqmd.gov/aqmp/07aqmp/aqmp/Appendix_V.pdf. Staff also determined the project's incremental effects on SO2, NO2 and CO concentrations.

The PEA discusses whether, as compared to conditions without the project, the project would delay the SCAQMD's ability to achieve attainment of the National Ambient Air Quality Standards (NAAQs) or California Air Ambient Quality Standards (CAAQs). Accordingly, the modeling analysis focuses on the two air basins within the SCAQMD's jurisdiction that are not currently in attainment for the NAAQs. U.S. EPA has designated the Basin as extreme non- attainment for ozone and the Coachella Valley as Severe-15. This means that the Basin must attain the federal standard by 2024 and the Coachella Valley by 2018. In addition, both air basins are designated as severe non-attainment for 24-hour average PM10. Furthermore, the Basin is designated as non-attainment for annual average PM2.5 with an attainment date of 2015. In contrast, the Coachella Valley has been in compliance with the federal PM2.5 standards with observed concentrations typically valuing only two thirds of the NAAQS.

Future-year concentrations of the key air pollutants are simulated using the incremental change in emissions between the with-project and without-project conditions. The years selected for simulations are 2014, 2023 and 2030, corresponding to the dates emission reductions must be achieved for PM2.5 attainment, ozone attainment, and the end date of the project, respectively. In addition, 2030 is expected to be approximately the attainment year for the new federal ozone NAAQS expected to be promulgated in August 2010.

Briefly, the regional concentrations are simulated by using National Weather Service (NWS) numerical meteorological model data to provide the characterization of the hourly weather that is coupled with a peer review regional air quality dispersion platform that reacts and transports emissions throughout a modeling domain. The Basin and Coachella Valley are both fully represented in the modeling domain.

The modeling platform developed for the 2007 AQMP utilized the combination of the Comprehensive Air Quality Model with Extensions (CAMx) dispersion model with the "one atmosphere" chemistry mechanism to simulate annual average particulate air quality and CAMx with the SAPRC99 chemistry mechanism to simulate episodic gaseous ozone air quality. The MM5 meteorological model provided critical meteorological inputs for the daily and annual simulations. The simulations utilized mobile source emissions provided by CARB's EMFAC2007 and the growth and planning assumptions provided by SCAG from their Interim 2007 Regional Transportation Plan. Point and area source emissions profiles were developed jointly by the SCAQMD and CARB. A comprehensive discussion of the modeling techniques, input data and model performance is provided in Appendix V of the 2007 AQMP.

As described in Appendix V of the 2007 AQMP, the regional numerical air quality projections followed U.S. EPA guidance using relative response factors (RRF) to estimate future year ozone and PM2.5 design values to determine future year attainment of the respective 8-hour average and annual average standards. The RRFs were used to adjust simulated future year air quality by accounting for variance in the model performance.

Ozone

The ozone simulations were conducted using the CAMx/MM5/SAPRC99 platform for a series of meteorological episodes identified in the 2007 AQMP attainment demonstration. Two indices are presented in the air quality analysis: project's contribution to ozone concentrations in each air basin having the projected maximum concentration and the average ozone concentration predicted throughout each of the basins. The modeling concentration results for the Basin and Coachella Valley for 2014, 2023 and 2030 present the ozone concentrations associated with the incremental difference in emissions between the project and without project conditions.

Basin Annual PM2.5

The Basin annual PM2.5 simulations were generated for the CAMx/MM5/One-Atmosphere platform for every hour in the year for 2014, 2023 and 2030, using an emissions weighting procedure presented in the 2007 AQMP and CARB's 2007 PM2.5 SIP Staff Report. PM2.5 occurs from directly emitted primary particulate (dust and diesel soot) and secondary aerosols formed in chemical reactions (nitrates and sulfates). The 2007 AQMP established a SCAQMD-specific emissions weighting methodology to estimate changes in PM2.5 due to changes in emissions. The contributions to regional nitrate, sulfate, organic carbon, and the combination of elemental carbon and metals can be directly estimated from the daily annual average day emissions of NOx, SOx, VOC and PM2.5. Table 4.0-3 provides the Basin-average annual average day emissions conversion factors used to estimate annual PM2.5 listed in the CARB staff report. In addition to being directly emitted in the form of primary particulates such as dust (crustal PM) and soot (elemental carbon or EC), PM2.5 is formed in the atmosphere by chemical reactions involving NOx and SOx. Table 4.0-4 illustrates the relative PM2.5 forming power of the various pollutants, in terms of the effect on ambient concentrations caused by a ton per day of each of the listed pollutants. The table shows that SOx is approximately 15 times as potent as NOx in forming PM2.5 (0.0526 $\mu g/m^3$ per ton of SOx per day as compared to 0.0035 $\mu g/m^3$ per ton of NOx per day).

Basin Annual PM10

Basin future year annual average PM10 concentrations were estimated by multiplying the projected annual average PM2.5 by a constant factor equal to the 10-year (1999-2008) average ratio of observed Basin annual average PM10 to co-located annual average PM2.5. The four-county average factor of 2.19 was calculated from PM10 and PM2.5 data measured at the monitoring sites used for the CAMx PM2.5 annual simulation. The average factor of 2.19 means that on average, there is 2.19 times as much PM10 measured at a given site as there is PM2.5.

Basin 24-Hour PM2.5

The Basin 24-hour PM2.5 concentrations were determined using an emissions weighting algorithm developed from the 2007 AQMP 24-hour average PM2.5 attainment demonstration simulations generated using the CAMx/MM5/One-Atmosphere platform. Average emissions conversion factors for 24-hour average maximum regional PM2.5 nitrate, sulfate, organic carbon, and the combination of elemental carbon and metals were calculated from corresponding simulated 24-hour maximum component species concentrations and the daily annual average day emissions of NO2, SO2, VOC, PM10 and PM2.5 emissions. Table 4.0-4 provides the 24-hour average PM2.5 Basin-average emissions conversion factors. As in Table 4.0-3, this table shows the relative PM2.5 forming power of the various pollutants, in terms of change in concentration per one ton per day emissions, this time looking at the effect on peak day concentrations. The table shows that NOx and SOx, which form nitrates and sulfates, have an even greater impact on daily PM2.5 levels than they do on annual levels.

TABLE 4.0-3

Basin-Average Annual Average PM2.5 Concentration Conversion Factors (Increase in PM2.5 concentration in μg/m^3 for each ton per day of emissions)

Pollutant Species	Species	Conversion Factor
PM2.5	EC Crustals & Metals	0.0345
NOx	Ammonium Nitrate	0.0035
SOx	Ammonium Sulfate	0.0526
VOC	Organic Carbon	0.0015

TABLE 4.0-4

Basin-Average 24-Hour Average PM2.5 Concentration Conversion Factors (Increase in PM2.5 concentration in μg/m^3 for each ton per day of emissions)

Pollutant Species	Species	Conversion Factor
PM2.5	EC Crustals & Metals	0.025
NOx	Ammonium Nitrate	0.071
SOx	Ammonium Sulfate	0.325
VOC	Organic Carbon	0.020

Basin 24-Hour PM10

PM10, or particulate matter less than 10 microns in aerodynamic diameter, is made up of fine particulate, or PM less than 2.5 microns in aerodynamic diameter (PM2.5) and coarse PM, which is particulate with a aerodynamic diameter between 2.5 microns and 10 microns. For days other than exceptional events such as wild fires or high wind driven fugitive dust, peak 24-hour PM10 is driven by secondary PM2.5 particulate formation. The contribution of coarse particulate to the 24-hour PM10 average comprises a smaller percentage of the total mass compared with the percentage for the annual PM10 concentration. The Basin average maximum 24-hr average PM10 impact was calculated by adding the Basin 24-hour maximum average PM2.5 concentration impact to the four-county average coarse particulate impact estimated using an emissions weighted methodology. The coarse particulate was calculated by multiplying the PM10 emissions by the factor of 0.195 μg/m3 / TPY PM10. The factor was derived from the revised Basin PM10 attainment demonstration presented in the South Coast Air Basin PM10 Maintenance Plan submitted to U.S. EPA, March 2010 as part of the California SIP.

Coachella Valley Annual PM2.5 and PM10

The project's contribution to the annual Coachella Valley PM10 concentration is almost exclusively a result of PM2.5 transport from the Basin (2003 Coachella Valley PM10 SIP). Annual PM2.5 and PM10 transport to the Coachella Valley is estimated by multiplying the predicted Basin annual average PM2.5 concentration by the factor 0.215.

PM10 mass is comprised of both fine (PM2.5) and coarse (PM10-PM2.5) particles. The coarse, larger particles settle closer to source areas and are less subject to transport over long distances. This is particularly evident for coarse particle transport from the Basin that must channel through Banning Pass while undergoing an elevation increase from a Basin average elevation of less than 1000 feet to more than 2500 feet. As a conservative estimate, this analysis assumes that all of the PM10 transport to the Coachella Valley is PM2.5.

The 1990 Coachella Valley SIP determined that transport accounted for 18 percent of the Coachella Valley annual average PM10 mass. The 0.215 factor used to estimate the PM2.5 transport to the Coachella Valley was determined by dividing 18 percent of the long-term (1999-2008) annual average Coachella PM10 concentrations by the Basin PM2.5 concentrations averaged for the same period.

The project's contribution to concentrations of annual average PM2.5 in the Coachella Valley was assumed to be equivalent to its estimated contribution to annual average PM10 concentrations.

In the cumulative analysis, the CAMx simulated particulate emissions from the Sentinel power plant, and added those emissions to both the annual PM2.5 and PM10 concentrations from project emissions.

Coachella Valley 24-hour PM2.5 and PM10

The impact of the project's contribution to the 24-hour average Coachella Valley PM10 concentration is calculated following a similar methodology as the annual average PM10 concentration but using a factor based on the 24-hour average percentage transport contribution determined from the source apportionment analysis. Project estimated 24-hour average PM10 concentration transport to the Coachella Valley is estimated by multiplying the predicted Basin 24-hour average PM2.5 by the factor 0.107. In other words, previous SIP analyses showed that the amount of transport into the Coachella Valley is related to the concentration of (24-hour) PM2.5 in the Basin by a factor of 0.107. Thus, Basin concentration times 0.107 equals transport concentration into the Coachella Valley.

In the cumulative impacts analysis, the CAMx simulated particulate impacts from the Sentinel power plant are added to the both the annual PM2.5 and PM10 concentrations from project emissions.

Basin Sulfur Dioxide and Nitrogen Dioxide

The contribution of the project emissions to Basin SO2 and NO2 concentrations is estimated using an emissions weighted approach that linearly relates changes in emissions to expected changes in ambient air quality. The emissions weighted analysis provides a very conservative approximation of the project's potential contribution to ambient SO2 and NO2. Both emissions weighted analyses assume that all of the project's NOx and SOx emissions would convert directly to NO2 and SO2, ignoring the contributions those emissions have towards the formation of ozone and particulates. As a result, the analysis of NO2 and SO2 impacts is very conservative.

Cumulative Impacts. The analysis includes a quantitative assessment of concentrations of pollutants resulting from the cumulative scenario described previously relating to the combined emissions from permits issued in reliance upon the SCAQMD internal account offsets, under the discussion of mass emissions of criteria pollutants. The emissions associated with the cumulative conditions are modeled to determine the concentrations of pollutants resulting from the combination of sources obtaining permits in reliance on offsets in the SCAQMD internal offset accounts.

Basin Carbon Monoxide

Ambient concentrations of carbon monoxide respond linearly to changes in the emissions inventory. Emissions weighted linear rollback is the methodology used to estimate the project impact to ambient CO concentrations.

Localized Concentrations of Criteria Pollutants

In addition to modeling the proposed project's contribution to regional concentrations of pollutants from all sources permitted under Rules 1304 and 1309.1, this analysis also reviews the potential for individual sources permitted under Rules 1304 and 1309.1 to result in discrete, localized concentrations of pollutants exceeding the SCAQMD's significance criteria.

Data Collection. To estimate the emissions from individual sources that could receive permits under Rules 1304 and 1309.1, data from past and pending permit applications were reviewed. Review of the SCAQMD's permit database produced a list of permits issued and pending by the SCAQMD under Rules 1304 and 1309.1 from 2003 through 2008. Approved and pending permits from 2003 through 2008 were also reviewed to identify facilities that would have qualified for offsets under Rule 1309.2[3], had it been in effect. The database that was analyzed started with a total of 81,173 pollutant records for permits approved and pending from 2003 through 2008. A number of the pollutants were

[3] Proposed amended Rule 1309.2 is no longer part of the proposed project and the previously adopted version of Rule 1309.2 was rescinded by the SCAQMD Governing Board on February 5, 2010. Nevertheless, these permits are potentially relevant because of the broad range of the types of facilities that could qualify for offsets under Rule 1304 or Rule 1309.1.

listed twice to provide two different unit values, one daily and one hourly. Thus, the list was updated to remove pollutants listed twice so they would not be double-counted. The updated list included 51,265 pollutant records for 12,315 permits approved and pending from 2003 through 2008. A comprehensive evaluation of the database identified approximately 7,732 individual facilities located throughout the district that had obtained permits under Rules 1304 and 1309.1 from the SCAQMD during this period.

Localized Concentration Modeling. The approach used to evaluate the effects on localized concentrations of pollutants resulting from the operation of individual facilities (also referred to as the “local” analysis) is described in Appendix C to this PEA. Because the specific attributes of sources that may be permitted under the project are not known, the evaluation of localized concentrations is made on the basis of air dispersion modeling of recently permitted emissions at actual facilities. This analysis is intended to provide an estimate of the potential impacts on localized concentrations of criteria pollutants in the vicinity of individual facilities as a result of future permits issued under the proposed project. This approach treats previously-permitted sources as representative of the types of individual sources and air pollutants emitted by sources that would be permitted in the future under the proposed project. It should be noted that the analysis for this PEA assigned each permit as though it were existing in the area with most adverse meteorological conditions, which is a conservative approach.

Emissions and available characteristics regarding the type of emission source (e.g., source category) are tabulated from the five-year data set described above. To facilitate the analysis of over 12,000 permits and pending permits, each permit was assigned to a permit category and cross-referenced to a Source Classification Code (SCC). SSCs are assigned to various source types by USEPA in their emissions inventory development. Using SSCs, one can determine various factors relevant to determining emissions impact, such as average stack height. SCCs were used for two purposes in the analysis: (1) to assign stack parameters to emission sources for modeling on the basis of source type; and (2) to estimate chemical speciation of permitted emissions reported as PM and organic gases with respect to particle size distribution of PM emissions. Neither of these approaches necessarily reflect the exact facts of the particular permit, but this is considered a conservative approach to analyze impacts.

Given the relatively large size of this data set, the following approach was used to evaluate the potential for significant impacts: First, a screening analysis was conducted using a screening-level air dispersion model (SCREEN3) and the permit categories were ranked according to level of risk; permit categories were ranked and prioritized on the basis of maximum ambient exposure of the emitted chemicals; categories, each comprising a range of permits, were developed on the basis of release characteristics (e.g., stack height, escape velocity, and release temperature) to allow the grouping of similar source types; and the results of this analysis were used to select a set of permit categories for further, more refined evaluation.

For criteria pollutants, SCREEN3 outputs used in the screening analysis comprised the estimated maximum offsite ambient concentration increments for the specified averaging time. These results were compared to applicable localized significance thresholds, to obtain a screening-level measure of impact.

The results of the screening analysis indicated that relatively few sources of CO and/or SOx potentially exceeded the applicable thresholds of significance. Given the conservative assumptions and parameters used in the screening-level model, it was concluded that emissions of CO and SOx in the permit database would be unlikely to cause significant adverse air quality impacts. Consequently, CO and SOx emissions were not included in the refined localized impacts analysis (the contribution of increased SOx emissions to formation of secondary PM10 and secondary PM2.5 was included in the regional analysis described earlier).

For each remaining pollutant, the ten primary facility permit categories with the greatest number of permits shown in the screening analysis as potentially exceeding the applicable air quality significance threshold were selected for refined analysis. Several permit categories appear in the top ten lists for more than one pollutant. Due to the conservative assumptions incorporated in the model, this approach resulted in analyzing the majority of permits that potentially exceeded applicable air quality significance thresholds as shown using the SCREEN3 model, as indicated by the following summary statistics.

- The total number of unique combinations of permit number, pollutant, and averaging period was 48,739, counting only those combinations for which emissions were reported.

- Of this total, the number of unique combinations (permit number plus pollutant plus averaging period) that potentially exceeded the SCAQMD's significance criteria based on the SCREEN3 screening results was 20,745 or about 43 percent[4]. The remaining unique combinations that did not potentially exceed any applicable air quality significance thresholds were not evaluated further because, based on the conservative nature of the SCREEN3 model, it is unlikely that they would generate significant adverse air quality impacts.

- Of the number of unique combinations (permit number plus pollutant plus averaging period) that potentially exceeded any applicable air quality significance criteria, the number of unique combinations that were associated with permit categories that were then evaluated in the refined analysis was 18,375 or about 89 percent of the 20,745.

The more refined analysis was then conducted on this subset of permits to evaluate further the potential for localized concentrations exceeding the applicable significance thresholds, using U.S. EPA's AERMOD Modeling System (2004), version 010709, based

[4] It should be noted that the SCREEN3 model uses very conservative assumptions and parameters and the more refined analysis using the AERMOD model substantially reduced the number and types of facilities potentially exceeding applicable significance thresholds as shown in subchapter 4.1.

on the Guideline on Air Quality Models (40 Code of Federal Regulations [CFR], Part 51, November 2005). AERMOD was used to estimate the short and long term maximum concentrations of criteria pollutants in the vicinity of individual facilities. AERMOD is an air dispersion model that is considered to be more precise than SCREEN3. Input parameters for modeled sources are defined such that a reasonable worst-case exposure scenario for each permit category is evaluated; however, refinements are implemented to reduce some of the conservatism included in the screening-level modeling. More refined aspects of the AERMOD analysis include the following:

- use of an ozone-dependent method for converting nitrogen oxides (NOx) to nitrogen dioxide (NO_2) based on the NOx within the plume and ozone contained within the volume of the plume between the source and receptor (i.e., Plume Volume Molar Ratio Method [PVMRM]),

- use of three years of AERMOD-ready meteorological data, and

- use of specific meteorological station locations selected on the basis of statistical evaluations.

Criteria pollutants, including NO2, and PM10 were modeled for operational emissions of representative facilities. For each permit category evaluated in the refined analysis, emission rates for a given pollutant type (NO2 or PM10) were selected from the permits in the category to represent both a typical and a reasonable maximum expected emission rate. (All PM10 is assumed to be PM2.5 for purposes of the maximum concentration; since PM2.5 is actually a subset of PM10, this approach assures a more conservative analysis.) These emission rates are represented by the emission rate of the permits at the 50^{th} and 95^{th} percentile of the distribution of emission rates, respectively, within each permit category (and evaluating pollutant types separately) to demonstrate typical and reasonably foreseeable worst-case emission scenarios. It should be noted that the 95^{th} percentile of the distribution of emission rates is not the same concept as the percentage of actual emissions or of potential to emit emissions. The predicted ground-level concentrations shown by the refined AERMOD analysis were then compared to relevant SCAQMD air quality significance thresholds to determine whether or not local air quality impacts would be significant. Potential impacts from both short- and long-term exposures were evaluated using different averaging times for outputs and corresponding thresholds.[5]

[5] It should be noted that in the context of actual permit applications, any individual permits shown to exceed applicable thresholds through modeling would not be approved unless additional pollution controls are installed, operations are curtailed, or the permit applicant accepts an emissions cap such that emissions are less than any applicable significance thresholds.

Health Effects of Criteria Pollutant Emissions and Toxic Air Contaminants

Health Effects of Criteria Pollutant Emissions

Criteria pollutant emissions can lead to health effects, including cardiovascular, respiratory, neurological, reproductive and respiratory diseases. These effects are characterized numerically as the number of premature deaths; hospital admissions; emergency room visits; minor restricted activity days; school absence days; loss of work days; and cases of acute/chronic bronchitis, nonfatal heart attacks and adverse upper/lower respiratory conditions that are correlated with a given concentration of pollutants.

Project Effects. As discussed earlier, air pollutant levels are expected to decrease in future years compared to existing conditions. This decrease in air pollution will result in health benefits for the district's residents. Under the proposed project, the growth projected in the 2007 AQMP would be expected to occur, and district-wide emissions are expected to decrease as forecasted under the 2007 AQMP. Thus, under the proposed project, the district's population would experience the same forecasted health benefits from reduced criteria pollutant emissions as are expected under the AQMP. The Final Socioeconomic Report for the 2007 AQMP quantifies these health benefits associated with the AQMP. Under the analytical assumptions in this PEA, if the proposed project were not approved, however, growth within the district would be significantly reduced and some facilities would be shut down and would not be replaced, so further reductions in criteria pollutant emissions would occur in comparison with the proposed project. Thus, without the project, the district's population would experience even more health benefits than are predicted to occur under the 2007 AQMP. In this context, the consequence of approving the proposed project would be to forego those potential additional health benefits beyond the benefits of implementing the 2007 AQMP. The analysis of criteria pollutant health effects compares the forecasted health benefits under the proposed project to the greater health benefits anticipated if the project were not approved, in order to quantify the incremental difference.

The differences between regional health benefits under the proposed project and under without project conditions are calculated for PM2.5 and ozone. Regional health benefits are not calculated for attainment pollutants (including PM10, for which the SCAQMD has requested re-designation as attainment) because the National Ambient Air Quality standards are required to be set at a level that protects public health, with an adequate margin of safety. As long as pollutant levels stay below the NAAQS, health effects from criteria pollutants are considered less than significant.

To determine the health effects of the conditions without the project, all modeling inputs except total emissions are the same as were used for the Final Socioeconomic Report for the 2007 AQMP. Therefore, there is a linear relationship between the difference in estimated emissions and change in health effects.

To calculate the relationship between emissions and health effects, the Final Socioeconomic Report for the 2007 AQMP relied upon several analyses that have estimated the health related effects to California and the Basin from PM2.5 and ozone. The California Air Resources board has estimated the frequency of adverse health effects occurring in California from exposures to air pollutants. CARB's analyses have provided estimates of annual mortality and morbidity as well as ranges of uncertainty in the predicted health outcome. Aside from premature death, indices such as hospital admissions, pulmonary and cardiac impacts, and lost productivity are quantified in terms of affected population.

In the Final Socioeconomic Report for the 2007 AQMP, health benefits were estimated for attaining the then applicable ozone standard of 0.08 ppm in 2024, and the PM2.5 annual standard of 15 µg/m3 in 2015. The health analysis relied on the simulated ozone and PM2.5 air quality and the use of U.S. EPA's BENMAP health program which translates air quality to health effects. A combined emissions and concentration weighting methodology is applied to the predicted ozone and PM2.5 concentrations to scale the health effects impacts identified in the Final Socioeconomic Report for the 2007 AQMP for the conditions without the project. It is important to note that the current standards for PM2.5 incorporate the health effects associated with breathing all fine particulate matter including PM10. Thus, the analysis of health effects due to PM2.5 is sufficient to characterize the overall particulate related health impact without the potential for double counting health impacts that could occur if the PM2.5 related health effect and the PM10 related health effect were addressed separately.

Cumulative Effects. Similar to the heath effects analysis for the proposed project, the cumulative impacts analysis relies on the methodology used in the Final Socioeconomic Report for the 2007 AQMP. In this case, the incremental health effects of the proposed project together with the other permits issued in reliance upon the SCAQMD internal account offsets are quantified. (This cumulative scenario is described further above, under the discussion of mass criteria pollutant emissions.)

Health Effects of Toxic Air Contaminants

Region-wide Effects. The regional modeling performed in the 2008 Multiple Air Toxics Exposure Study III (MATES III)[6] and the 2010 Draft Clean Communities Plan (CCP)[7] formed the basis of the air toxics assessment for the proposed project and alternatives. MATES-III provided an analysis of the exposure to toxic air contaminants from anthropogenic sources throughout the Basin. MATES III was a monitoring and evaluation study conducted in the South Coast Air Basin over the period April 2004 to March 2006. The MATES III Study consisted of three elements: (1) a monitoring program, (2) an updated air toxics inventory for calendar year 2005, and (3) a modeling effort to characterize cancer risk across the Basin. The MATES-III regional modeling analysis built upon the inventory development and model simulations that were the foundation of the 2007 AQMP. The 2010 Draft CCP is a planning document that outlines the SCAQMD's future overall air toxics control strategy. The CCP includes the

[6] MATESIII Report: http://www.aqmd.gov/prdas/matesIII/MATESIIIFinalReportSept2008.html

[7] 2010 Draft Clean Communities Plan: http://www.aqmd.gov/aqmp/CCP.html

development of future year toxic inventories and regional air quality modeling out to 2023.

The proposed project's incremental contribution to health risks from toxic air contaminants are estimated using the MATES-III modeling methodology to develop emissions weighted estimates of toxic risk from each of the 17 toxic compounds listed in Table 4.0-5. The analysis in this PEA re-creates the MATES-III 2014, 2023 and 2030 model simulations for the 17 toxic compounds under conditions with the proposed project (which are the same as under the 2007 AQMP) and under conditions without the proposed project. A comprehensive discussion of the MATES-III analysis including the methodology for conducting regional modeling and projected risk is presented in the Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin, which is available at http://www.aqmd.gov/prdas/matesIII/matesIII.html. The toxic particulates and gases simulated in MATES III and the CCP are listed in Table 4.0-5. It is important to acknowledge that these are not all the pollutants in the southern California atmosphere nor are they all the pollutants emitted by sources in the Basin. The pollutants listed in Table 4.0-5 are those considered important by the researchers and regulators conducting the MATES III study.

TABLE 4.0-5

Toxic Compounds and Unit Risk Factors Used in CAMx/RTRAC Simulations

Compound	Unit Risk Per Million
Diesel PM	3.0×10^{-4}
Cr6	1.5×10^{-1}
As	3.3×10^{-3}
Cd	4.2×10^{-3}
Ni	2.6×10^{-4}
Pb	1.2×10^{-5}
Benzene	2.9×10^{-5}
Perchloroethylene	5.9×10^{-6}
p-Dichlorobenzene	1.1×10^{-5}
Methylene Chloride	1.0×10^{-6}
Trichloroethylene	2.0×10^{-6}
1,3-Butadiene	1.7×10^{-4}
Primary Formaldehyde	6.0×10^{-6}
Primary Acetaldehyde	2.7×10^{-6}
Secondary Formaldehyde	6.0×10^{-6}
Secondary Acetaldehyde	2.7×10^{-6}
Naphthalene	3.4×10^{-5}

The Comprehensive Air Quality Model with Extensions (CAMx) enhanced with a reactive tracer modeling capability (RTRAC) is the air quality modeling and atmospheric chemistry platform. The Penn State/National Center for Atmospheric Research Mesoscale Model 5 (MM5) with four dimensional data assimilation was used to generate the meteorological fields for the CAMx simulations. The CAMx dispersion model with the RTRAC was used in conjunction with the 2007 AQMP meteorological and emissions inputs. Modeling was conducted on a 240 by 150 kilometer domain that included the Basin and the coastal shipping lanes and the grid resolution was 2 km by 2 km. Cancer risk from exposure to 17 compounds (listed in Table 4.0-5) having risk factors provided by California's EPA's Office of Environmental Health Hazard Assessment (OEHHA) were simulated to estimate the regional spatial patterns and level of risk predicted in the Basin. The analysis relied on a comprehensive speciation of volatile organic compounds (VOC) emissions and metals to provide the compound-related air quality effects that were then converted into risk estimates. It is important to recognize that the MATES-III simulated toxic risk analysis was conducted as a regional modeling study and did not address the impacts of an individual source.

The metric used to estimate the cancer risk impacts in the PEA is the change in overall population-weighted inhalation cancer risks between the conditions with and without the project. CAMx provides grid cell average concentrations for each of the pollutants listed in Table 4.0-5 and the population in each grid cell is used as the weighting factor to calculate population-weighted average concentrations for each toxic air contaminant. The greater the population in the grid cell the greater its weight; grid cells with no population (e.g., grid cells over the ocean) do not contribute to the weighted average. The total inhalation cancer risk is simply the summation of the products of the population-weighted average pollutant concentrations and their corresponding inhalation unit risk factors.[8] All the toxics listed in Table 4.0-5 are carcinogens.

The population weighted non-cancer chronic hazard index is calculated similarly. The total population-weighted non-cancer chronic hazard index is the summation of the ratios of population-weighted average pollutant concentrations to its chronic reference exposure level (REL).[9] As with the cancer risk estimates only the inhalation pathway is considered. All the toxics listed in Table 4.0-5 have non-cancer chronic RELs and are thus included in the chronic hazard calculation. The metric used to estimate the non-cancer chronic impacts in the PEA is the change in overall population-weighted chronic hazard index between the conditions with and without the project.

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[8] Inhalation unit risk factor is the theoretical upper bound probability of extra cancer cases occurring in the exposed population assuming a lifetime exposure to the chemical when the air concentration is expressed in exposure units of per micrograms/cubic meter. The unit risk factors are available at http://www.arb.ca.gov/toxics/healthval/healthval.htm.

[9] Reference exposure level (REL) is an exposure level at or below which no non-cancer adverse health effect is anticipated to occur in a human population exposed for a specific duration. The chronic RELs are available at http://www.arb.ca.gov/toxics/healthval/healthval.htm

The acute hazard index is the summation of the ratios of peak hourly pollutant concentrations to its acute reference exposure level.[10] The total acute hazard index is calculated for each hour at each grid cell in the modeling domain and the highest value is identified. The following pollutants have non-cancer acute RELs and are the only ones included in the acute hazard index calculation: acetaldehyde, formaldehyde, perchloroethylene, methylene chloride, arsenic, and nickel. The metric used to estimate the non-cancer acute impacts in the PEA is the change in acute hazard index between the conditions with and without the project.

Cumulative Effects. The same methodology as is used to assess project effects is used to assess the toxic air contaminant emissions from the other sources with permits issued in reliance on the SCAQMD internal offset accounts. The resulting concentrations of toxic air contaminants are calculated using the same methodology as is used to calculate concentrations of toxic air contaminants resulting from the proposed project.

Localized Concentrations of Toxic Air Contaminants. In addition to contributing to region-wide health risk, sources emitting toxic air contaminants have the potential to result in localized concentrations of toxic air contaminants that exceed the SCAQMD significance thresholds. The SCAQMD's regulations require detailed modeling of toxic air contaminants and associated health risk when new or modified sources are proposed for approval. A qualitative discussion of localized concentrations of toxic air contaminants is included in the PEA.

Odors

The potential for the proposed project to result in significant odors is assessed qualitatively based upon the attributes of sources permitted under Rules 1304 and 1309.1 and applicable SCAQMD rules.

DIRECT IMPACTS METHODOLOGY – Visibility

Visibility

Pollution can cause the absorption and scattering of light, which reduces the clarity and color of what we see.[11] To evaluate the visibility effects of the proposed project, air pollution modeling results are used to calculate the potential for visual range reduction, measured in miles and also translated into "deciviews."

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[10] The acute RELs are available at http://www.arb.ca.gov/toxics/healthval/healthval.htm

[11] EPA, How Air Pollution Affects the View, available at http://www.epa.gov/visibility/pdfs/haze_brochure_20060426.pdf

At Class 1 Wilderness Areas, the EPA uses deciviews as the unit of measurement for the federal Regional Haze visibility program required by the federal Clean Air Act. The unit is calculated based on "light extinction" -- that is, the amount of light lost as it travels over distance, resulting in a decline in visibility. As deciview values increase, visibility decreases. The deciview index is scaled to account for the fact that linear changes in light extinction do not have a linear effect on human perception; whether or not a change is perceptible depends upon background conditions. The deciview unit scales light extinction to correspond approximately to incremental changes in human perception, across the entire range of conditions, from pristine to highly impaired.[12] For example, whether a 5 kilometer change in visual range is perceptible depends upon the initial visibility -- a 5 kilometer change from conditions that allow for a visibility of 400 kilometers would not be perceptible, whereas a 5 kilometer change from conditions that allow for a visibility of only 10 kilometers would be perceptible. The worse the background conditions, the more one would perceive a small change in those conditions. The deciview scale takes these background conditions into account so that a 1 deciview difference on a 20 deciview day equates to the same perception of change as a 1 deciview change on a 5 deciview day. This enables a direct impact comparison.

While the deciview calculation does not directly measure changes in color, such as the brown sky that can be caused by photochemical smog, it does capture these effects by incorporating reductions of light absorbing particulates and gases (elemental carbon and NO2) and the scattering effects of particulate mass into the evaluation.[13] Light absorption by carbon leads to a blackening effect and absorption by NO2 leads to a browning effect, while scattering provides a white-to-gray scale impact. The calculation of the deciview (through extinction coefficient) accounts for changes in the concentrations of the gases and particulate and therefore relates to the browning effect.

A one to two deciview change is a small, but generally noticeable change in visual range (Improve, Vol. 2. No. 1, (Winter 1993)). EPA has concluded that a 0.5 deciview change does not "cause" visual impairment on its own because a 0.5 change is not perceptible, but a 0.5 change may "contribute" to cumulative changes that are perceptible. *See Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations*, 70 Fed. Reg. 39104, 39120, 39162 (July 6, 2005). It is important to note that a change in deciviews does not correspond to any particular linear change in visual range in miles.[14] A 0.5 change in deciviews is considered significant. The PEA evaluates the change in deciviews resulting from the project.

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[12] EPA, Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule, available at http://www.epa.gov/ttnamti1/files/ambient/visible/natural.pdf.

[13] William Malm, National Park Service, Introduction to Visibility, available at http://www.epa.gov/visibility/pdfs/introvis.pdf. In technical terms, a deciview is a log function of the light scattering and absorption extinction coefficient.

[14] At zero deciviews, visual range is 400 kilometers (248.5 miles); at 30 deciviews, visual range is 20 kilometers (12.4 miles); and at 42 deciviews, visual range is 6 kilometers (3.7 miles). William Malm, National Park Service, Introduction to Visibility, available at http://www.epa.gov/visibility/pdfs/introvis.pdf.

Light extinction of more than 0.23 per kilometer (translating to less than ten mile visibility) over an 8-hour averaging period when humidity is less than 70 percent is also considered significant based upon the standard adopted by the California Air Resources Board. The PEA evaluates compliance with this standard at the location predicted to have worst-case visibility conditions, Riverside - Rubidoux.

Project Effects: To estimate changes in visibility using deciviews, future year gaseous and particulate air quality are simulated using the 2007 AQMP air quality modeling platform. The CAMx dispersion air quality model is used to simulate both gaseous and particulate air quality. A comprehensive discussion of the modeling techniques, input data and model performance is provided in Appendix V of the 2007 AQMP (http://www.aqmd.gov/aqmp/07aqmp/aqmp/Appendix_V.pdf). The translation into visual range reduction is performed using EPA's Interagency Monitoring of Protected Visual Environments (IMPROVE) model for the impacts on federal Class I wilderness areas, and using the methodology developed for the 1991 AQMP, and used for all subsequent AQMPs, for Riverside (the most impacted area).

The EPA-sponsored IMPROVE program was established to provide background measurements and visual range calculation in support of the federal regional haze visibility standard attainment. The IMPROVE technique utilizes empirical equations based on the relationships between visibility and air quality to provide visual range in miles, which is converted into deciviews. The IMPROVE model is designed specifically for Class I areas. Accordingly, visibility impacts to Class 1 areas at San Gabriel, San Gorgonio, and San Jacinto Class I wilderness areas are estimated using the EPA IMPROVE methodology. Additional information regarding the IMPROVE model can be found on the USEPA website at http://www.epa.gov/ttnamti1/visdata.html.

In the 2007 AQMP, Basin visibility was estimated for Riverside because that is the portion of the Basin that experiences the greatest combination of gaseous and particulate air pollution. Visual range at Riverside was estimated using the set of empirical relationships that were developed for the 1991 AQMP and have been used in successive plans. The empirical algorithms account for naturally occurring light scattering (including Raleigh scattering by air molecules and Mie scattering from water vapor), backscatter from particulates, plus light absorption from particulates and gaseous pollutants. In this analysis, the same approach is used to determine the change in visibility between conditions with the proposed project and conditions without the proposed project. At Riverside this PEA presents the change in visibility over an 8 hour averaging period when humidity is less than 70 percent. This is because CARB sets a statewide standard based on visibility distance using these parameters.

Cumulative Effects: The cumulative impacts analysis relies on the same methodology as is used to evaluate project effects. In this case, the incremental effects on visibility of the proposed project, plus the emissions from the other permits issued in reliance upon the SCAQMD internal account offsets. (This cumulative scenario is described further above, under the discussion of mass criteria pollutant emissions.)

DIRECT IMPACTS METHODOLOGY – Climate Change

Greenhouse Gas Emissions

Pollutants that contribute to greenhouse gas emissions include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are the greenhouse gases (GHGs) identified under AB 32 as well as under EPA's motor vehicle GHG regulation. The analysis in this PEA considers all of these pollutants, but uses one methodology to calculate CO_2, CH_4, and N_2O emissions, and a second methodology to calculate HFCs, PFC, and SF_6. First, an analysis of emissions data from the 2007 AQMP focuses on directly emitted CO_2, N_2O, and CH_4 emissions because these are the primary GHG pollutants emitted during the combustion process. Second, an analysis of the statewide GHG inventory is conducted to determine the impact from the remaining GHG pollutants including HFCs, PFCs and SF_6.

The analysis of GHGs is a different analysis than the analysis of criteria pollutants for the following reasons. For criteria pollutants, significance thresholds are based on daily emissions because attainment or non-attainment in many cases is based on daily exceedances of applicable ambient air quality standards. Further, several ambient air quality standards are based on relatively short-term exposure effects on human health, e.g., one-hour and eight-hour. By contrast, since the atmospheric life of CO_2 is approximately 100 years, for example, the effects of GHGs are longer-term, affecting global climate over a relatively long time frame. As a result, the SCAQMD's current approach is to evaluate GHG effects over a longer timeframe. GHG emissions are measured in metric tons (MT).

CO_2, CH_4, and N_2O Emissions

Project Effects: CO_2, CH_4, and N_2O emissions are the major contributors to GHG emissions and represent about 98 percent of the total national GHG emissions and can be calculated as CO_2 equivalent (CO_2e) based on their global warming potentials (GWP). GWP is a measure of how much a given mass of a GHG is estimated to contribute to global warming based on a relative scale comparing the gas in question to that of the same mass of carbon dioxide (whose GWP is by convention equal to 1). For purpose of this analysis, CO_2, CH_4, and N_2O emissions and their corresponding criteria pollutant emissions were extracted from the 2007 AQMP basin wide inventory for Rule 1304 and Rule 1309.1-related source categories only. Affected source categories include fuel combustion (e.g., electric utilities, petroleum refining, food and agricultural processing, etc.), waste disposal (e.g., landfills, sewage treatment, etc.), cleaning and surface coatings (e.g., printing, degreasing, etc.), and industrial processes (e.g., chemical, mineral and metal processes, electronics, etc.) The inventory for the combustion sources was based on fuel-use data and the inventory for the non-combustion sources was based on the methane emissions from the total organic gases (TOG) inventory and CARB profiles. The 2007 AQMP CO_2, CH_4, and N_2O emissions inventory from both combustion and non-combustion sources are shown in Table D-1 in Appendix D.

Because specific information regarding future equipment types, sizes, operation activity, ratings, load factors, etc. is not available for facilities that may receive permits under Rules 1304 and 1309.1, a ratio was derived to correlate criteria pollutants to GHG emissions. In order to determine the share of total GHGs represented by stationary source emissions from the industry categories eligible for permits under Rules 1309.1 and 1304, staff determined the share of total AQMP stationary source combustion emissions of SOx that is represented by SOx emissions from the relevant industry categories. SOx emissions were selected as a surrogate to prorate the GHG emissions because SOx emissions result primarily from sulfur contained in fossil fuels. The primary fuel used for stationary source combustion in the South Coast region is natural gas. To a much smaller extent diesel fuel is used by emergency backup engines during periodic engine testing and maintenance and when there is a power outage. For both fuel types, the control levels for SOx between existing equipment and the new equipment are the same. Therefore, SOx provides a more direct linkage than other pollutants to estimate the corresponding CO_2, CH_4, and N_2O emissions. In contrast, NOx emissions are not directly related to the amount of fuel combusted because some NOx sources have a greater degree of control than others. Therefore, some sources will have less NOx emissions than other sources per unit of fuel combusted. Therefore, SOx provides a more direct linkage than other pollutants to estimate the corresponding GHG emissions. Using a ratio of GHG emissions to SOx emissions from the AQMP inventory, the GHG emissions from the proposed project are calculated using the estimated SOx emissions from the proposed project and multiplying by the ratio factor. Table D-1 in Appendix D provides a list of the affected source categories, CO_2, CH_4, and N_2O emissions, CO_2e emissions and corresponding SOx emissions from the 2007 AQMP.

HFCs, PFCs, and SF_6 Emissions

Project Effects: Because the ratio of SOx emissions to CO_2e from the 2007 AQMP is based on CO_2, CH_4, and N_2O emissions, the remaining GHG emissions from HFCs, PFCs and SF_6 had to be calculated using a separate methodology. This was done by using CARB's statewide overall GHG inventory and developing a ratio of statewide GHGs from high GWP pollutants (HFCs, PFCs and SF_6) and applying it to the GHG emissions from all types of sources that would be affected by the proposed project (e.g., commercial, industrial, etc). The state inventory over a three-year period was examined to determine the total statewide GHG inventory and the statewide high GWP (i.e., HFCs, PFCs, and SF_6 emissions) sources. Specifically, the ratio was calculated by dividing the total high GWPs by the total GHG emissions from all affected sources in the state (14.48 million MT CO_2e /year / 223.32 million MT CO_2e /year = 0.065). By applying the ratio of statewide high GWPs to all statewide GHG sources (0.065) to the CO_2, CH_4, and N_2O emissions from 2007 AQMP (72 million MT/year), the total six GHG pollutant emissions of all AQMP sources can be determined (72 x 1.065 = 76.68 million MT CO_2e/year). Thus, a ratio of 76.68 million MT/year of total GHG emissions to 931 tons per year of total SOx emissions (76.68/931 = 0.0824) from the 2007 AQMP can be derived. The ratio was multiplied by the estimated SOx emissions from the proposed project to determine the total GHG emissions from the proposed project.

Cumulative Effects: In addition to calculating GHGs attributed to the proposed project, the analysis includes calculations of combined GHGs from all sources receiving permits on the SCAQMD internal offset accounts, as described under the discussion of mass emissions of critical pollutants. The analysis of GHGs from the three power plants is based upon the FSAs prepared by the CEC for each of the plants.

The FSA for the CPV Sentinel project included GHG emissions from both the construction and operational phases of the project. Because the primary sources of emissions are combustion stationary sources, the GHG emissions evaluated are carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4). GHGs are emitted from power plant sources such as combustion turbine generators (CTG) during operation, start-up and shutdown, firewater pumps, black start generators, and boilers. Annual GHG emissions are calculated by multiplying the heat or fuel input rate by the default emission factors and hours of operation for each piece of equipment.

The FSAs for the El Segundo and Walnut Creek projects did not include GHG emissions, so GHG emissions for the two power plant projects were calculated in this analysis using the known data in the Sentinel project and the same default emission factors. The FSAs prepared for the El Segundo and Walnut Creek projects included the types of affected equipment, the rated capacity of the equipment, and hours of operation. To calculate the unknown heat and fuel input for El Segundo and Walnut Creek projects, a ratio of rated capacity to heat/fuel input was derived applying the known data from the Sentinel project.

SUBCHAPTER 4.1

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES - AIR QUALITY

INTRODUCTION

The methodology used for analyzing air quality impacts is discussed in Subchapter 4.0. Based on that methodology, this chapter (Chapter 4.1) evaluates the air quality impacts resulting from the proposed project. This chapter first describes the significance criteria used to assess whether the air quality impacts from the proposed project are significant. It then provides an impact assessment based on those criteria. This assessment includes direct and indirect, as well as cumulative, impacts. The chapter concludes with a discussion of mitigation measures.

SIGNIFICANCE CRITERIA

Although there is no ironclad rule as to when an impact is "significant," generally, the questions presented in the environmental checklist in Appendix G of the CEQA Guidelines can provide a framework for analysis that can be refined by more specific criteria developed by a particular agency. The SCAQMD has developed the following air quality significance thresholds, which are used in this analysis to determine the significance of the air quality impacts from the proposed project. The primary air quality significance thresholds used for this analysis have been adopted by the SCAQMD and are provided on the SCAQMD's website:

http://www.aqmd.gov/ceqa/handbook/signthres.pdf.

Air Quality Impacts

1. **Conflict with Air Quality Management Plan.** Would the proposed project conflict with or obstruct the implementation of the applicable air quality plan? This analysis is based on the 2007 Air Quality Management Plan (AQMP) and examines whether emissions of criteria pollutants under the proposed project would conflict with or obstruct the implementation of the 2007 AQMP.

2. **Mass Emissions and Modeled Concentrations of Criteria Pollutants.** Would the proposed project violate any air quality standard or contribute to an existing or projected air quality violation? Mass daily emissions of criteria pollutants and modeled concentrations of criteria pollutants, on both a region-wide and localized basis, are considered in this analysis. For the analysis of mass emissions, the air quality significance thresholds are shown in Table 4.1-1. These significance thresholds for mass emissions were developed through a public process and approved by the SCAQMD Governing Board as significance thresholds for individual projects. Under these standards, air quality impacts from a project are

considered to be significant if any emissions equal or exceed the daily mass emissions thresholds shown in Table 4.1-1.

TABLE 4.1-1

Mass Emissions Significance Thresholds for Construction and Operation Air Quality Impacts (pounds/day)

Air Pollutant	Construction [a]	Operation
Volatile Organic Compound (VOC)	75	55
Carbon Monoxide (CO)	550	550
Nitrogen Oxides (NO_X)	100	55
Sulfur Oxides (SO_X)	150	150
Particulates (PM10)	150	150
Fine Particulates (PM2.5)	55	55
Lead	3	3

[a] Construction significance thresholds also serve as the operational significance thresholds in the Coachella Valley and portion of the district.

See SCAQMD (2009) http://www.aqmd.gov/ceqa/handbook/signthres.pdf.

The analysis of region-wide concentrations of criteria pollutants attributable to the proposed project provides a more detailed evaluation of the effects of the mass emissions on concentrations of pollutants throughout the Basin and in the Coachella Valley. This analysis supplements the quantification of mass emissions.

For the analysis of localized concentrations of criteria pollutants, the PEA evaluates whether the proposed project would exceed the SCAQMD's concentration-based significance thresholds. A project would have a significant impact if its operations would result in offsite ambient air pollutant concentrations that would exceed any of the SCAQMD's localized thresholds of significance in Table 4.1-2.

TABLE 4.1-2

SCAQMD Localized Operational Thresholds for Ambient Air Quality Concentrations

Air Pollutant	Ambient Operation Threshold
Nitrogen dioxide (NO2)	
1-hour average	0.18 ppm (338 μg/m^3)
Annual average	0.03 ppm (56 μg/m^3)
Particulates (PM10)	
24-hour average (construction)	10.4 μg/m^3
24-hour average (operation)	2.5 μg/m^3
Annual average	1 μg/m^3
Fine Particulates (PM2.5)	
24-hour average (construction)	10.4 μg/m^3
24-hour average (operation)	2.5 μg/m^3
Carbon monoxide (CO)	
1-hour average	20 ppm (23,000 μg/m^3)
8-hour average	9.0 ppm (10,000 μg/m^3)
Sulfur Dioxide (SO2)	
1-hour average	0.25 ppm (655 μg/m^3)
24-hour average	0.04 ppm (105 μg/m^3)

Notes:

a) The NO2, SO2, and CO thresholds are absolute thresholds based on the applicable ambient air quality standards; the maximum predicted impact from proposed project operations is added to the background concentration for the proposed project vicinity and compared to the threshold.

c) The PM10 and PM2.5 thresholds are incremental thresholds. For CEQA significance, the maximum increase in concentration relative to the CEQA baseline is compared to the threshold.

d) Conversion equation for parts per million (ppm) and micrograms per cubic meter of air (μg/m^3): μg/m^3 = (ppm)(molecular weight)/24.45 x 1000 (μg/mg)

See SCAQMD (2009) http://www.aqmd.gov/ceqa/handbook/signthres.pdf.

3. **Health Effects of Criteria Pollutant Emissions and Toxic Air Contaminants.** Would the proposed project expose sensitive receptors to substantial pollutant concentrations? This analysis evaluates potential health impacts from region-wide emissions of criteria pollutants, region-wide emissions of toxic air contaminants (TACs), and localized concentrations of TACs.

With respect to the health effects associated with region-wide emissions of criteria pollutants, the SCAQMD has not adopted formal significance thresholds for health impacts of ozone and PM2.5, as distinguished from the concentration-based significance thresholds set forth in Table 4.1-2 above. For purposes of this PEA, the SCAQMD considers the effects significant if emissions attributable to the project would make a substantial contribution to negative health effects in the affected communities in comparison to the without-project scenario.

The SCAQMD has adopted significance thresholds for TACs. One of the primary health risks of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because it is believed by many scientists that there is no "safe" level of exposure to carcinogens. Any exposure to a carcinogen poses some risk of causing cancer. It is estimated that about one in four deaths in the United States is attributable to cancer.[1] About two percent of cancer deaths in the United States may be attributable to environmental pollution (Doll and Peto 1981).[2] The proportion of cancer deaths attributable to air pollution has not been estimated using epidemiological methods.

New and modified sources of TACs in the SCAQMD's jurisdiction are subject to Rule 1401 - New Source Review of Toxic Air Contaminants, and Rule 212 - Standards for Approving Permits. Rule 212 requires notification of the SCAQMD's intent to grant a permit to construct a significant project, which is defined as a new or modified permit unit located within 1,000 feet of a school (a state law requirement under AB 3205); a new or modified permit unit posing an maximum individual cancer risk of one in one million (1×10^{-6}) or greater; or a new or modified facility with criteria pollutant emissions exceeding specified daily maximums. Distribution of notice is required to all addresses within a 1/4-mile radius, or other area deemed appropriate by the SCAQMD. Rule 1401 currently controls emissions of carcinogenic and non-carcinogenic (health effects other than cancer) air contaminants from new, modified and relocated sources by specifying limits on cancer risk and hazard index, respectively.

Unlike carcinogens, for most non-carcinogens it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. The California Environmental Protection Agency (CalEPA) Office of Environmental Health Hazard Assessment (OEHA) develops Reference Exposure Levels (RELs) for TACs that are health-conservative estimates of the levels of exposure at or below which health effects are not

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[1] American Cancer Society, California Department of Public Health, California Cancer Registry. California Cancer Facts and Figures 2010. Oakland, CA; American Cancer Society, California Division, September 2009; http://www.**ccrcal**.org/PDF/ACS2010-9-29-09.pdf

[2] Doll R, Peto R.; J Natl Cancer Inst. 1981 Jun;66(6):1191-308; http://www.ncbi.nlm.nih.gov/sites/entrez/7017215?dopt=Abstract&holding=f1000,f1000m,isrctn

expected. The non-cancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

Under the SCAQMD's established significance standards for TACs, a project that has the potential to expose receptors to the following thresholds[3] is considered significant:

- the maximum incremental cancer risk would be greater than or equal to 10 in 1 million (10×10^{-6}),
- the incremental non-cancer hazard index (acute and/or chronic) would be greater than or equal to 1.0, or
- incremental cancer burden would be greater than 0.5 excess cancer cases (in areas with a cancer risk greater than or equal to one in one million (1×10^{-6})).

The SCAQMD has not developed different significance thresholds for cumulative emissions of TACs as compared to project-specific emissions from TACs. Thus, cumulative impacts are evaluated based on the same health impact significance standards for TACs as set forth above.

4. **Odors.** Would the proposed project create objectionable odors affecting a substantial number of people?

The significance threshold for odor impacts is based on whether a project creates an odor nuisance pursuant to SCAQMD Rule 402 – Nuisance.

Visibility Impacts.

5. **Visibility.** Would the proposed project create significant aesthetic impacts by resulting in air emissions that substantially degrade the existing visual character or quality of the project surroundings?

Emissions are considered to be significant if they cause a violation of the State standard for visibility-reducing particles or cause a violation of visibility standards for federal Class I areas (national parks or wilderness areas).

The state visibility standard was first adopted by CARB in 1969 based on perceived reductions in visibility to less than ten miles on days when relative humidity is less than 70 percent.[4] The statewide standard is

[3] http://www.aqmd.gov/ceqa/handbook/signthres.pdf

[4] Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.

intended to limit the frequency and severity of visibility impairment due to regional haze. In 1989, CARB converted the statewide 10-mile standard to an instrumental standard that is equivalent to the visual standard set in 1969. Compliance with the state standard for visibility is now determined by evaluating whether there is a light extinction coefficient of 0.23 per kilometer when relative humidity is less than 70 percent, 8-hour average (10 am – 6 pm, PST). Emissions that cause a violation of this standard are considered significant.

In harmony with USEPA guidance, the SCAQMD also considers a 0.5 deciview change to be significant for Class I areas (National Parks and federal wilderness areas). The nature of the deciview unit is described in more detail in Subchapter 4.0. A one to two deciview change is a small, but generally noticeable change in visual range. The USEPA has concluded that a 0.5 deciview change does not "cause" visual impairment on its own because a 0.5 change is not perceptible, but a 0.5 change may "contribute" to cumulative changes that are perceptible. Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations, 70 Fed. Reg. 39104, 39120, 39162 (July 6, 2005). Accordingly, a 0.5 deciview change would be considered a significant project impact and a cumulatively considerable contribution to a significant cumulative impact. A change that is less than 0.5 deciview is not significant and is not a cumulatively considerable contribution to a cumulative impact.

Climate Change Impacts

6. **Greenhouse Gas Emissions.** Would the proposed project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance?

SCAQMD's approved[5] interim GHG significance threshold is a tiered approach to determining GHG significance of projects. Under Tier 1, if the proposed project qualifies for an exemption under CEQA, it is not considered significant for GHG emissions. If the project does not qualify for the exemption, then the evaluation moves to the next tier. Tier 2 consists of determining whether or not the project is consistent with a GHG reduction plan (which may be part of a local general plan, for example) that meets specified requirements. If the project is consistent with such a plan, then it is not considered significant for GHG emissions. If the project is not consistent with such a plan (or if there no such approved plan), then the evaluation moves to the next tier. Under Tier 3, a

[5] Approved SCAQMD CEQA GHG Significance Threshold for projects where SCAQMD is Lead Agency was approved by the Governing Board at its December 5, 2008. For a discussion of the basis of the SCAQMD threshold, see the following web site: http://www.aqmd.gov/hb/2008/December/081231a.htm.

proposed industrial project is considered significant if GHG emissions from the project exceed 10,000 metric tons CO_2 equivalent ($MTCO_2e$) per year. For purposes of the analysis in this PEA, this significance threshold is applied so that the proposed project is considered significant if GHG emissions attributed to the project would exceed 10,000 $MTCO_2e$/yr.

The following categories of emissions are included in the analysis of air quality impacts in this subchapter:

- **Emissions from sources permitted under the project.** Emissions from stationary sources that are attributed to the project are quantified, as described in the methodology section. This analysis estimates emissions through the year 2030.

- **Cumulative impacts of all sources using SCAQMD internal account offsets.** Cumulative emissions from all sources permitted through 2030 based upon offsets in the SCAQMD internal account are evaluated. As described in the methodology section, this includes emissions attributed to the project, together with emissions from sources permitted under Rule 1304 and 1309.1 pursuant to the earlier version of Rule 1315 and SB 827, and the emissions from three specific power plants (Sentinel Power Plant Project, Walnut Creek Mission Energy Project, and NRG El Segundo Repowering Project). This analysis includes estimated emissions through the year 2030.

- **All cumulative forecasted emissions.** This analysis describes cumulative emissions from all sources included in the AQMP through the year 2030. This includes the emissions attributed to the project combined with the emissions from all other stationary and mobile sources within the area covered by the AQMP.

- **Indirect emissions related to the project.** This discussion describes emissions from construction of sources permitted under the project and emissions from mobile sources associated with facilities permitted under the project. These types of indirect emissions impacts are discussed in qualitative terms.

DIRECT IMPACT ANALYSIS – AIR QUALITY

1. AQMP Consistency. Would the proposed project conflict with or obstruct the implementation of the applicable air quality plan?

<u>The 2007 AQMP</u>

The 2007 AQMP incorporates future growth projections for the entire region, based on data provided by the Southern California Association of Governments (SCAG). The

SCAQMD is required to use SCAG's growth projections in its AQMP. Health & Safety Code § 40460(b). The AQMP details the projected air emissions resulting from this regional growth, and sets forth measures and strategies for attaining air quality standards in light of this growth. The AQMP takes into account future emissions from both stationary and mobile sources, as well as emissions from construction activities.

The permits issued under Rule 1304 and 1309.1 with proposed Rule 1315 in effect would serve a subset of the future growth that is forecasted in the 2007 AQMP. Accordingly, the emissions from the issuance of permits under the project are not expected to cause future emissions in the region to exceed the emissions levels anticipated by the 2007 AQMP. Proposed Rule 1315 nevertheless includes a "cap," which limits the amount of stationary source emissions from the project and ensures that this amount does not exceed the level of emissions projected in this PEA. If the cap is exceeded for any pollutant, proposed Rule 1315 would bar the issuance of permits for individual projects that require offsets from the SCAQMD's internal accounts until consistency with the cap is restored.

Thus, emissions from regional growth in the industry sectors that are eligible for permits issued in reliance upon SCAQMD internal account offsets are a component of the emissions forecasted in the 2007 AQMP and are accounted for in the 2007 AQMP. For that reason, the proposed project would not conflict with or obstruct the implementation of the AQMP.

2. Criteria Pollutant Emission Standards. Would the proposed project violate any air quality standard or contribute to an existing or projected air quality violation?

The analysis in this section evaluates the effects on air quality attributed to the proposed project by assessing mass daily criteria pollutant emissions, region-wide concentrations of criteria pollutants, and localized concentrations of criteria pollutants. These effects are evaluated separately below for all emissions attributable to sources expected to receive permits under the project, as well as on a cumulative basis that takes account of all sources using SCAQMD internal account offsets.

Regional Mass Criteria Pollutant Emissions - Project Impacts

In the future, emissions in the SCAQMD's jurisdiction are expected to be substantially lower than under existing conditions. In fact, the Basin is projected to achieve the PM2.5 standard by the deadline of 2015, and the 8-hour ozone standard by the deadline of 2024, including emissions from this project. However, as described in Subchapter 4.0, the proposed project would result in a higher level of emissions than the emissions expected to occur without the project. This means that the without project scenario is projected to result in greater emissions reductions than are projected to occur under the proposed project. The analysis below quantifies the difference between the without project and with project scenarios in terms of mass emissions of criteria pollutants from stationary sources.

Table 4.1-3 below quantifies the emissions represented by the amount of stationary source emissions that is estimated to occur under the proposed project but not without the project. The numbers in the table are based on the projections in the 2007 AQMP for the industry sectors that could be eligible for permits under Rules 1304 and 1309.1, with a 15 percent factor added to ensure reasonable worst case emissions are captured. Table 4.1-3 also depicts the emissions represented by shutdowns of stationary sources that have obtained offsets from SCAQMD internal accounts under the proposed project but not under the without project scenario. Emissions are listed in both tons per day and pounds per day. Table 4.1-4 adds the two subtotals to come up with an estimate of total stationary source emissions attributed to the proposed project. Table 4.1-4 then compares these emissions totals in pounds per day to the SCAQMD's operational significance thresholds for each pollutant for the years 2014, 2023 and 2030.

TABLE 4.1-3

Emissions from Projected Growth and Replacement of Existing Facilities

Years	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO
2007 AQMP Industry Sector Growth Projections (tons per day)						
2010-2014	5.79	0.52	0.13	0.82	0.52	0.27
2010-2023	18.95	1.33	0.45	2.80	1.78	2.79
2010-2030	29.02	2.26	0.70	4.40	2.80	4.89
Emission Reductions From Shutdowns of Currently Permitted Sources Obtaining Offsets from SCAQMD Internal Accounts (tons per day)						
2010-2014	11.21	0.77	0.03	0.03	0.02	0.87
2010-2023	15.57	1.05	0.04	0.04	0.03	1.37
2010-2030	15.57	1.05	0.04	0.04	0.03	1.37
2007 AQMP Industry Sector Growth Projections (pounds per day)						
2010-2014	11,580	1,040	260	1,640	1,040	540
2010-2023	37,900	2,660	900	5,600	3,560	5,580
2010-2030	58,040	4,520	1,400	8,800	5,600	9,780
Emission Reductions From Shutdowns of Currently Permitted Sources Obtaining Offsets from SCAQMD Internal Accounts (pounds per day)						
2010-2014	22,420	1,540	60	60	40	1,740
2010-2023	31,140	2,100	80	80	60	2,740
2010-2030	31,140	2,100	80	80	60	2,740

TABLE 4.1-4

Total Project Stationary Source Emissions

Years	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO
Tons per Day						
2010-2014	16.99	1.29	0.16	0.85	0.54	1.14
2010-2023	34.52	2.38	0.49	2.84	1.80	4.16
2010-2030	44.59	3.31	0.74	4.44	2.82	6.26
Pounds per Day						
2010-2014	33,980	2,580	320	1,700	1,080	2,280
2010-2023	69,040	4,760	980	5,680	3,610	8,320
2010-2030	89,180	6,620	1,480	8,880	5,650	12,520
Significance Threshold	55	55	150	150	55	550
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Based on the emissions totals above, the stationary source emissions attributable to the proposed project are considered to result in a significant air quality impact because the emissions will exceed the applicable operational significance threshold for each pollutant.

Project lead emissions. Facilities that use or process lead are only rarely permitted by the SCAQMD and very few sources emit sufficient levels of lead to cause or contribute to a nonattainment problem. There are two such sources in Los Angeles County, both battery recycling facilities. From SCAQMD's annual emissions reporting, staff has determined that total lead emissions in the Basin are approximately 18 lbs/day (6,517 lbs/yr) based on fiscal year (FY) 2006-2007 data comprised of 566 facilities in SCAB that reported lead emissions. The SIC and county location of each facility identified the SIC growth rate listed in the 2007 AQMP (Appendix III, Table 2-5, 2007 AQMP, SCAQMD) for the years 2015, 2020 and 2030. To account for the actual net increases and decreases during the time periods of the project (2010-2030) and cumulative scenario (2007-2030), the overall net lead increases were separately estimated for each of these time periods. For the time period of July 2010 to 2030, the net increase of lead emissions from the project were estimated to be equal to 0.70 pounds per day, which was based on using the estimated lead emissions in 2010 and net increase of SIC growth factors from July 2010 to 2030. Incremental lead impacts from all the attainment demonstration years for the project are presented in Table 4.1-5. For the lead emitting facilities, there were some facilities with negative SIC growth factors. Thus, the cumulative net increase of lead emissions was determined to be lower than the project. The cumulative net increase in lead emission by 2030 in SCAB is estimated to be 0.63 pounds per day. Incremental cumulative lead impacts from all the attainment demonstration years are presented in Table 4.1-5. Both the project and cumulative lead impacts are less than the CEQA significance threshold of three pounds per day so project and cumulative lead impacts are not significant.

TABLE 4.1-5

Project Lead Emissions

Years	Lead (lbs/day)
2010-2014	0.13
2010-2023	0.45
2010-2030	0.70

Regional Mass Criteria Pollutant Emissions - Cumulative Impacts

Cumulative impacts of all sources using SCAQMD internal account offsets. As explained in section 4.0, the assessment of cumulative impacts of past, present and future sources using SCAQMD internal account offsets, includes three components: (1) project emissions -- emissions of criteria pollutants from sources permitted under Rules 1304 and 1309.1 after July 2010; (2) pre-project emissions -- emissions from sources permitted under Rules 1304 and 1309.1 pursuant to the prior version of Rule 1315 and SB 827; and (3) emissions for three power plants considered to be reasonably foreseeable future projects. Table 4.1-6 below presents the cumulative total project and pre-project mass emissions of criteria pollutants. The cumulative total is the sum of the 2007 AQMP industry sector growth projections (starting from 2007 as opposed to 2010 under the project impacts in Table 4.1-3) and the emission reductions from shutdowns of currently permitted sources that have obtained offsets from the SCAQMD internal accounts. The cumulative total in Table 4.1-6 is presented in both tons per day and pounds per day.

Power plant emissions. The cumulative impact analysis also includes emissions from three specified power plant projects. As explained in Chapter 2, these three power plants are considered probable foreseeable future projects that could contribute to cumulative impacts. The three projects have been evaluated by the California Energy Commission (CEC), the CEQA lead agency for the projects. The CEC has prepared a separate Final Staff Assessment (FSA) for each project. The FSA is the functional equivalent of an EIR under the CEC's certified regulatory process for evaluating the environmental impacts of proposed projects under its jurisdiction. The SCAQMD reviewed the FSAs in conducting the cumulative impact analysis for proposed Rule 1315.

TABLE 4.1-6

Cumulative Project and Pre-Project Stationary Source Emissions

Years	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO
	2007 AQMP Industry Sector Growth Projections (tons per day)					
2007-2014	11.57	1.03	0.26	1.64	1.04	0.54
2007-2023	24.26	1.70	0.58	3.58	2.28	3.57
2007-2030	34.23	2.66	0.82	5.20	3.30	5.76
	Emission Reductions From Shutdowns of Currently Permitted Sources Obtaining Offsets from SCAQMD Internal Accounts (tons per day)					
2010-2014	11.21	0.77	0.03	0.03	0.02	0.87
2010-2023	15.57	1.05	0.04	0.04	0.03	1.37
2010-2030	15.57	1.05	0.04	0.04	0.03	1.37
	Cumulative Emissions (tons per day)					
2007-2014	22.78	1.80	0.29	1.67	1.06	1.41
2007-2023	39.83	2.75	0.62	3.62	2.31	4.94
2007-2030	49.80	3.71	0.86	5.24	3.33	7.13
	Cumulative Emissions (pounds per day)					
2007-2014	45,560	3,600	580	3,340	2,120	2,820
2007-2023	79,660	5,500	1,240	7,240	4,620	9,880
2007-2030	99,600	7,420	1,720	10,480	6,640	14,260

The first power plant project is the Sentinel Power Plant proposed by Competitive Power Ventures, LLC (CPV). The Sentinel power plant would be located in Desert Hot Springs in Riverside County. As discussed above, AB 1318 (Perez), which took effect on January 1, 2010, requires the SCAQMD to transfer emission offsets for SO_x and particulate matter (PM10) to the Sentinel power plant upon specified conditions described in the law. The Sentinel power plant would consist of eight turbines capable of generating 850 megawatts of electricity. To obtain the PM and SOx offsets, CPV Sentinel will be required to pay a mitigation fee that will be used to fund emission reductions programs. Emission reduction projects have the potential to reduce different criteria pollutants (i.e., co-benefits) but as a conservative analysis, it is assumed the emission reduction projects will only reduce the criteria pollutant of the offset being obtained (i.e., PM or SOx). The emission reductions from the projects funded by the Sentinel mitigation fee are included in the operational emissions presented in Table 4.1-7. For detail on the origin of the Sentinel mitigation fee and the methodology used to determine the emissions reductions from projects funded by the Sentinel mitigation fee, refer to Subchapter 4.0 – Air Quality Methodology.

The second power plant project is the Walnut Creek Mission Energy power plant located in the City of Industry in Los Angeles County. This power plant is the subject of SB 388 (Calderon) which would require the SCAQMD to provide offsets to the Walnut Creek power plant. This power plant would consist of five turbines capable of generating 500 megawatts of electricity.

The third power plant is the El Segundo Power Redevelopment Project located in the City of El Segundo in Los Angeles County. The project proponent is planning to replace the existing El Segundo Generating Station (3 boilers) with a 630 megawatts natural gas-fired combined cycle electric generation facility. When the SCAQMD commenced preparation of this PEA, it appeared that NRG El Segundo would pursue special legislation similar to the Sentinel project. However, NRG El Segundo later submitted an application to carry out its repowering under Rule 1304(a)(2) electric utility steam boiler replacement and SCAQMD approved the application pursuant to SB 827. Accordingly, the NRG El Segundo power plant emissions are included in the analysis of cumulative impacts below.

Table 4.1-7 presents the mass emissions resulting from operation of the three power plants,[6] as presented in the FSAs prepared by the CEC.

TABLE 4.1-7

Mass Emissions (lbs/day) from Power Plant Operations

Power Plant	VOC	NOx	SOx	PM_{10}	$PM_{2.5}$	CO
NRG El Segundo	1,114	2,783	167	1,837	1,819	14,210
Walnut Creek	229	1,046	73	731	723	1,684
CPV Sentinel	522	1,962	118	1,171	1,159	2,933
TOTAL Emissions	**1,865**	**5,790**	**358**	**3,739**	**3,701**	**18,827**
Emission Reductions from Projects funded by Sentinel Mitigation Fee	n/a	n/a	22	1,160	740	n/a
Remaining Emissions	**1,865**	**5,790**	**336**	**2,579**	**2,961**	**18,827**
SCAQMD Operational Significance Threshold	55	55	150	150	55	550
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

[6] The FSAs for the three power plants did not include operational PM2.5 mass emissions. Using established standards for determining the percentage of PM_{10} that is PM2.5, operational PM2.5 emissions from all three power plants were calculated. For example, 89 percent of PM_{10} emissions from off-road equipment are PM2.5 emissions, 21 percent of fugitive PM_{10} emissions from construction and demolition are PM2.5 emissions, and 99 percent of PM_{10} emissions from stationary combustion sources are PM2.5 emissions.

Table 4.1-8 presents the cumulative operational total for mass emissions of criteria pollutants from stationary sources, by adding the comparable values in Tables 4.1-6 and 4.1-7 in pounds per day by year 2030. As shown in the tables below, the cumulative impact is significant. The proposed project is determined to make a cumulatively considerable contribution to this significant impact.

TABLE 4.1-8

Total Cumulative Stationary Source Mass Emissions (lbs/day) in Year 2030

	VOC	NOx	SOx	PM_{10}	$PM_{2.5}$	CO
Cumulative stationary source emissions	99,600	7,420	1,720	10,480	6,640	14,260
Power Plant Projects – Post Mitigation	1,865	5,790	336	2,579	2,961	18,827
TOTAL Cumulative Stationary Source Emissions	**101,480**	**13,220**	**2,080**	**13,580**	**9,940**	**32,660**
SCAQMD Operational Significance Threshold	55	55	150	150	55	550
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

All cumulative forecasted emissions. This component of the analysis describes project emissions projections in the larger context of all of the emissions forecasted in the 2007 AQMP from all sources.

In 2030, stationary source emissions of VOCs attributed to the proposed project are estimated at about 45 tons per day. (See Table 4.1-4.) This compares with the region-wide 2030 forecast of approximately 291 tons per day on average for stationary and area source emissions of VOCs (with total projected regional VOC emissions at approximately 508 tons per day). See 2007 AQMP, Appendix III, Table A-10 (annual average emissions) Project VOC emissions are less than ten percent of the total regional VOC emissions.

For NO_x emissions in 2030, stationary source emissions from the proposed project are estimated at about 3.3 tons per day. This compares with the region-wide 2030 forecast of approximately 76 tons per day on average for stationary and area source emissions of NO_x (with total projected regional NO_x emissions at approximately 512 tons per day). Project emissions are about 6/10ths of one percent of the total.

For SO_x emissions in 2030, stationary source emissions from the proposed project are estimated at less than 1 ton per day. This compares with the region-wide 2030 forecast of approximately 17 tons per day on average for stationary and area sources of SO_x (with total projected regional SO_x emissions at approximately 72 tons per day). Project emissions are about one percent of the total.

For PM10 emissions in 2030, stationary source emissions from the proposed project are estimated at about 4.5 tons per day. This compares with the region-wide 2030 forecast of approximately 282 tons per day on average for stationary and area source emissions of PM10 (with total projected regional PM10 emissions at approximately 330 tons per day). Project emissions are somewhat over one percent of the total.

The impacts under the proposed project are considered cumulatively considerable, and therefore significant, even though emissions attributed to the project represent a fraction of the cumulative future regional emissions projected in the 2007 AQMP.

Cumulative lead emissions. As discussed earlier under project impacts, staff determined that total lead emissions in the Basin are approximately 18 lbs/day (6,517 lbs/yr) based on fiscal year (FY) 2006-2007 data comprised of 566 facilities in SCAB that reported lead emissions. The SIC and county location of each facility identified the SIC growth rate listed in the 2007 AQMP (Appendix III, Table 2-5, 2007 AQMP, SCAQMD) for the years 2015, 2020 and 2030. Similar to the project, to account for the actual net increases and decreases during the time periods of the cumulative scenario (2007-2030), the overall net lead increases were separately estimated for each of these time periods. For the lead emitting facilities, there were some facilities with negative SIC growth factors. Thus, the cumulative net increase of lead emissions was determined to be lower than the project. The cumulative net increase in lead emission by 2030 in SCAB is estimated to be 0.63 pounds per day. Incremental cumulative lead impacts from all the attainment demonstration years are presented in Table 4.1-9. The cumulative lead impacts are less than the CEQA significance threshold of three pounds per day so cumulative lead impacts are not significant.

TABLE 4.1-9

Cumulative Lead Emissions

Years	Lead (lbs/day)
2007-2014	0.33
2007-2023	0.50
2007-2030	0.63

Regional Criteria Pollutant Concentrations - Project Impacts

The analysis below focuses on the Basin and the Coachella Valley, which are the two areas within the SCAQMD's jurisdiction that are designated as federal nonattainment regions under the CAA. The Riverside County portion of the MDAB, which is also within the SCAQMD's jurisdiction, is designated as a nonattainment region only with respect to the state standards (CAAQS) for ozone and PM10. Unlike the Basin and the Coachella Valley, this area of the SCAQMD's jurisdiction does not have a monitoring station to allow for the modeling of concentration-based impacts. This area is sparsely populated and has few stationary sources, so it is unlikely that project impacts would even approach the extent of impact in the Coachella Valley. However, it is conservatively assumed for purposes of the environmental analysis that any impact identified for the Coachella Valley would apply equally to this area of the MDAB.

This analysis supplements the preceding section that compared mass emissions to SCAQMD numeric significance thresholds. As explained above, the region-wide emissions of criteria pollutants attributed to the proposed project are considered significant in comparison to the SCAQMD's significance thresholds. No new threshold is applied to assess the regional concentrations of those same pollutants. The information in this section is provided to further inform the public and decision-makers regarding the degree to which the emissions attributed to the proposed project could contribute to concentrations of pollutants throughout the Basin and Coachella Valley.

For the region-wide analysis, the 2014, 2023 and 2030 future air quality was simulated for the without project and proposed project emissions scenarios. Regional concentrations of pollutants are discussed below in the following order: (a) ozone concentrations; (b) PM2.5 and PM10 concentrations; (c) SO2 and NO2 concentrations; (d) lead concentrations; and (e) CO concentrations.

a. Ozone Concentrations

In 1997, the USEPA adopted an 8-hour NAAQS for ozone of 0.08 parts per million, which equals 80 parts per billion (ppb). In 2008, the USEPA adopted a revised 8-hour NAAQS for ozone of 75 ppb. California has a more stringent 8-hour standard CAAQS for ozone of 70 ppb. California also has a 1-hour CAAQS for ozone of 90 ppb.

The NAAQS that served as the basis for the 2007 AQMP was the 1997 8-hour standard of 0.08 ppm (80 ppb). Through the issuance of the AQMP, the SCAQMD voluntarily requested a "bump up" in the ozone designations for the Basin and Coachella Valley. In accordance with this request, the USEPA changed the Basin's federal ozone designation from "severe-17" to "extreme," and the Coachella Valley's federal ozone designation from "serious" to "severe-15." As a result of these designations, the Basin is required to reach the 80 ppb ozone standard by 2024 (with emission reductions required to be in place by 2023). The Coachella Valley is required to reach the standard by 2019. The 2007 AQMP demonstrates attainment with the 80 ppb standard within these timeframes, with attainment in the Basin being achieved by 2024 and attainment in the Coachella Valley being achieved in 2018.

As explained above, the emissions estimates in the 2007 AQMP include emissions from future projected cumulative growth throughout the region. As a result, it is not anticipated that the emissions attributed to the proposed project would interfere with attainment of the 80 ppb federal ozone standard as demonstrated in the 2007 AQMP.

In the future, additional emissions reduction measures will be needed beyond the control measures identified in the 2007 AQMP in order to reduce ambient ozone levels to achieve attainment of the 75 ppb federal ozone standard adopted in 2008 and the

California 1-hour and 8-hour ozone standards (90 ppb and 70 ppb, respectively). It cannot be ascertained precisely when these standards will be attained. The 2007 AQMP projects attainment in the Basin and Coachella Valley will not occur until after 2024.

Air quality will improve under future conditions with or without the proposed project. The analysis below examines the further reductions in forecasted ambient ozone concentrations projected to occur without the project, as compared with future conditions projected to occur with the proposed project. Table 4.1-10 quantifies these reductions in terms of average and maximum 8-hour ozone concentrations for the Basin and the Coachella Valley for the years 2014, 2023 and 2030.

TABLE 4.1-10

Additional Reductions in Regional Ozone Concentrations under the Without Project Scenario

Year	**Basin Average Ozone** (ppb)	**Basin Maximum Station Ozone** (ppb)	**Coachella Valley Average Ozone** (ppb)	**Coachella Valley Maximum Station Ozone** (ppb)
2014	0.9	1.4	0.5	0.6
2023	1.5	1.9	0.8	1.1
2030	2.6	2.9	1.1	1.3

Given these reductions, it is possible that under the without project scenario attainment of the NAAQS and CAAQS could occur at an earlier date than under the conditions with the proposed project. However, for several reasons, it cannot be determined whether the without project scenario would in fact achieve attainment at an earlier date than under the proposed project, and if so when. These reasons include the magnitude of the ozone problem and amount of reductions that are needed; the long-term nature of the control measures needed to reduce ozone levels; and the relatively small amount of ozone attributable to the project as shown in Table 4.1-10 (which range from 0.5 to 2.9 ppb).

With respect to the 1997 federal ozone standard of 80 ppb, it is unclear whether the without project scenario would achieve attainment more quickly than would be the case under the proposed project. For the Basin, per federal guidance, the 2007 AQMP relies on long-term measures resulting from new and emerging technologies that likely will not be in place until the attainment date of 2024 approaches. Without these long-term measures, maximum ozone concentrations in the Basin would exceed 90 ppb. In addition, there are no interim dates prior to 2024 for achieving any particular level of ozone reductions. Furthermore, given these factors, predictions cannot be made about how the projected reductions in ambient ozone concentrations under the without project scenario might translate into a specific timeframe for attaining the 80 ppb standard, as compared with conditions under the proposed project. More specifically, it is impossible to determine whether an additional reduction of the maximum ozone concentration of 2 ppb in 2023 under the without project scenario would accelerate the Basin's current attainment date of 2024. Standing alone, this reduction of 2 ppb would not be sufficient to achieve attainment. Rather, substantial additional reductions would be needed, and these reductions likely will not occur until shortly before 2024.

For the Coachella Valley, the 2007 AQMP projected a maximum ozone concentration of 88 ppb in the year 2013. But in 2014, the without project scenario is estimated to result in a reduction of only 0.6 ppb in the maximum ozone concentration, as compared to future conditions with the proposed project. This small reduction likely would not accelerate the projected attainment date of 2018 with respect to the 80 ppb ozone standard.

Nevertheless, it is possible that the reductions shown in Table 4.1-10 could lead to earlier attainment with one or more of the relevant ozone standards, as compared with conditions under the proposed project. For example, even when the Basin has attained the federal 80 ppb ozone standard, the 2008 federal ozone standard will require a further reduction in ozone levels on the order of 5 ppb (i.e., from 80 to 75 ppb). According to the projections in Table 4.1-10 for the year 2030, the without project scenario would reduce maximum ozone levels by approximately 3 ppb, which is more than half of this amount. Given that the reductions from the without project scenario are substantial in relation to the reductions to be achieved, the without project scenario could accelerate attainment with the 75 ppb standard, as compared with the conditions under the proposed project. It is also possible that the without project scenario would accelerate attainment of the California ozone standards, although as noted above it is not possible to predict when attainment might occur in comparison to the future conditions with the proposed project.

As explained in the discussion of mass emissions of criteria pollutants, the impact of the project is considered significant because it may cause or contribute to a violation of a federal or state ozone standard based on the SCAQMD's significance thresholds for emissions of criteria pollutants that are ozone precursors. The foregoing analysis provides additional information about the degree to which the without project scenario could accelerate attainment compared to conditions with the project.

b. Particulate Matter Concentrations

The Basin is designated as a state and federal nonattainment region for PM10 and PM2.5. The Coachella Valley is designated a state and federal nonattainment region for PM10 (but not for PM2.5).

With respect to PM10, the USEPA has established a 24-hour NAAQS of 150 micrograms per cubic meter of air ($\mu g/m^3$).[7] Monitored PM10 in both the Basin and the Coachella Valley has not exceeded this standard for several years. The SCAQMD has accordingly submitted a request to the USEPA to redesignate both areas as federal attainment regions for PM10. California has established a 24-hour CAAQS of 50 $\mu g/m^3$ and an annual CAAQS of 20 $\mu g/m^3$. The 2007 AQMP projects that the Basin will attain the state standards at some point after 2024. The Coachella Valley is "unclassified" for attainment with the state's PM2.5 standard, however, observed PM2.5 values in the Coachella

[7] In 2006, the USEPA revoked the annual NAAQS for PM_{10}.

Valley are routinely 80 percent of the annual state standard and 75 percent of the 24-hour state standard (same as the federal standard).

With respect to PM2.5 in the Basin, the USEPA previously established a 24-hour NAAQS of 65 $\mu g/m^3$; in 2006 the USEPA lowered this standard to 35 $\mu g/m^3$. The USEPA has also established an annual NAAQS of 15 $\mu g/m^3$. The 2007 AQMP determined that the Basin has already attained the 24-hour NAAQS of 65 $\mu g/m^3$, and demonstrated attainment with the annual NAAQS by 2015. The CAA requires periodic updates of the AQMP to demonstrate further emissions reductions to attain the 24-hour NAAQS. The 2007 AQMP projects that the Basin will achieve attainment with this standard at some point after 2020. California has established an annual CAAQS of 12 $\mu g/m^3$. The 2007 AQMP projects that the Basin will attain this standard at some point after 2024.

As explained above, the 2007 AQMP includes all projected growth and cumulative air emissions in the region and the proposed project is not expected to cause the region to exceed the level of growth projected in the AQMP. Therefore, the proposed project would not interfere with the attainment demonstrations made in connection with the 2007 AQMP and the 2010 PM10 maintenance plans– specifically, the continued attainment of the NAAQS for PM10; continued attainment of the 24-hour NAAQS for PM2.5 of 65 $\mu g/m^3$, and the Basin's attainment by 2015 of the annual NAAQS for PM2.5 of 15 $\mu g/m^3$.

However, it is possible that the without project scenario could result in emissions reductions that would, in turn, lead to earlier attainment with other relevant particulate matter standards, as compared with conditions under the proposed project. Table 4.1-11 quantifies the estimated reductions in PM2.5 concentrations under the without project scenario in comparison with the scenario with the proposed project. As with the reductions in ozone concentrations, it cannot be determined whether these reductions under the without project scenario would translate, if at all, into earlier compliance with federal or state PM2.5 standards.

TABLE 4.1-11

Additional Reductions in Regional PM2.5 Concentrations under the Without Project Scenario

Year	**Basin Annual Average PM2.5** ($\mu g/m^3$)	**Basin Daily Average PM2.5** ($\mu g/m^3$)	**Coachella Valley Annual Average PM2.5** ($\mu g/m^3$)	**Coachella Valley Daily Average PM2.5** ($\mu g/m^3$)
2014	0.06	0.6	0.01	0.1
2023	0.15	1.2	0.03	0.1
2030	0.21	1.6	0.05	0.2

Given the very small amount of reductions in PM2.5 concentrations under the without project scenario for the Coachella Valley, it is not likely that there would be any difference in the Valley's PM2.5 designation as between the without project and with project scenarios. The Coachella Valley is "unclassified" for attainment with the state's PM2.5 standard.

It is also not likely that the reductions in the Basin would lead to attainment of the annual PM2.5 NAAQS (15 $\mu g/m^3$) any earlier than the 2015 date projected in the 2007 AQMP, especially since the majority of the control measures slated to attain this standard are not scheduled for implementation until 2014. However, the reductions under the without project scenario become larger over time and as a result could influence the Basin's future attainment with the 24-hour NAAQS of 35 $\mu g/m^3$ and the annual CAAQS of 12 $\mu g/m^3$.

With respect to PM10, Table 4.1-12 quantifies the reductions in emissions concentrations under the without project scenario. As noted above, the SCAQMD has requested that the USEPA redesignate both the Basin and the Coachella Valley as federal attainment areas for PM10. Ambient PM10 concentrations in the Basin are typically less than two-thirds of the NAAQS and the Basin has been in compliance with the NAAQS for more than 5 years. Ambient PM10 concentrations (excluding exceptional events) in the Coachella Valley are approximately 80 percent of the NAAQS. Based on the data, the differences in PM10 concentrations as between the proposed project and without project scenarios would not make any measurable difference in terms of attainment with the NAAQS.

However, California's PM10 standards are stricter than the NAAQS and both regions are designated as state nonattainment areas. As with PM2.5 emissions, given the very small amount of reductions in PM10 concentrations under the without project scenario in the Coachella Valley, it is unlikely that this scenario would lead to an earlier attainment date for the CAAQS as compared to future with project conditions. However, for the Basin, it is possible that the emissions reductions under the without project scenario would lead to an earlier CAAQS attainment date, especially in light of the fact that compliance with the CAAQS is not projected until some point after 2024 and given the reductions under the without project scenario in construction and mobile source emissions (which cannot be quantified and therefore are not included in Table 4.1-12).

As explained in the discussion of mass emissions of criteria pollutants, the impact of the project is considered significant because it may cause or contribute to a violation of a federal or state PM10 and PM2.5 standards based on the SCAQMD's significance thresholds for emissions of criteria pollutants. The foregoing analysis provides additional information about the degree to which the without project scenario could accelerate attainment compared to conditions with the project.

TABLE 4.1-12

Additional Reductions in Regional PM10 Concentrations under the Without Project Scenario

Year	Basin Annual Average PM10 ($\mu g/m^3$)	Basin Daily Average PM10 ($\mu g/m^3$)	Coachella Valley Annual Average PM10 ($\mu g/m^3$)	Coachella Valley Daily Average PM10 ($\mu g/m^3$)
2014	0.12	0.7	0.01	0.1
2023	0.32	1.8	0.03	0.1
2030	0.47	2.5	0.05	0.2

c. SO2 and NO2 Concentrations

Both the Basin and the Coachella Valley are designated as federal attainment regions for SO2. The Basin is also designated as a state attainment region for SO2, while the Coachella Valley is designated as unclassified, which means there is insufficient data to make a designation of attainment or nonattainment.

For the Basin, ambient SO2 concentrations over a five year period (2004-2008) are only 30 percent of the 1-hour CAAQS (250 ppb) and 28 percent of the more protective 24-hour CAAQS (40 ppb). The observed maximum annual average is approximately seven percent of the annual NAAQS (30 ppb). Furthermore, the maximum incremental difference in SO2 concentrations from stationary sources as between the proposed project and the without project scenario is projected at 1.3 percent in 2014 and 1.7 percent in 2023 and 2030. The maximum difference in 1-hour average concentrations is 1.0 ppb or less in all years.

In light of these numbers, the reductions in SO2 concentrations under the without project scenario likely would not make any difference in the Basin's attainment designation for this pollutant, as compared to future conditions with the proposed project.

On June 3, 2010, U.S. E.P.A. finalized a new NAAQS for SO2 of 0.075 ppm. Attainment of the standard is measured by the 4th highest 1-hour value per year, averaged over 3 years. While peak maximum 1-hour concentrations could equal the new standard, the 2004-2008 average of the Basin's 4th highest 1-hour SO2 concentration is approximately 50 percent of the new standard. The emissions attributed to the project, therefore, are not expected to result in an exceedance of either the existing or newly adopted SO2 standards in the Basin.

Due to the limited number of sources in the area, there is no SO2 monitoring station in the Coachella Valley. Total SOx emissions from all point and area sources is approximately 0.04 tpd in the Valley (less than one tenth of one percent of the Basin SOx emissions). The project's contribution to SOx concentrations in the Coachella Valley are expected to be less than 1 ppb and are not expected to result in an exceedance of any SO2 standard in the Valley. Regional SO2 concentrations are listed in Table 4.1-13.

TABLE 4.1-13

Additional Reductions in Regional SO2 Concentrations under the Without Project Scenario

Year	**Basin 1-Hour Average SO2** (ppb)	**Basin 24-Hour Average SO2** (ppb)	**Basin Annual Average SO2** (ppb)
2014	1.0	0.0	0.0
2023	1.0	0.0	0.0
2030	1.0	0.0	0.0

With respect to NO2, the Basin is in compliance with the annual NAAQS of 53 ppb, but has recently been classified by CARB as a nonattainment region for the new annual CAAQS of 30 ppb. The current estimate is that the Basin and Coachella Valley are in attainment with the federal 1-hour standard.

The exceedance of the new annual CAAQS is fractional (four percent) and is expected to be remedied in the near-term due to emissions controls that will be implemented to meet the 2015 attainment date for the annual PM2.5 NAAQS. Further, the maximum incremental difference in NO2 concentrations from stationary sources as between the proposed project and without project scenario is projected at only 0.7 percent in 2014, 1.1 percent in 2023 and 1.3 percent in 2030. This translates into at most a 1 ppb difference in the daily maximum 1-hour average and less than a 0.5 ppb difference in the annual average.

The Basin remains in compliance with the federal annual standard. The maximum annual average concentration for the period 2004-2008 is approximately 59 percent of the federal annual standard. Moreover, the Basin is in compliance with the state 1-hour standard, with the peak 1-hour concentration during the five year period 2004-2008 at 77 percent of the state standard.

Using an emissions weighted approach, the maximum potential incremental increased contribution to Basin NO2 from the project would be less than 1 ppb in 2014 and 1 ppb in 2023 and 2030, for 1-hour or annual averages. In all cases, the NO2 contribution from the project represents only a small fraction of the California and federal standards, and is not expected to result in exceedance of the existing standards or delay in attaining the new state standard.

The Basin is projected to remain in attainment for federal standards and state 1-hour standards and to be in attainment with the new state annual average NO2 standards by 2015. The small emissions reductions attributable to the without project scenario would not be expected to accelerate this near-term compliance date. Reductions in NO2 concentrations under the without project scenario are shown in Table 4.1-14.

As explained in the discussion of mass emissions of criteria pollutants, the impact of the project is considered significant because it may cause or contribute to a violation of a federal or state SO2 and NO2 standards based on the SCAQMD's significance thresholds for emissions of SOx and NOx. The foregoing analysis provides additional information about the degree to which the without project scenario could accelerate attainment compared to conditions with the project.

TABLE 4.1-14

Additional Reductions in Regional NO2 Concentrations under the Without Project Scenario

Year	**Basin 1-Hour Average NO2** (ppb)	**Basin Annual Average NO2** (ppb)	**Coachella Valley 1-Hour Average NO2** (ppb)	**Coachella Valley 24-Hour Average NO2** (ppb)
2014	0.0	0.0	0.0	0.0
2023	1.0	0.0	0.0	0.0
2030	1.0	0.0	0.0	0.0

d. Lead Concentrations

CARB has recently recommended that the USEPA designate the portion of the Basin that is located within Los Angeles County as a federal non-attainment region for the new federal NAAQS for lead (adopted by the USEPA in 2008), which is a rolling three-month average of 0.15 micrograms per cubic meter of air ($\mu g/m^3$). The USEPA has proposed to make this designation, which is expected to become final in October 2010. CARB has also recently adopted a regulation designating the Los Angeles County portion of the Basin as a state nonattainment region for the CAAQS for lead, which is a 30-day average of 1.5 $\mu g/m^3$. Facilities that use or process lead are only rarely permitted by the SCAQMD and very few sources emit sufficient levels of lead to cause or contribute to a nonattainment problem. There are two such sources in Los Angeles County, both battery recycling facilities.

The SCAQMD has a rule in effect (Rule 1420) that applies to any facility that uses or processes lead-containing materials, and prevents emissions from any such facility from exceeding 1.5 $\mu g/m^3$ beyond the property line on a monthly average basis. The SCAQMD is in the process of adopting a new rule (proposed Rule 1420.1 for battery recycling facilities) and a rule amendment (proposed amendment to Rule 1420 for all other stationary sources) that will limit emissions to preclude exceeding the new NAAQS of 0.15 $\mu g/m^3$ at the facility property line. In light of this rulemaking, it is not anticipated that any facilities would be permitted under the proposed project that would cause or contribute to a violation of a federal or state ambient standard for lead.

e. CO Concentrations

Carbon monoxide (CO) impacts from the proposed project are expected to be minimal. The Basin is in attainment of both the California and federal 1–hour and 8-hour standards. Current maximum ambient concentrations are less than 50 percent of the 8-hour standard in the most heavily impacted portions of the Basin. The 2008 winter planning emissions inventory (2007 AQMP, Appendix III) estimated total Basin emissions at 3,180 tons per day. Mobile sources account for more than 91 percent of the emissions inventory. The stationary and area source inventory comprises less than nine percent of the total at 281 TPD.

Ambient concentrations of carbon monoxide respond linearly to changes in the emissions inventory. Emissions weighted linear rollback is the methodology used to estimate the project impact to ambient CO concentrations. Table 4.1-15 summarizes the results. The proposed project is estimated to contribute to ambient CO concentrations in an amount less than 0.1 part per million, for all years simulated. The project would not affect the Basin's attainment status (either California or federal standard).

TABLE 4.1-15

Regional CO Concentrations from the Proposed Project

Year	**CO Impact** (ppm)
2014	0.00
2023	0.01
2030	0.01

<u>Regional Criteria Pollutant Concentrations - Cumulative impacts of all sources using SCAQMD internal account offsets</u>

Table 4.1-16 below quantifies the subtotal of regional concentrations of ozone from all sources using SCAQMD internal account offsets in terms of the difference in ozone concentrations as between the cumulative project scenario and the without project scenario.

The PEA has previously identified a significant project-level impact due to the difference in mass emissions of ozone precursors under with project conditions in comparison to without project conditions. The PEA also previously explained that the cumulative impact would similarly be significant and the proposed project is determined to make a cumulatively considerable contribution to this impact. The analysis of regional concentrations of ozone from the project combined with other sources using offsets is intended to supplement the analysis of mass emissions by providing more analysis to determine the magnitude of the cumulative effect.

TABLE 4.1-16

Cumulative Projects' Contribution to Regional Ozone Concentrations

Year	**Basin Average Ozone** (ppb)	**Basin Maximum Station Ozone** (ppb)	**Coachella Valley Average Ozone** (ppb)	**Coachella Valley Maximum Station Ozone** (ppb)
2014	1.1	1.8	0.8	0.8
2023	2.0	2.5	1.0	1.3
2030	3.0	3.5	1.3	1.6

Table 4.16 presents the contribution to average ozone concentrations for the Basin from the cumulative projects using internal account offsets. Table 4.1-17 presents a similar comparison for PM2.5 concentrations, while Table 4.1-18 presents this comparison for PM10 concentrations.

As described above, there is a significant project-level impact as a result of PM2.5 and PM10 emissions from the proposed project as compared with the without project scenario based on exceeding the mass daily significance thresholds (Table 4.1-4). Taking into account the emissions from the cumulative projects (including the three power plants) the PEA previously explained that the cumulative impact is similarly significant. The PEA concluded that the proposed project would make a cumulatively considerable contribution to this significant impact. Tables 4.1-17 and 4.1-18, below, provide further detail regarding this cumulative impact by identifying the contribution to regional concentrations of PM2.5 and PM10 from the project plus other sources relying on internal account offsets.

TABLE 4.1-17

Cumulative Projects' Contribution to Regional PM2.5 Concentrations

Year	**Basin Annual Average PM2.5** (μg/m^3)	**Basin Daily Average PM2.5** (μg/m^3)	**Coachella Valley Annual Average PM2.5** (μg/m^3)	**Coachella Valley Daily Average PM2.5** (μg/m^3)
2014	0.18	1.1	0.04	0.1
2023	0.26	1.8	0.06	0.2
2030	0.32	2.2	0.07	0.2

TABLE 4.1-18

Cumulative Projects' Contribution to Regional PM10 Concentrations

Year	Basin Annual Average PM10 ($\mu g/m^3$)	Basin Daily Average PM10 ($\mu g/m^3$)	Coachella Valley Annual Average PM10 ($\mu g/m^3$)	Coachella Valley Daily Average PM10 ($\mu g/m^3$)
2014	0.38	1.8	0.04	0.1
2023	0.57	2.8	0.06	0.2
2030	0.71	3.5	0.07	0.2

Tables 4.1-19 and 4.1-20 provide the cumulative project's contributions to regional SO2 and NO2 concentrations. Using an emissions weighted approach, the maximum potential incremental cumulative increased contribution to 1-hour Basin SO2 would be 1.0 parts per billion maximum concentration in each of the three time periods: 2014, 2023 and 2030 as shown in Table 4.1-19. No measurable contribution is projected for the Basin SO2 24-hour or annual standards. The cumulative projects' contributions to regional SO2 concentrations shown in Table 4.1-19 reflect only a minor fraction of the California SO2 standards at 250 ppb for 1-hour average and 40 ppb for 24-hour average, and the federal SO2 standards at 75 ppb for 1-hour average and 30 ppb for annual average.

TABLE 4.1-19

Cumulative Projects' Contributions to Regional SO2 Concentrations

Year	Basin 1-Hour Average SO2 (ppb)	Basin 24-Hour Average SO2 (ppb)	Basin Annual Average SO2 (ppb)
2014	1.0	0.0	0.0
2023	1.0	0.0	0.0
2030	1.0	0.0	0.0

The cumulative projects' contribution to regional NO2 concentrations range from 0.0 to 2.0 ppb for the Basin and Coachella Valley as presented in Table 4.1-20. The cumulative projects' contribution to regional NO2 concentrations shown in Table 4.1-20 reflect only a minor fraction of the California NO2 standards at 180 ppb for 1-hour and 30 ppb for annual average, and the federal NO2 standard of 53 ppb for annual average.

TABLE 4.1-20

Cumulative Projects' Contribution to Regional NO2 Concentrations

Year	**Basin 1-Hour Average NO2** (ppb)	**Basin Annual Average NO2** (ppb)	**Coachella Valley 1-Hour Average NO2** (ppb)	**Coachella Valley 24-Hour Average NO2** (ppb)
2014	1.0	0.0	1.0	0.0
2023	2.0	0.0	1.0	0.0
2030	2.0	0.0	1.0	0.0

Overall, the cumulative projects' contributions to SO2 and NO2 concentrations are not projected to result in an exceedance of the existing and newly adopted NO2 and SO2 state and federal standards.

As discussed under the proposed project analysis, CO impacts from the cumulative projects are expected to be minimal because the Basin is in attainment of both the California and federal 1–hour and 8-hour standards and current maximum ambient concentrations are less than 50 percent of the 8-hour standard in the most heavily impacted portions of the Basin. Table 4.1-21 summarizes the cumulative projects' contribution to regional CO concentrations, which are less than 0.1 part per million, for all years simulated. Thus, the cumulative projects would have no impact on the Basin's attainment status (either California or federal standard).

TABLE 4.1-21

Cumulative Projects' Contribution to Regional CO Concentrations

Year	**CO Impact** (ppm)
2014	0.01
2023	0.02
2030	0.02

<u>Localized Criteria Pollutant Concentrations</u>

In accordance with the methodology described in Chapter 4.0, the results of the modeling analysis for localized concentrations of particulate matter and NO2 are presented in the following discussion. This analysis evaluates concentrations of pollutants that may result from individual sources based on modeling for representative categories of facilities that receive permits from the SCAQMD. The actual permitted sources may result in lower concentrations of pollutants than the modeled concentrations shown in this analysis. The results include estimated concentrations for both the 50^{th} and 95^{th} percentile emission rates for both short- and long-term exposure periods. These concentrations are then compared to the SCAQMD's significance thresholds in Table 4.1-2. The highest results from three years of meteorological data (2005-2007) are presented for each of the three meteorological station locations evaluated (i.e., Azusa, Burbank, and La Habra[8]). Additional results, including results from all three modeled years, are presented in the *Air Quality Analysis* in Appendix C to this PEA.

Summaries of the maximum ambient concentrations are presented in the tables below, with exceedances noted in bold, for each permit category for each of the three representative worst-case locations. The concentrations shown are for direct stationary source emissions and estimate localized concentrations based on the modeling.

a. Particulate Matter

The refined analysis of potential localized PM2.5 impacts identified the following representative facility categories that exceeded applicable significance thresholds at the 50th percentile emissions rate: tar pots (includes emissions from both molten asphalt inside the kettle and from the combustion of liquefied petroleum gas, which is used to heat the asphalt), blasting (abrasive), and equipment processing (typically cement processing). Exceedances were estimated for all three representative facility permit categories for the maximum 24-hour time period; the annual threshold was also exceeded for equipment processing. Of these representative facility permit categories, only emissions modeled for the tar pot category resulted in total concentrations (ambient concentrations plus project concentrations) exceeding the significance threshold by a substantial amount, with exceedances observed for all three meteorological stations modeled. Exceedances for the other two categories were small, and may not occur at locations without worst-case meteorology. It should be noted that the analysis of tar pot emissions was conducted only for the 24-hour averaging period because it was assumed that tar pots would not remain in one location for a long duration; thus, the annual-average exposures are expected to be relatively low and would not be expected to exceed any localized air quality significance threshold based on annual averages. The significance determination for PM2.5 impacts is based on an incremental increase in concentrations that exceed an established threshold.

At the 95th percentile emission rate, in addition to the three representative facility categories that exceeded PM2.5 thresholds at the 50th percentile emission rate, the following three additional representative facility permit categories were shown to exceed applicable significance thresholds: spray booths, gas turbine engines greater than 50 megawatts (MW), and asphalt. The analysis showed that the tar pots representative facility category continued to exceed the significance threshold by the largest amount, with exceedances again only estimated for the 24-hour averaging period (tar pot emissions were analyzed only for the maximum 24-hour time period for the same reasons given in the discussion of 50th percentile emissions rate analysis). The abrasive blasting permit category also showed potential for exceeding the 24-hour significance threshold level. Sources covered by tar pots and blasting permits were assumed to operate for

[8] The Azusa, Burbank, and La Habra air quality monitoring stations were selected for the modeling analysis because they represent "worst-case" ambient air quality conditions, i.e., the locations with the highest ambient concentrations.

fewer weeks per year and days per week than most other categories, which results in an increase in modeled 24-hour concentrations.

TABLE 4.1-22

PM2.5 Maximum Concentration Over Three Years (2005-2007) Using the 50th Percentile Emissions Rate

Permit Category	Time Scale	Estimated Project Concentration (μg/m³)			Threshold (μg/m³)
		Azusa	Burbank	La Habra	
Spray Booth and Equipment	24-hour	1.2	1.4	1.7	2.5
	Annual	0.46	0.33	0.47	1
Heater/Furnace	24-hour	0.59	0.58	0.39	2.5
	Annual	0.13	0.13	0.13	1
Tar Pot	24-hour	**9.2**	**8.8**	**12.5**	2.5
	Annual	0.07	0.06	0.07	1
Tanks and Storage	24-hour	2.3	2.5	2.5	2.5
	Annual	0.75	0.74	0.82	1
Blasting	24-hour	**3.6**	**3.7**	**4.3**	2.5
	Annual	0.03	0.02	0.02	1
Equipment Process	24-hour	**3.2**	**3.0**	**3.7**	2.5
	Annual	**1.3**	1.0	**1.3**	1
Blending	24-hour	0.47	0.43	0.78	2.5
	Annual	0.17	0.15	0.26	1
Turbine Engine > 50 Megawatts	24-hour	1.1	1.0	0.9	2.5
	Annual	0.22	0.13	0.20	1
Afterburner	24-hour	0.14	0.12	0.07	2.5
	Annual	0.03	0.02	0.02	1
Asphalt	24-hour	1.1	1.0	1.1	2.5
	Annual	0.27	0.22	0.24	1

TABLE 4.1-23

PM2.5 Maximum Concentration Over Three Years (2005-2007) Using the 95th Percentile Emissions Rate

Permit Category	Time Scale	Estimated Project Concentration ($\mu g/m^3$)			Threshold ($\mu g/m^3$)
		Azusa	Burbank	La Habra	
Spray Booth and Equipment	24-hour	**3.6**	**3.5**	**3.6**	2.5
	Annual	0.94	**1.2**	0.76	1
Heater/Furnace	24-hour	1.06	0.92	0.61	2.5
	Annual	0.19	0.25	0.15	1
Tar Pot	24-hour	**112.4**	**110.1**	**215.9**	2.5
	Annual	0.29	0.35	0.22	1
Tanks and Storage	24-hour	1.7	1.7	1.8	2.5
	Annual	0.48	0.56	0.37	1
Blasting	24-hour	**47.9**	**56.8**	**52.2**	2.5
	Annual	0.09	0.10	0.11	1
Equipment Process	24-hour	**2.8**	**2.6**	1.6	2.5
	Annual	0.54	0.70	0.47	1
Blending	24-hour	0.23	0.22	0.23	2.5
	Annual	0.08	0.10	0.06	1
Turbine Engine > 50 Megawatts	24-hour	**3.8**	**2.9**	2.3	2.5
	Annual	0.73	0.91	0.53	1
Afterburner	24-hour	1.1	1.0	0.56	2.5
	Annual	0.18	0.23	0.15	1
Asphalt	24-hour	**4.6**	**4.5**	**4.0**	2.5
	Annual	1.0	**1.3**	0.84	1

Although the tables above show potential significant adverse localized PM2.5 concentrations for some representative facility categories, it is unlikely that future facilities obtaining permits through either Rule 1304 or 1309.1 would generate this level of impacts for the following reasons. First, the concentration results are based on worst-case assumptions. For example, the distance to the sensitive receptor was assumed to be 50 meters for most representative facility categories, and 10 meters was used for a few categories such as tar pots. Second, equipment generally does not operate at its full potential to emit. Finally, SCAQMD Rule 1303(b)(1) would prohibit the issuance of a permit for a source that exceeds the standards set forth in Appendix A (Table A-2) to that rule; in turn, the Appendix A standards for particulate matter are the same as the significance threshold set forth above in Table 4.1-2 and in the right-hand column in

Tables 4.1-22 & 4.1-23.[9] Thus, under Rule 1303, permit units shown by modeling to exceed these standards would not be permitted by the SCAQMD. This conclusion may not be correct for the tar pot and abrasive blasting equipment, which may be portable equipment exempt from modeling. (Rule 1304(a)(3) & (a)(7).)

Nevertheless, the PEA determines that the impact resulting from the proposed project would be significant in terms of localized particulate matter concentrations. This finding is based on the data presented in the tables above.

b. NO2 Emissions

Determining significance for NO2 emissions requires knowledge of the ambient NO2 concentrations in the area where the project would be located. To determine significance, an individual project's NO2 emissions are modeled to obtain emissions concentrations. The individual project's emissions concentrations are then added to the local ambient NO2 concentrations to obtain a maximum total NO2 concentration. If any maximum total NO2 concentration exceeds the applicable localized NO2 significance threshold, localized NO2 impacts are considered to be significant. The table below shows the ambient NO2 concentrations for the three locations used to conduct the modeling analyses for the proposed project.

TABLE 4.1-24

Ambient NO2 Concentrations

Year	Time Scale	Estimated Ambient Concentration ($\mu g/m^3$)			Threshold ($\mu g/m^3$)
		Azusa	Burbank	La Habra	
2005	1-hour	223.1	187.9	204.2	338
	Annual	**57.5**	**58.3**	42.4	56
2010	1-hour	205.1	175.8	188.7	338
	Annual	48.9	49.9	34.6	56
2030	1-hour	146.2	137.0	188.0	338
	Annual	25.4	**65.9**	23.3	56

The following two tables show the maximum incremental NO2 concentrations for representative facility categories that were modeled for each of the three years from 2005 through 2007 at the three meteorological stations used to perform the modeling analysis for NO2. In all cases where the background concentrations are below the localized significance threshold, the total NO2 concentration (i.e., incremental plus background) is also less than the SCAQMD's localized significance threshold.

[9] It should be noted that Rule 1303 does not currently include modeling requirements for PM2.5. However, PM2.5 is a subset of PM_{10}, and the SCAQMD's significance threshold for PM2.5 is the same as the significance and modeling threshold for PM_{10}. Therefore, any facility that would exceed the significance threshold for PM2.5 would necessarily exceed the threshold for PM_{10}.

While the SCAQMD no longer has incremental significance thresholds for NO2 in areas exceeding the NO2 standards, it formerly had such thresholds, which were 20 $\mu g/m^3$ (1-hour) and 1 $\mu g/m^3$ (annual). If one were to apply these former incremental thresholds, the emissions shown in bold in the two tables below would be considered significant. However, except for the tar pot and soil treatment vapor extraction, which may be portable equipment exempt from modeling requirements, no such permits would actually be issued, since the emissions would exceed the levels allowed by Rule 1303, which are the same as the former CEQA significance thresholds.

Nevertheless, the PEA determines that the impact resulting from the proposed project would be significant in terms of localized NO2 concentrations. This finding is based on the data presented in the tables in this section.

TABLE 4.1-25

NO2 Maximum Concentration Over Three Years (2005-2007) Using the 50th Percentile Emissions Rate

Permit Category	Time Scale	Estimated Incremental Concentration ($\mu g/m^3$)		
		Azusa	Burbank	La Habra
Spray Booth and Equipment	1-hour	6.7	5.7	5.9
	Annual	0.13	0.09	0.13
Heater/Furnace	1-hour	3.5	3.6	3.1
	Annual	0.17	0.10	0.13
Tar Pot	1-hour	18.3	9.8	11.1
	Annual	0.01	0.01	0.01
Equipment Process	1-hour	**97.9**	**72.6**	**76.4**
	Annual	**2.5**	**1.6**	**2.2**
Afterburner	1-hour	1.2	1.2	1.1
	Annual	0.08	0.04	0.07
Asphalt	1-hour	13.8	13.9	15.2
	Annual	0.52	0.30	0.46
Internal Combustion Engine	1-hour	0.02	0.02	0.02
	Annual	0.002	0.001	0.002
Soil Treat Vapor Extract	1-hour	11.9	**28.0**	**45.9**
	Annual	0.96	0.84	0.89
Oven	1-hour	7.0	6.2	5.8
	Annual	0.17	0.12	0.15
Printing	1-hour	14.9	14.7	12.7
	Annual	0.36	0.25	0.31

Based upon the information in this section, as well as the information in Appendix C, impacts from localized concentrations of criteria pollutants are considered significant.

TABLE 4.1-26
NO2 Maximum Concentration Over 3 Years (2005-2007) Using the 95th Percentile Emissions Rate

Permit Category	Time Scale	Estimated Incremental Concentration ($\mu g/m^3$)		
		Azusa	Burbank	La Habra
Spray Booth and Equipment	1-hour	4.9	5.6	4.3
	Annual	0.20	0.12	0.16
Heater/Furnace	1-hour	4.6	4.8	4.4
	Annual	0.40	0.23	0.37
Tar Pot	1-hour	**45.7**	**24.5**	14.2
	Annual	0.02	0.02	0.02
Equipment Process	1-hour	**48.7**	**55.6**	**43.8**
	Annual	**2.6**	**1.4**	**1.9**
Afterburner	1-hour	13.2	12.9	11.5
	Annual	0.85	0.47	0.78
Asphalt	1-hour	13.9	14.0	15.3
	Annual	0.92	0.51	0.80
Internal Combustion Engine	1-hour	0.22	0.21	0.19
	Annual	0.02	0.01	0.02
Soil Treat Vapor Extract	1-hour	**23.8**	**56.1**	**91.7**
	Annual	**1.9**	**1.7**	**1.8**
Oven	1-hour	**30.2**	**29.8**	**27.8**
	Annual	**2.1**	**1.2**	**2.0**
Printing	1-hour	6.3	6.9	5.3
	Annual	0.34	0.19	0.25

3. Health Effects. Would the proposed project expose sensitive receptors to substantial pollutant concentrations?

This section evaluates the potential health effects to sensitive receptors posed by (a) region-wide emissions of criteria pollutants; (b) region-wide emissions of toxic air contaminants (TACs); and (c) localized concentrations of TACs.

a. Region-wide emissions of criteria pollutants

Project Impacts

Increases in criteria pollutant concentrations may result in potential adverse health effects including cardiovascular, neurological, reproductive and respiratory ailments. Health effects can be evaluated by modeling criteria pollutant concentrations, which can provide information on mortality, hospital admissions, emergency room visits, minor restricted activity days, school absence days, loss of work days, and cases of acute/chronic bronchitis, nonfatal heart attacks and adverse upper/lower respiratory conditions.

The current population in the district is approximately 17 million, and is expected to grow to approximately 20 million by 2030. As is shown in Table 4.1-27 below, CARB has estimated that there are approximately 6,500 premature deaths each year in the Basin resulting from exposure to ozone and PM2.5 concentrations. There are approximately 100,000 cases of asthma and other respiratory symptoms each year in the Basin due to these exposures. Results in Table 4.1-27 are based on CARB's monitored 2004-2006 PM2.5 concentrations not meeting the California annual standard of 12 µg/m3 and 2004-2006 ozone measurements not meeting the California 8-hour standard of 0.070 ppm.

TABLE 4.1-27

Basin Health Impacts From PM2.5 and Ozone Exposures

Health Outcome	Cases per Year	Uncertainty Range
Premature Death	6,500	2,100 to 11,000
Hospital Admissions	4,100	2,400 to 5,800
Asthma and other Respiratory Symptoms	100,000	42,000 to 160,000
School Absence Days	8,400	0 to 17,000
Work Loss Days	660,000	560,000 to 760,000
Minor Restricted Activity Days	5,200,000	3,700,000 to 6,600,000

Source: CARB Staff, October 2009; derived from CARB's 2009 statewide health impacts data found at http://www.arb.ca.gov/research/health/qhe/qhe.htm

The Final Socioeconomic Report for the 2007 AQMP explained the health benefits (or, conversely, the reductions in adverse health impacts) resulting from the emissions controls to be implemented under the AQMP.

In comparison with the with-project scenario, the without project scenario would result in additional health benefits beyond what is evaluated in the Final Socioeconomic Report for the 2007 AQMP.

Table 4.1-28 provides the health benefits predicted, or impacts avoided, when fully implementing the control measures under the 2007 AQMP relating to ozone. Ozone standards are expected to demonstrate attainment by year 2023. Thus, no other attainment years are listed in Table 4.1-28. In addition, the air quality due to ozone pollution is expected to continue to improve after the attainment of the ozone standard is reached in 2023.

TABLE 4.1-28

Estimated Ozone Health Benefits (Impacts Avoided) Predicted in 2007 AQMP (Basin and Coachella Valley)

Year	Mortality - Premature Deaths (people)	Hospital Admissions (people)	Minor Restricted Activity Days (days)	School Absences (days)
2023	200	1,200	842,700	888,200

Table 4.1-29 below summarizes the estimated additional ozone health improvements that would be achieved under the without project scenario, as compared to the future conditions under the proposed project. The table therefore depicts the incremental health impacts resulting from ozone emissions attributed to the proposed project. The table is based on the methodology used in the Final Socioeconomic Report for the 2007 AQMP and covers all areas of the district.

As shown in the table, in 2023 the without project scenario, as compared to future conditions under the proposed project, would result in the additional avoidance, beyond what was projected in the AQMP from ozone, of approximately 12 premature deaths, 71 hospital admissions, 49,513 minor restricted activity days, and 52,186 school absences. In the year 2030, the without project scenario would result in the avoidance from ozone of approximately 20 premature deaths, 122 hospital admissions, 85,339 minor restricted activity days, and 89,947 school absences. These impacts show additional benefits which could occur if the project were not implemented.

TABLE 4.1-29

Estimated Ozone Health Impacts - Health Benefits Foregone (Basin and Coachella Valley)

Year	Mortality - Premature Deaths (people)	Hospital Admissions (people)	Minor Restricted Activity Days (days)	School Absences (days)
2014	7	42	29,575	31,172
2023	12	71	49,513	52,186
2030	20	122	85,339	89,947

The avoidance of 12 premature deaths in 2023 under the without project scenario would represent an increase of six percent in the health benefits described in the 2007 AQMP, which projects that future emissions controls would avoid 200 premature deaths from ozone emissions in the year 2023. The avoidance of 71 hospital admissions in 2023 under the without project scenario similarly would represent an increase of six percent in health benefits described in the 2007 AQMP, which projects that future emissions controls would avoid 1,200 hospital admissions from ozone emissions in the year 2023.

Table 4.1-30 provides the health benefits predicted, or impacts avoided, when fully implementing the control measures under the 2007 AQMP relating to PM2.5 and PM10. Particulate annual PM2.5 matter standards are expected to be attained by the year 2014. Thus, no other attainment years are listed in Table 4.1-30. In addition, the air quality due to particulate matter pollution is expected to continue to improve after the attainment of the particulate matter standard is reached in 2014.

TABLE 4.1-30

Estimated PM2.5 and PM10 Health Benefits (Impacts Avoided) Predicted in 2007 AQMP (Basin and Coachella Valley)

Year	**Mortality** (deaths)	**Acute Bronchitis** (people)	**Chronic Bronchitis** (people)	**Non-fatal Heart Attacks** (people)	**Upper/ Lower Respiratory Illness** (people)	**Annual Emergency Room Visits**	**Hospital Admissions** (people)	**Minor Restricted Activity Days**	**Work Loss** (days)
2014	1,500	2,700	800	1,300	57,300	500	600	1,061,300	185,000

Table 4.1-31 below provides an analysis of potential additional benefits with respect to PM2.5 emissions. The 2007 AQMP projects that PM2.5 emission controls will avoid 1,500 premature deaths in the year 2014. The without project scenario would avoid an additional 33 premature deaths during the same timeframe (in 2014). Thus, the health benefits in terms of premature deaths avoided by not implementing the proposed project represent an additional 2.2 percent increase in benefits beyond what the AQMP projects.

The additional premature deaths avoided under the without project scenario increases to 86 and 125 in 2023 and 2030, respectively. However, it should be noted that the total premature deaths due to PM2.5 avoided under the AQMP would continue to increase well beyond 1,500, as a result of additional emission reductions in 2023 and 2030, although the totals for these years have not been calculated.

TABLE 4.1-31

Estimated PM2.5 and PM10 Health Impacts -Health Benefits Foregone (Basin and Coachella Valley)

Year	Mortality (deaths)	Acute Bronchitis (people)	Chronic Bronchitis (people)	Non-fatal Heart Attacks (people)	Upper/ Lower Respiratory Illness (people)	Annual Emergency Room Visits	Hospital Admissions (people)	Minor Restricted Activity Days	Work Loss (days)
2014	33	59	18	29	1,262	11	13	23,374	4,074
2023	86	155	46	74	3,283	29	34	60,814	10,601
2030	125	224	66	108	4,763	42	50	88,214	15,377

Given the magnitude of the health benefits under the without project scenario, the PEA finds that the health impacts of the proposed project from criteria pollutant emissions (ozone and PM2.5) would be significant.

Cumulative Impacts of all sources using SCAQMD internal account offsets

Table 4.1-32 summarizes the estimated cumulative ozone health improvements under the without project scenario, as compared to the cumulative scenario which includes the project and other sources using SCAQMD internal account offsets. Table 4.1-33 presents this same analysis for particulate matter.

TABLE 4.1-32

Estimated Cumulative Ozone Health Impacts Health Benefits Foregone (Basin and Coachella Valley)

Year	Mortality - Premature Deaths (people)	Hospital Admissions (people)	Minor Restricted Activity Days (days)	School Absences (days)
2014	9	54	37,662	39,696
2023	15	92	64,780	68,278
2030	24	143	100,213	105,624

TABLE 4.1-33

Estimated Cumulative Particulate Matter Health Impacts Health Benefits Foregone (Basin and Coachella Valley)

Year	**Mortality** (deaths)	**Acute Bronchitis** (people)	**Chronic Bronchitis** (people)	**Non-fatal Heart Attacks** (people)	**Upper/ Lower Respiratory Illness** (people)	**Annual Emergency Room Visits**	**Hospital Admissions** (people)	**Minor Restricted Activity Days**	**Work Loss** (days)
2014	102	184	55	89	3,908	34	41	72,384	12,618
2023	152	273	81	132	5,803	51	61	107,476	18,735
2030	189	341	101	164	7,231	63	76	133,938	23,347

Health effects resulting from emissions from the three power plant projects are included in the cumulative health impact analysis discussed above. However, facility-specific PM2.5 impacts from these 3 power plants are also included for completeness. The three power plants are unlikely to have overlapping impacts since they are located so far apart from one another (El Segundo, City of Industry, Coachella Valley). Facility-specific emissions and stack parameters from permit applications were used to estimate the PM2.5 concentrations at each census block group. The emissions analyzed in the permit applications are based on the facility's maximum allowable emissions, which is higher than the actual operational emissions, since the facility will not run at maximum capacity all the time. Therefore, the estimated impacts are considered to be conservative. It was assumed that the PM10 emissions are all PM2.5. The USEPA's recommended air quality dispersion model, AERMOD (version 09292), was used to estimate the PM2.5 concentrations from each facility. The SCAQMD's pre-processed meteorological data (available on the internet at http://aqmd.gov/smog/metdata/AERMOD.html) from the meteorological site closest to each facility was selected. The modeling performed was consistent with the SCAQMD's modeling guidance utilizing the regulatory default and urban option within AERMOD. However, the rural option was selected for CPV Sentinel due to the land uses within the vicinity of the facility location. Receptors were placed at all census block group centroids located within a 25 km radius of each facility.

The El Segundo Generating Station is an existing power generating facility that consists of four (4) utility boilers. The El Segundo Power Redevelopment Project involves the demolition and removal of three (3) boilers and the construction of two (2) new gas turbines to replace those boilers. Boilers 1 and 2 have been removed and Boiler 3 will be removed when the new gas turbines are operational. No changes to Boiler 4 are anticipated. Therefore, the incremental change in PM2.5 concentration at each census block was estimated by subtracting the existing concentrations due to Boilers 1, 2, and 3 from the concentrations due to new gas turbines.

The potential health effects from PM emissions from the three facilities were estimated using the CARB's methodology (CARB 2008, cited below).

The resulting change in cases of mortality in a population age group living in a specific location with a given change in PM was then calculated. The results by age group were then summed over the census block groups to give an overall estimate of the change in mortality from PM emissions of the facility.

Based on this methodology, the SCAQMD estimates that there may be an increase in annual adult mortality of 1.77 persons in the area of the Walnut Creek Energy Park, 0.05 persons in the area for El Segundo Power Redevelopment Project, and 0.19 persons in the area for CPV Sentinel Energy Project. The reference for this methodology is from CARB in their "Methodology for Estimating Premature Deaths Associated with Long-term Exposure to Fine Airborne Particulate Matter in California" (October 24, 2008). The methodology is also available and can be accessed online at http://www.arb.ca.gov/research/health/pm-mort/PMmortalityreportFINALR10-24-08.pdf.)

As stated by CARB, health impacts of PM exposure are commonly estimated at a state-wide or regional level. (CARB, 2008, page 36) However, CARB has developed this methodology to assist in estimating health impacts associated with exposure to PM resulting from specific sources in a limited geographic area, using the Ports of Los Angeles and Long Beach as an example. (Id.) CARB believes that "it is also reasonable to apply the PM2.5- mortality relationship to analyses of populations of small sizes, as long as uncertainties and limitations are explicitly stated." (CARB 2008, page 44)

The first uncertainty is in estimating the increase in risk of death in response to an increase in the concentration of PM2.5. In its study, CARB used an estimate of the relative risk of premature death of 10 percent for every 10 microgram per cubic meter increase in PM2.5 exposure, with a 3 to 20 percent confidence interval. (CARB 2008, p. 41). This means that while the increase in risk is estimated at 10 percent the actual increase in risk could vary from three to 20 percent. Accordingly, the actual results could be more or less resulting mortality than predicted by the methodology used in this document.

Second, when applying the methodology to a limited area, there is uncertainty in the baseline mortality rate. County-wide mortality data was used to generate the assumed mortality rate for the specific census tracts used in the analysis and there could be differences in the specific census tracts affected by the individual facility. (CARB 2008 page 45).

Third, in this case, because the power plants have not yet been built, the exposure concentration was estimated based on air quality modeling rather than direct ambient measurement. Finally, there is also uncertainty associated with modeling. (CARB 2008, page 47). Despite the uncertainties, the methodology developed in the CARB report and used here has been endorsed by CARB scientific advisors and has undergone an external peer review process.

As noted above, the proposed project is determined to have a significant health impact resulting from emissions of criteria pollutants. The cumulative impact is similarly significant, taking into account other stationary sources, receiving permits in reliance on offsets in the internal offset accounts including the three power plants. The PEA concludes that the proposed project would make a cumulatively considerable contribution to this significant impact.

b. Region-wide emissions of TACs

Currently, about one in three female and one in two male Californians contracts cancer at some time in their lives[10]. This represents an overall cancer risk of 330,000 to 500,000 in a million. According to the MATES-III study completed by SCAQMD in 2008, total Basin population-weighted cancer risk from air pollution is 853 in a million, which is based on the modeling exposures over the entire basin. Approximately 94 percent of this risk is caused by mobile source emissions, primarily diesel particulates (84 percent) and six percent from industrial sources. Total risk from industrial sources is approximately 51 in a million. Based on emissions from stationary sources, the difference in cancer risk between implementing the proposed project and not implementing it in 2014 would be 1 in a million, or about 2 tenths of one percent of the projected 2014 total of 556 in a million, Table 4.1-35, below. This difference increases to as much as 4.5 in a million by the year 2030. Nevertheless, overall exposure to cancer risk from air pollution is expected to decrease dramatically over the next 20 years. Using MATES-III modeling, future projections of average cancer risk reductions in the SCAB were determined and listed in Table 4.1-34.

TABLE 4.1-34

Estimated Future Cancer Risk Reductions

Year	**Baseline Inventory** (cancer cases in a million)
2005	853
2014	556
2020	439
2023	396
2030	397

Basin health risk (measured in cancer risk per million person population over a lifetime of exposure) was estimated using the MATES-III modeling platform for 2014, 2023 and 2030 model simulations for the proposed project and cumulative emissions scenarios. Table 4.1-35 summarizes the incremental cancer risk out of a population of 1 million that is associated with the proposed project and cumulative scenario, as compared to the without project scenario.

[10] American Cancer Society, California Department of Public Health, California Cancer Registry. California Cancer Facts and Figures 2010. Oakland, CA: American Cancer Society, California Division, September 2009. http://www.ccrcal.org/PDF/ACS2010-9-29-09.pdf (page 6)

The maximum cancer risk attributable to the cumulative projects scenario would be less than seven additional cases of cancer in a population of one million individuals that are exposed over a 70-year lifetime. The change in cancer risk per million does not exceed SCAQMD's significance threshold of 10 in a million. For reference, the MATES-III study for 2005 attributed the risk from stationary sources, which include industries and businesses such as dry cleaners and chrome plating operations, at approximately 51 additional cancers in a population of one million individuals. However, project and cumulative cancer burden, as listed in Table 4.1-35, does exceed the SCAQMD's significance threshold of 0.5, so the project and cumulative cancer burden impacts are significant.

TABLE 4.1-35

Cancer Risk and Cancer Burden Impacts (Project and Cumulative)

Year	**Project Toxic Risk Reduction Not Achieved** (cases of cancer per million)	**Project Cancer Burden** (excess cancer cases)	**Cumulative Project Toxic Risk Reduction Not Achieved** (cases of cancer per million)	**Cumulative Cancer Burden** (excess cancer cases)
2014	0.91	16	3.35	59
2023	2.86	54	5.15	96
2030	4.40	86	6.59	129

A hazard index (HI) is a summation of the hazard (non-cancer) quotients for all chemicals to which an individual is exposed. A hazard index can be measured as a result of chronic (long-term) exposure or acute (short-term) exposure. SCAQMD's significance threshold for non-cancer chronic or acute HI value is 1.0 because if the HI is less than 1.0, no significant adverse human health effects (non-cancer) are expected to occur. Evaluating the same pollutants analyzed in the MATES-III study, the weighted average chronic HI was calculated for the region to determine per capita (population) chronic HI of 0.909 (base case). Under the no-project scenario, the per capita chronic HI is 0.901. Table 4.1-36 provides the change in chronic HI in overall population-weighted between the conditions with and without and the proposed project and with and without the cumulative projects. Acute HI was calculated for each hour in each population area and the highest value is identified as the project impact. Similar to the chronic HI, the change in acute HI in overall population-weighted between the conditions with and without and the proposed project and with and without the cumulative projects is provided in Table 4.1-36.

TABLE 4.1-36

Chronic and Acute Health Impacts (Project and Cumulative)

Year	Project Chronic Health Index Not Achieved	Cumulative Projects Chronic Health Index Not Achieved	Project Acute Health Index Not Achieved	Cumulative Projects Acute Health Index Not Achieved
2014	0.00	0.02	0.02	0.06
2023	0.02	0.03	0.05	0.09
2030	0.02	0.03	0.08	0.11

As shown in the above table, the change in hazard index does not exceed SCAQMD's significance threshold for acute or chronic exposure, considering either project-specific or cumulative impacts. However, overall, the PEA finds that the health impacts attributable to the proposed project are significant based on regional toxic emissions. The project would result in a cancer burden that exceeds the SCAQMD's significance threshold. For example, as compared to the without project scenario, the proposed project would create an increased cancer risk of 4.4 in 1 million in the year 2030 for the nearly 20 million people that are projected to be living in the SCAQMD's jurisdiction at that time, resulting in an increased cancer burden that exceeds the SCAQMD's 0.5 cancer burden significance threshold. The PEA further determines that there is a significant cumulative impact and that the proposed project makes a cumulatively considerable contribution to this significant impact.

c. Localized emissions of TACs

SCAQMD Rule 1401 (New Source Review of Toxic Air Contaminants) prohibits the issuance of a permit for a stationary source that emits a listed TAC (or for a modification to or relocation of such a source), unless the applicant demonstrates, among other things, all of the following:

- The cumulative increase in the maximum individual cancer risk (MICR),[11] which is the sum of the calculated MICR values for all TACs emitted from the new, relocated or modified permit unit, will not result in a cancer burden[12] of greater than 0.5, and will not result in an increased MICR greater than 1 in 1 million at any receptor location, if the permit unit is

[11] MICR is the estimated probability of a potentially maximally exposed individual contracting cancer as a result of exposure to TACs over a period of 70 years for residential receptor locations, or as calculated by established Risk Assessment Procedures for worker receptor locations. SCAQMD Rule 1401(c)(8).

[12] "Cancer burden" means the estimated increase in the occurrence of cancer cases in a population subject to an MICR of greater than or equal to 1 in 1 million resulting from exposure to TACs. SCAQMD Rule 1401(c)(3).

constructed without T-BACT,[13] or an increased MICR greater than 10 in 1 million, if the permit unit is constructed with T-BACT.

- The cumulative increase in the total chronic Hazard Index for any target organ system due to the total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.

- The cumulative increase in the total acute Hazard Index for any target organ system due to the total emissions from the new, relocated or modified permit unit will not exceed 1.0 at any receptor location.

See SCAQMD Rule 1401(d). These thresholds in Rule 1401 are the same as the SCAQMD's CEQA significance thresholds for toxics.

As a result of these regulatory prohibitions, the issuance of a permit by the SCAQMD to a stationary source of TACs would not result in stationary source emissions that exceed the CEQA significance thresholds for localized health impacts. However, the thresholds above contained in Rule 1401 are applied on a permit-unit basis; as a result, a facility with multiple permitted sources could still exceed the Hazard Index limits in Rule 1401. Such facilities would instead be subject to Rule 1402; under that rule, the allowable cancer burden is the same as under Rule 1401, but the Hazard Index limits for acute and chronic non-cancer toxic impacts are higher (3.0) than the limits under Rule 1401 and thus higher than the applicable CEQA significance thresholds. Therefore, a facility with multiple permit units could comply with Rule 1402 but still exceed the CEQA significance thresholds. Thus, the localized air toxic impacts from the project are considered significant.

The cumulative impact analysis in the section above has already evaluated the effects on public health resulting from cumulative increases in emissions of TACs. Nevertheless, based upon the information in the FSAs prepared by the CEC, the localized health risk from each of the three potential power plants is presented in Table 4.1-37.

[13] T-BACT means the most stringent emissions limitation or control technique for TACs that (a) has been achieved in practice for the category or class of source at issue; or (b) is any other emissions limitation or control technique, including process and equipment changes of basic and control equipment, found by the Executive Officer to be technologically feasible for the class or category of source, or for a specific source. SCAQMD Rule 1401(c)(2).

TABLE 4.1-37

Localized Toxic Impacts from Three Power Plants (from the CEC's FSAs)

Health Impact	NRG El Segundo Repower Project	Walnut Creek Energy Park	CPV Sentinel Upgrade	CEC Significance Threshold	Significant ?
Cancer Risk	0.94×10^{-6}	1.28×10^{-6} (a)	0.856×10^{-6} (b)	10×10^{-6}	No
Chronic Health Index	0.02	0.026	0.030	1.0	No
Acute Health Index	0.01	0.012	0.115	1.0	No

a. risk from normal project operations
b. risk at the point of maximum impact

4. Odors. Would the proposed project create objectionable odors affecting a substantial number of people?

Equipment at a permitted stationary source could create objectionable odors. However, SCAQMD evaluation of permit applications would include the imposition of conditions to minimize such odors. Such conditions would range from limiting the release of the odor emitting source to installation and operation of control equipment that provides odor abatement. Such control equipment includes thermal oxidizers, scrubbers, afterburners, carbon absorbers and paint spray booths. The application of the control equipment can vary depending on the source. Oxidizers, for example, can be utilized in a variety of applications including paint finishing, printing, composites, wood & furniture coating, ethanol, biodiesel, food processing, chemical, pharmaceutical, flexible packaging, adhesives, plastics, fiberglass, expanded foam, aerospace, surface coating, microelectronics, and soil vapor extraction processes. Scrubbers have been proven successful in controlling odors generated from oil refining, food processing, asphalt manufacturing, metal casting, waste handling, and semiconductor manufacturing.

Chapter 5 of this PEA includes an analysis of the impacts resulting from representative facilities that could include sources permitted under Rules 1304 and 1309.1. The environmental impact reports reviewed for the analysis in Chapter 5 show that, despite the permitting controls described above, some facilities may result in significant odor effects. These facilities are identified in subchapter 5.3. Accordingly, the odor impacts resulting from the proposed project under review in this PEA are therefore considered significant.

IMPACT ANALYSIS - VISIBILITY IMPACTS

5. Visibility. Would the proposed project create significant aesthetic impacts by resulting in air emissions that substantially degrade the existing visual character or quality of the project surroundings?

Pollution can cause the absorption and scattering of light, which reduces the clarity and color of what we see.[14] Poor air quality can therefore result in adverse impacts on visibility. As discussed earlier in this chapter, emissions that substantially contribute to a violation of the statewide standard for visibility are considered significant, and emissions that cause or substantially contribute to a violation of the Regional Haze Rule for federal Class I areas (National Parks and wilderness areas), exceed a change of 0.5 deciviews, are also considered significant.

Project Effects

Table 4.1-38 below summarizes the project's predicted visibility impacts with respect to the State standard. The State standard is a light extinction coefficient of 0.23 per kilometer when relative humidity is less than 70 percent (roughly equivalent to a 10-mile visual range), over an 8-hour averaging period (10 am – 6 pm, PST). Visual range (measured in miles) is provided for informational purposes. The without project values for the extinction coefficient predicted for the eastern Basin represented by Riverside-Rubidoux (the worst case), are from 0.063 to 0.067 from 2014 to 2030, or one third of the California standard. The maximum predicted impact on the light extinction coefficient (.001 km-1) attributable to the proposed project would not cause or contribute to a violation of the state standard, and is not significant.

TABLE 4.1-38

Project Impacts to Visibility at Riverside-Rubidoux
Measured in Extinction Coefficient (km^{-1}) and Visual Range (miles)

Year	**Predicted Extinction Coefficient Without the Project** (km^{-1})	**Project Impact on Extinction Coefficient** (km^{-1})	**Visual Range Without Project** (miles)	**Project Difference in Miles**
2014	0.0672	0.0002	36.512	-0.091
2023	0.0629	0.0005	39.290	-0.274
2030	0.0656	0.0008	37.633	-0.469

Table 4.1-39 summarizes the project's predicted visibility impacts with respect to the federal standard for Class I areas. Under the federal standard, a 0.5 deciview change would be considered a significant project impact and a cumulatively considerable

[14] EPA, How Air Pollution Affects the View, available at http://www.epa.gov/visibility/pdfs/haze_brochure_20060426.pdf.

contribution to a significant cumulative impact. The maximum project impact measured in deciviews would be less than 0.06 in all cases, which is not significant.

TABLE 4.1-39

Impacts to Visibility at Class-I Wilderness Areas Measured in Deciview and Visual Range (miles)

Area Impacted	**Predicted Deciview Value Without Project**	**Total Project Impact** (Difference in Deciviews)	**Predicted Visual Range Without Project** (miles)	**Project Difference in Miles**
2014				
Agua Tibia	17.709	0.007	41.463	-0.022
San Gabriel	16.566	0.014	49.529	-0.058
Cucamonga	16.032	0.012	50.620	-0.049
San Gorgonio	13.037	0.006	67.717	-0.023
San Jacinto	13.964	0.006	60.644	-0.020
Joshua Tree	11.251	0.005	90.694	-0.017
2023				
Agua Tibia	17.699	0.020	41.497	-0.081
San Gabriel	16.262	0.042	50.709	-0.194
Cucamonga	15.732	0.030	51.881	-0.147
San Gorgonio	12.986	0.018	67.866	-0.114
San Jacinto	13.940	0.014	60.735	-0.086
Joshua Tree	11.297	0.005	90.396	-0.075
2030				
Agua Tibia	17.781	0.022	41.161	-0.088
San Gabriel	16.321	0.058	50.405	-0.265
Cucamonga	15.865	0.049	51.224	-0.243
San Gorgonio	13.124	0.023	67.006	-0.138
San Jacinto	14.056	0.020	60.075	-0.119
Joshua Tree	11.378	0.017	89.893	-0.108

Cumulative Effects

Using the same methodology as is used to calculate the visibility impacts attributed to the proposed project, the SCAQMD also calculated the visibility impacts attributed to the cumulative projects. The two tables below show the combined effects on visibility from such sources.

The data in these tables show that cumulative emissions would not result in a significant impact on visibility.

TABLE 4.1-40

Cumulative Impacts to Visibility at Riverside-Rubidoux
Measured in Extinction Coefficient (km^{-1}) and Visual Range (miles)

Year	**Predicted Extinction Coefficient Without the Project** (km^{-1})	**Difference in Extinction Coefficient** (km^{-1})	**Visual Range Without the Project** (miles)	**Difference in Miles**
2014	0.0672	0.0003	36.512	-0.170
2023	0.0629	0.0008	39.290	-0.456
2030	0.0656	0.0008	37.633	-0.469

TABLE 4.1-41

Cumulative Impacts to Visibility at Class-I Wilderness Areas
Measured in Deciview and Visual Range (miles)

Area Impacted	**Predicted Deciview Value Without Projects**	**Total Cumulative Impact** (Difference in Deciviews)	**Predicted Visual Range Without Projects** (miles)	**Difference in Miles**
2014				
Agua Tibia	17.709	0.011	41.463	-0.044
San Gabriel	16.566	0.024	49.529	-0.108
Cucamonga	16.032	0.021	50.620	-0.101
San Gorgonio	13.037	0.012	67.717	-0.072
San Jacinto	13.964	0.009	60.644	-0.059
Joshua Tree	11.251	0.008	90.694	-0.056
2023				
Agua Tibia	17.699	0.023	41.497	-0.094
San Gabriel	16.262	0.053	50.709	-0.239
Cucamonga	15.732	0.036	51.881	-0.178
San Gorgonio	12.986	0.022	67.866	-0.139
San Jacinto	13.940	0.017	60.735	-0.105
Joshua Tree	11.297	0.014	90.396	-0.092
2030				
Agua Tibia	17.781	0.025	41.161	-0.101
San Gabriel	16.321	0.066	50.405	-0.304
Cucamonga	15.865	0.057	51.224	-0.282

Area Impacted	Predicted Deciview Value Without Projects	Total Cumulative Impact (Difference in Deciviews)	Predicted Visual Range Without Projects (miles)	Difference in Miles
San Gorgonio	13.124	0.027	67.006	-0.161
San Jacinto	14.056	0.02	60.075	-0.134
Joshua Tree	11.378	0.020	89.893	-0.125

IMPACT ANALYSIS - CLIMATE CHANGE IMPACTS

6. Greenhouse Gas Emissions. Would the proposed project result in greenhouse gas emissions that may have a significant impact on the environment, based on any applicable threshold of significance?

Potential Environmental Impacts of Climate Change

Some gases in the atmosphere affect the Earth's heat balance through the greenhouse effect by absorbing infrared radiation. This layer of gases in the atmosphere prevents the heat from escaping. These gases are known as greenhouse gases. Naturally occurring GHGs have been present at relatively stable levels in the atmosphere for millennia. Examples of these natural GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and water vapor. In addition to these natural GHGs, there are several other man-made GHGs, including but not limited to: sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

As human industrial activity has increased, the concentrations of GHGs in the atmosphere have increased. There is a general scientific consensus that most current global warming is the result of human activity on the planet. It is widely accepted that continued increases in GHG emissions would contribute to global climate change although there is uncertainty concerning the magnitude and timing of future emissions and the resultant warming trend. Human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors contribute to these GHG emissions. CARB reports that transportation is the largest sector contributing to GHG emissions at 38 percent of the state's 2004 GHG emissions, followed by electricity generation.[15] Climate change may also result from other processes caused by atmospheric warming. One of the main contributing factors to increasing levels of CO_2, is likely melting permafrost. When permafrost thaws, it releases carbon into the soil or beneath lakes and releases CO_2 and methane into the atmosphere. Scientists are now estimating that there is more than twice the total amount of carbon stored in permafrost as there is in atmospheric carbon dioxide, and the impacts from

[15] California Air Resources Board. 2007. *Staff Report – California 1990 Greenhouse Gas Emissions Level and 2020 Emission Limit*, November 16. http://www.arb.ca.gov/cc/ccei.htm.

melting permafrost "could amount to roughly half those resulting from global land-use change during this century."[16]

As GHG emissions increase, temperatures in California are projected to rise over the twenty-first century. The modeled magnitudes of the warming vary because of uncertainties in future emissions and the climate's sensitivity. According to a CEC report,[17] projected warming scenarios predict temperatures to increase between 3.6 to 9°F by 2100. Rising temperatures could have a variety of impacts, including stress on sensitive populations (e.g., sick and elderly), additional burden on building systems (e.g., demand for air conditioning), and increasing emissions of greenhouse gases and criteria pollutants associated with energy generation.

The California Natural Resources Agency[18] recently prepared a document that discusses the impacts of climate change upon California. Extreme natural events are likely to occur, including higher nighttime temperatures and longer, more frequent heat waves overall; a 12 to 35 percent decrease in precipitation levels by mid-to late-twenty-first century; increased evaporation and faster incidences of snowmelt that would increase drought conditions, and more precipitation in the form of rain as compared to snow.[19]

It is expected that climate change would intensify California's "Mediterranean climate pattern," with the majority of annual precipitation occurring between November and March and drier conditions during the summer.[20] This would increase droughts and floods and would affect river systems. Climate change is expected to alter seasonal and inter-annual patterns of precipitation

Another impact of global climate change is increased fire hazard. Changes in temperature and precipitation may combine to alter risks of wildfire. Fire is an important natural disturbance within many California ecosystems that promotes vegetation and wildlife diversity, releases nutrients, and eliminates heavy fuel accumulations that can lead to catastrophic burns. The changing climate could alter fire regimes in ways that could have social, economic, and ecological consequences. As the existing climate throughout

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16 Schurr, E.A.G et al. 2008. Vulnerability of Permafrost Carbon to Climate Change: Implications for the Global Carbon Cycle. *BioScience*. 58(8): 701-714.

17 Cayan, D. et al. 2009. *Climate Change Scenarios and Seal Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment*. PIER Research Report, CEC-500-2009-014, California Energy Commission.

18 California Natural Resources Agency. *2009 California Climate Adaptation Strategy*: *A Report to the Govenor of the State of California in Response to Executive Order S-13-2008*. http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF.

19 Cayan, Dan, Mary Tyree, Mike Dettinger, Hugo Hidalgo, Tapash Das, Ed Maurer, Peter Bromirski, Nicholas Graham, and Reinhard Flick (2009). *Climate Change Scenarios and Sea Level Rise Estimates for the California 2008 Climate Change Scenarios Assessment*. PIER Research Report, CEC-500-2009-014, Sacramento, CA: California Energy Commission.; *see also* California Energy Commission. 2006. *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004.* December 2006 (discussing the potential for more frequent extreme-heat conditions, potential for increase in the severity of winter storms, and reduced snow pack and stream flow in the Sierra Nevada mountains).

20 Cayan et al. 2009.

California changes over time, mass migration of species, or worse, failure of species to migrate in time to adapt to the changes in climate, could also result. The extended droughts characteristic of California's Mediterranean climate result in large areas of dry vegetation that provide fuel for wildland fires that can spread into urban areas. Wildland-urban fires occur when a fire burning in wildland vegetation gets close enough to ignite urban structures. Areas of dense, dry vegetation, particularly in canyon areas and hillsides pose the greatest wildland fire potential.[21]

Changes in temperature and precipitation may also cause sea levels to rise along the California coastline.[22] Sea level rise can cause damage to coastal communities and loss of land. An emerging effect from climate change may be acidification (i.e., a decrease in the pH of the ocean water, making it more acidic.) of the ocean. In turn, acidification would affect the ability of hard-shelled invertebrates to create their skeletal structures.[23] The implications of this change could be major losses to shellfish industries, and shifts in food resources for ocean fisheries. Weather pattern shifts could change the amount of calcium carbonate being delivered by rivers from sources stored in rocks, further exacerbating the reduced ability of invertebrates to form calcified shells.[24]

Climate change could have effects on diverse types of ecosystems, from alpine to deep-sea habitat.[25] As temperatures and precipitation change, seasonal shifts in vegetation would occur; this could affect the distribution of associated flora and fauna species. As the range of species shifts, habitat fragmentation could occur, with acute impacts on the distribution of certain sensitive species. Changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects could occur.[26] The IPCC states that "20 percent to 30 percent of species assessed may be at risk of extinction from climate change impacts within this century if global mean temperatures exceed 2 to 3°C (3.6 to 5.4°F) relative to preindustrial levels."[27] Shifts in existing biomes could also make ecosystems vulnerable to invasive species encroachment. Wildfires, which are an important control mechanism in many ecosystems, may become more

[21] http://www.fire.ca.gov/index.php

[22] California Energy Commission. 2006. *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004.* December 2006.

[23] Risien, J. (ed.). 2009. *West Coast Regional Marine Research and Information Needs*. Corvallis, Oregon: Oregon Sea Grant. ORESU-Q-09-001.

[24] Griffith, E.M., A. Paytan, K. Caldeira, T. D. Bullen and E. Thomas. 2008. A dynamic marine calcium cycle during the past 28 million years. Science. December 12, 2008.

[25] EPA, 2008. *Climate Change – Ecosystems and Biodiversity*. http://www.epa.gov/climatechange/effects/eco.html (accessed January 3, 2009).

[26] California Energy Commission. 2006. *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004.* December 2006.

[27] IPCC, 2007: *Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change* [Parry, Martin L., Canziani, Osvaldo F., Palutikof, Jean P., van der Linden, Paul J., and Hanson, Clair E. (eds.)]. Cambridge University Press, Cambridge, United Kingdom, 1,000 pp.

severe and more frequent, making it difficult for native plant species to repeatedly re-germinate. In general terms, climate change is expected to put a number of stressors on ecosystems, with potentially catastrophic effects on biodiversity.

Climate change may increase the risk of vector-borne infectious diseases, particularly those found in tropical areas and spread by insects: malaria, dengue fever, yellow fever, and encephalitis.[28] Cholera, which is associated with algal blooms, could also increase. While these health impacts would largely affect tropical areas in other parts of the world, effects could also be felt in California.

Warming of the atmosphere would be expected to increase smog and particulate pollution, which could adversely affect individuals with heart and respiratory problems, such as asthma. Extreme heat events would also be expected to occur with more frequency, and could adversely affect the elderly, children, and the homeless. Therefore, there may be an increase in heat-related human deaths and a higher risk of respiratory problems caused by deteriorating air quality.

Finally, the water supply impacts and seasonal temperature variations expected as a result of climate change could affect the viability of existing agricultural operations, making the food supply more vulnerable. Changes in growing season conditions could also affect California agriculture, causing variations in crop quality and yield.[29]

Given scientific uncertainties and the fact that the effect of adding or subtracting any particular greenhouse gas emissions must be considered in a global context, it is not possible to quantify or determine the exact relationship between a project's emissions and these potential environmental impacts.

Greenhouse Gas Emissions Attributable to the Project

The following analysis takes two approaches in order to capture all six GHG pollutants identified in AB 32. First, an analysis of criteria pollutant emissions data from the 2007 AQMP focuses on directly emitted CO_2, N_2O, and CH_4 because these are the primary GHG pollutants emitted during the combustion process. Second, an analysis of the statewide inventory was conducted to determine the impact from the remaining GHG pollutants including HFCs, PFCs and SF_6. Combustion GHG emissions are proportional to SOx emissions, while emissions of HFCs, PFCs & SF6 are analyzed as proportional to emissions of CO2, CH4 and N2O, based on the statewide inventory. (See Subchapter 4.0 for additional discussion of the methodology for calculating GHG emissions and Appendix D for the detailed calculations and equations).

The first part of the analysis uses SOx emissions as a surrogate to prorate the CO_2, CH_4, and N_2O emissions because SOx emissions result primarily from sulfur contained in

28 EPA, 2008. *Climate Change – Health and Environmental Effects*. http://www.epa.gov/climatechange/effects/health.html#climate (accessed January 3, 2009).

29 California Energy Commission. 2006. *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004.* December 2006.

fossil fuels. According to the 2007 AQMP, the CO_2, CH_4, and N_2O emissions from all affected major source categories totaled 72 million MT per year and the total SOx emissions from all affected major source categories are 931 tons per year. The second part of the analysis, which accounts for HFCs, PFCs, and SF_6, uses a ratio based on the statewide inventory of high GWP pollutants (HFCs, PFCs, SF_6) to statewide GHG emissions inventory from all of the types of sources that may be eligible for offsets under the proposed project. Specifically, the ratio by dividing the total high GWPs by the total GHG emissions from all affected sources (14.48/223.32 = 0.065).

By applying the ratio of high GWPs to all GHG sources (0.065) to the CO_2, CH_4, and N_2O emissions from 2007 AQMP (72 million MT/year), the total amount of GHG emissions of all AQMP sources can be determined (72 x 1.065 = 76.68 million MT/year). Thus, a ratio of 76.68 million MT/year of total GHG emissions to 931 tons per year of total SOx emissions (76.68/931 = 0.0824) from the 2007 AQMP, the total GHG emissions from the proposed project can be calculated using the estimated SOx emissions from the proposed project. Table 4.1-42 converts daily SOx emissions (see Table 4.1-4) into annual SOx emissions since GHG emissions are reported in annual amounts and the significance threshold is an annual one. By multiplying the annual SOx emissions to the ratio of total GHG to total SOx emissions, the total GHG emissions from all six GHG pollutants attributed to the proposed project is calculated and listed in Table 4.1-42.

TABLE 4.1-42

SOx Emissions and Greenhouse Gas Emissions Attributed to the Proposed Project

Attainment Year Periods	**SOx Emissions** (tons/day)	**SOx Emissions** (tons/year)	**AQMP SOx to GHG Emissions Ratio**	**TOTAL GHG Emissions** (million MT CO_2 eq /year)
2010-2014	0.16	58.4	0.0824	4.81
2010-2023	0.49	178.85	0.0824	14.74
2010-2030	0.74	270.1	0.0824	22.26

SCAQMD's adopted Tier 3 GHG significance threshold is 10,000 MT CO2eq per year for projects for which SCAQMD is lead agency. Projects with incremental increases below this threshold are not considered to result in cumulatively considerable contributions to cumulative climate change impacts. The estimated increase in greenhouse gas emissions attributable to the proposed project is greater than the SCAQMD's GHG significance threshold for lead agency projects (10,000 MTCO2e/yr). As such, GHG emissions attributable to the proposed project, taken as a whole, are therefore significant.

Cumulative Effects

Using the same methodology as is used to calculate GHG emissions attributed to the proposed project, the SCAQMD also calculated the additional GHG emissions attributed to the same cumulative stationary sources analyzed in the other sections. Cumulative daily SOx emissions are listed in Table 4.1-6. Table 4.1-43 lists the total GHG emissions from all six GHG pollutants attributed to the cumulative projects.

TABLE 4.1-43

SOx Emissions and Greenhouse Gas Emissions from Cumulative Projects

Attainment Year Periods	**SOx Emissions** (tons/day)	**SOx Emissions** (tons/year)	**AQMP SOx to GHG Emissions Ratio**	**TOTAL GHG Emissions** (million MT CO_2 eq /year)
2007-2014	0.29	106.22	0.0824	8.79
2007-2023	0.61	223.02	0.0824	18.47
2007-2030	0.86	314.27	0.0824	26.06

The Final Staff Assessments prepared by the California Energy Commission are used to calculate the additional greenhouse gas emissions associated with each of the three power plants that potentially may be permitted in reliance upon the SCAQMD internal account offsets due to State Legislation. The methodology section explains how greenhouse gas emissions were quantified based on the information in the FSAs.

A summary of the GHG emissions from each power plant project can be found in Table 4.1-44. GHG emissions for the Sentinel project were found in the FSA prepared by the CEC. Using the methodology and analysis in the Sentinel FSA, GHG emissions from the other two power plants were determined. The detailed analysis can be found in Appendix D. A summary of the operational GHG emissions and total GHG emissions from all three power plants is set forth in Table 4.1-44.

TABLE 4.1-44

GHG Emissions from Operation of the Three Power Plants

GHG Emissions (MT/yr)	**NRG El Segundo Repower Project**	**Walnut Creek Energy Park**	**CPV Sentinel Upgrade**	**Total GHG Emissions** (MT/yr)
CO_2eq (operation)	1,464,618	681,110	1,077,158	3,222,885

CPV Sentinel will be paying a mitigation fee for SOx and PM10 offsets that will be spent on emission reduction projects. Because SOx emissions have been used to determine GHG emissions, a change in SOx emissions from the cumulative proposed project would affect the resulting GHG emissions impact. SOx and PM10 emissions reduced by emission reduction projects funded by the mitigation fee to be paid by CPV Sentinel have been estimated, based on current best available control technology (BACT) incremental cost effectiveness. Details on how the Sentinel fee and emission reductions from funding emission reduction projects were calculated can be found in Appendix D. Table 4.1-45 provides both cumulative projects GHG emissions and power plant GHG emissions and adds them together, along with subtracting the GHG benefit from the Sentinel fee, to determine the total GHG emissions from the cumulative scenario in year 2030. Table 4.1-45 also compares the total cumulative GHG impacts with the SCAQMD Tier 3 GHG significance threshold. The total GHG emissions of 29.13 million MT CO2e/year in year 2030 exceeds the SCAQMD's Tier 3 GHG significance threshold of 0.01 million MT CO2e/year (or 10,000 MT CO2e/year), so GHG emissions impacts are significant and, thus, the cumulative scenario is cumulatively considerable.

TABLE 4.1-45

Total GHG Emissions from Cumulative Scenario in Year 2030

	Total Cumulative GHG Emissions (million MT CO_2 eq /year)
Sources Permitted Under Rules 1304 and 1309.1 -Year 2030	26.06
Power Plant Projects	3.22
CPV Sentinel Fee GHG Benefit	-0.33
TOTAL Cumulative GHG Emissions	**29.13**
SCAQMD Tier 3 GHG Significance Threshold	0.01 (or 10,000 MT/yr)
Significant?	Yes

INDIRECT IMPACT ANALYSIS - CONSTRUCTION AND MOBILE SOURCE EMISSIONS

The construction and mobile source emissions associated with a facility that is permitted under the project can be characterized as an indirect effect of the project. Those emissions when added to the emissions that will be directly emitted by sources permitted under the project, described in the preceding sections, would not occur without the project, but would be expected to add to the total amount of emissions that would occur with the project.

Construction emissions. The quantified estimates of emissions attributable to the project, as shown in the tables in the preceding sections, do not include emissions resulting from construction of the facilities that receive permits under the project. Construction emissions include emissions from construction equipment and emissions relating to transport of workers and materials to the construction site. While the 2007 AQMP includes construction emissions expected to result from all future growth in the region, the amount of construction emissions that is attributable to the proposed project (i.e., the amount of construction emissions that would occur under the proposed project but not under the without project scenario) cannot be determined. It is not possible to calculate the potential construction emissions associated with individual stationary sources that may be permitted under the project because the conditions under which any given permitted facility will be constructed cannot be foreseen. For example, some actions permitted under Rule 1304, such as replacing a piece of equipment at an existing facility, might result in negligible construction emissions, while other actions permitted under Rule 1304, such as relocating an entire a facility, could entail a significant amount of construction work which would in turn result in substantial construction-related emissions. Similarly, construction of a new facility that would receive a permit for equipment under Rule 1309.1 (such as a new school, fire station or hospital) could involve a significant amount of construction work while adding new equipment permitted under Rule 1309.1 to an existing facility would ordinarily involve very limited construction work.

Although the construction emissions that would occur with and without the project cannot be estimated, the total amount of construction emissions attributable to the project would exceed the significance applicable thresholds described above. Furthermore, because construction emissions would add to the project-related operational emissions which are described above, they will increase each of the significant operational impacts that are identified to some degree. The extent of that increase cannot be estimated, however, because the amount of construction emissions associated with the project cannot be quantified.

Mobile source emissions. Mobile source emissions associated with facilities permitted under the project could also be characterized as an indirect air quality impact of the project. These are emissions that do not result from the permitted source itself, but that result from vehicle traffic to and from the facility that contains the permitted source. Thus, for example, when a sewage treatment plant is permitted as an essential public service under Rule 1309.1, operation of the facility results in emissions from the stationary equipment at the facility that is permitted under the Rule. Operation of the facility will also result in mobile source emissions from vehicles of employees, suppliers and others that travel to and from the facility in connection with its day to day operations. The quantified analysis of emissions presented in the tables in the preceding sections do not include these mobile source emissions. As is explained below, an increase in mobile source emissions is very likely to be associated with the project in comparison with the without project scenario, but the amount of mobile source emissions which may result cannot be determined.

In general, it is unlikely that exempt sources that receive permits under Rule 1304 would result in substantial amounts of new mobile source emissions. For example, Rule 1304 provides a number of exemptions for projects where there is limited or no increase in the potential to emit pollutants or where there is a net decrease in emissions. See, e.g., Rule 1304(a)(1) (equipment replacement), (a)(5) (air pollution control strategies), (c)(1) (relocations), (c)(2) (concurrent facility modification). Given the limited scale and scope of these types of projects, they ordinarily would not be expected to lead to sizeable increases in production or employment and or a significant increase in vehicle miles traveled (VMT) associated with increases in production and employment. Rule 1304 also provides exemptions for certain temporary actions, such as emergency activities and the installation of temporary portable equipment. See, e.g., Rule 1304(a)(4), (a)(6), (a)(7), (a)(8), (b)(1). Given the temporary nature of these types of actions, they also would ordinarily not result in substantial increases in production or employment, and thus in VMT. With respect to Rule 1309.1, in general, permitting stationary emissions sources under the project for essential public services also would not necessarily result in substantial amounts of additional VMT and a resulting increase in mobile source emissions, particularly when a new or expanded facility would serve an existing population. A new police or fire station, for example, would not be expected to significantly increase VMT, and the same would hold true of a new school sited to serve an existing population.

On the other hand, some individual projects that receive permits under Rules 1304 and 1309.1, either alone or in combination, might lead to increased traffic that would generate substantial amounts of new mobile source emissions. For example, a new public facility could result in a significant increase in employment, increasing vehicle trips by their employees. workers and others. The same is true for innovative technologies and research operations that qualify for Priority Reserve credits under Rule 1309.1. Similarly, the relocation of an existing source (see Rule 1304(c)(1)) could, in some instances, have the effect of increasing VMT by moving the facility farther away from workers and suppliers, thereby resulting in an increase in VMT.

Furthermore, some facilities that receive permits under the project may have only minimal stationary source emissions, while at the same time generating a substantial amount of traffic that results in significant mobile source emissions. For example, a boiler in a hotel might qualify for a Rule 1304 exemption due to the limited stationary source emissions from that equipment, but the hotel itself could result in substantial VMT by employees and visitors.

As this discussion illustrates, there is no correlation between the amount of stationary source emissions at a facility receiving a permit under Rule 1304 or Rule 1309.1 and the amount of mobile source emissions that may be associated with that facility. Nor is there any correlation between the number of permits that may be issued under Rule 1304 and 1309.1 and mobile source emissions, since the relationship will depend on variables that will differ from facility to facility.

Because the difference in construction and mobile source emissions that will occur under the with project scenario in comparison to the without project scenario cannot be measured or estimated, the environmental analysis in this PEA assumes that construction and mobile sources emissions associated with stationary sources permitted under Rule 1304 or Rule 1309.1 will, in the aggregate, comprise a substantial increment of emissions in addition to the emissions attributed to the project. For each of the project related regional air quality impacts found to be significant in this PEA, it is accordingly concluded that the significant impact will be increased by some degree by the additional mobile source emissions that will occur as an indirect result of the project. Stationary source mass emissions under the proposed project exceed significance thresholds and any further increase in these emissions as a result of construction and mobile source emissions adds to this previously identified significant impact. These impacts include the following: regional criteria pollution emissions; localized concentrations of criteria pollutants; health effects of criteria pollutants; health effects of toxic air contaminants; odors; and greenhouse gas emissions. As noted above, because the amount of such emissions cannot be calculated, the extent of the contribution to each impact made by mobile source emissions cannot be characterized. However, the effect of the project in combination with such emissions is, in each instance, significant.

In addition, because construction and mobile source emissions are presumed to be substantial, combined impacts from sources permitted under Rules 1304 and 1309.1 plus construction and mobile source emissions from facilities containing such sources could result in significant impacts relating to visibility.

The combined stationary and mobile source emissions would not result in a significant impact with regard to conflicts with the AQMP because mobile source emissions are included in the AQMP.

SUMMARY OF OVERALL SIGNIFICANCE DETERMINATION OF DIRECT AND INDIRECT AIR QUALITY IMPACTS

Table 4.1-46 provides an overview of all the air quality impact areas analyzed in the previous sections of this subchapter. The only impact areas that show a different significance conclusion between direct and indirect impacts are chronic and acute health impacts and visibility. The direct impact analysis determined that the change in hazard index does not exceed SCAQMD's significance threshold for acute or chronic exposure, considering either project-specific or cumulative impacts. However, based on SCAQMD staff's review of similar types of facilities that have or could have obtained offsets, it is possible that future individual projects could have significant non-cancer exposure impacts, so indirect impacts were concluded to be significant. Similarly, the direct impact analysis determined the change in visibility from emissions from permitted sources would not result in significant impacts. However, emissions from construction and mobile sources could result in significant impacts to visibility.

TABLE 4.1-46

Significance Determination of Direct and Indirect Air Quality Impacts

Air Quality Impact Area	Direct Impacts	Indirect Impacts	Overall Significance Determination	Table Reference
Consistency with AQMP	Not significant	Not significant	Not significant	n/a
Regional Emissions from Criteria Pollutants - Project	Significant	Significant	Significant	Table 4.1-4
Regional Emissions from Criteria Pollutants - Cumulative	Significant	Significant	Significant	Table 4.1-8
Regional Emissions from Lead – Project	Not significant	Not significant	Not significant	Table 4.1-5
Regional Emissions from Lead - Cumulative	Not significant	Not significant	Not significant	Table 4.1-9
Localized Concentrations (PM2.5 and NO2)	Significant	Significant	Significant	Tables 4.1-22 to 4.1-26
Health Effects (Ozone, PM) - Project	Significant	Significant	Significant	Tables 4.1-27, 29 and 31
Health Effects (Ozone, PM) - Cumulative	Significant	Significant	Significant	Tables 4.1-32 to 4.1-33
Regional Health Impacts - Project (TACs)	Significant	Significant	Significant	Table 4.1-35
Regional Health Impacts - Cumulative (TACs)	Significant	Significant	Significant	Table 4.1-36
Localized Toxic Air Contaminants	Significant	Significant	Significant	n/a
Odors	Significant	Significant	Significant	n/a
Visibility – Project	Not significant	Presumed significant	Presumed significant	Tables 4.1-38 to 4.1-39
Visibility - Cumulative	Not significant	Presumed significant	Presumed significant	Tables 4.1-40 to 4.1-41
Greenhouse Gases	Significant	Significant	Significant	Table 4.1-45

MITIGATION MEASURES

Regional Air Quality Impacts

<u>Limitations on Total Quantity of Emissions</u>

As described above, the regional emissions directly resulting from Proposed Rule 1315 equal the quantity of the Rule 1315 offsets that are used pursuant to Rules 1304 and 1309.1. Thus, any reduction or limitation on the use of the offsets will directly reduce the quantity of regional air pollutant emissions. For this reason, the proposed project includes a cap on total emissions offsets to be provided from the SCAQMD internal accounts for each pollutant in order to ensure that the net emissions increase attributable to both federal major and non-major sources do not exceed the emissions analyzed in this PEA.

The SCAQMD Governing Board may consider whether a further limit on use of offsets from the SCAQMD internal accounts is feasible or desirable. Historically, the SCAQMD Governing Board has made a policy decision, based on social and economic considerations as allowed by CEQA, not to limit projected regional economic growth through the AQMP.

Nevertheless, this PEA includes project alternatives which would, by limiting availability of offsets, limit growth in the region. This enables the decision-makers, other agencies, and members of the public to assess the environmental benefit from additional limitations on offsets.

New or Modified Sources

The discussion and analysis that follows describes measures that will continue to be applied by the SCAQMD to ensure that new or modified sources that receive offsets under Rule 1304 or 1309.1 reduce emissions to the extent feasible:

As explained in the impacts discussion, the impacts of the proposed project exceed the SCAQMD's regional pounds-per-day operational significance thresholds for each pollutant, VOC, NOx, SOx, and PM10 and CO, for each time period of analysis (2010-2014, 2010-2023, and 2010-2030) based on attainment demonstration years.

The SCAQMD requires all feasible measures to reduce the pollutants of concern at the individual permit level. This is because SCAQMD rules require "best available control technology" (BACT) for any new or modified source resulting in an emissions increase of nonattainment pollutants and their precursors, and best available control technology for toxic air pollutants (T-BACT) for any permit which would result in a maximum individual cancer risk exceeding 1 in a million at any receptor location. In addition, no permit may be issued if it exceeds a maximum individual cancer risk of 10 in a million, even with T-BACT.

Rule 1303(a)(1) requires BACT for any permit for a new or modified source of a nonattainment air contaminant, and Rule 1302(z), defines "nonattainment air contaminant" to include precursors to such contaminants. The nonattainment air contaminants are ozone and particulate matter. VOC and NOx are defined as precursors to ozone, and VOC, NOx, and SOx are defined as precursors to particulate matter (Rule 1302(af)). Therefore, any new or modified source that would result in any increase of any of the pollutants for which emission offsets will be granted (VOC, NOx, SOx, and PM10) will be required to have BACT. Regulation XVII similarly requires BACT for attainment pollutants such as CO.

The term BACT is defined differently for major and non-major sources, and somewhat differently for T-BACT, but in all cases the definition of BACT is as stringent as the definition of "feasible" under CEQA. "Feasible" is defined in CEQA Guidelines section 15364 as "capable of being accomplished within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

For major sources, BACT is defined in Rule 1302(h) as: "the most stringent emission limitation or control technique which:

> (1) has been achieved in practice for such category or class of source; or
>
> (2) is contained in any state implementation plan (SIP) approved by the Environmental Protection Agency (EPA) for such category or class of source. A specific limitation or control technique shall not apply if the owner or operator of the proposed source demonstrates to the satisfaction of the Executive Officer or designee that such limitation or control technique is not presently achievable; or
>
> (3) is any other limitation or control technique, found by the Executive Officer or designee to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as compared to measures as listed in the Air Quality Management Plan (AQMP) or rules adopted by the SCAQMD Governing Board."

Two points are worth noting about this definition. First, the major source is required to use the most stringent of any of the three listed control techniques. Thus, if the technique has been achieved in practice anywhere for the class or category of source, it must be used. Second, the major source is not allowed to consider cost under the first "achieved in practice" test, but only under Rule 1303(h)(3) where it is more stringent than "achieved in practice." Accordingly, BACT for major sources is more stringent than the CEQA definition of feasible, which allows consideration of both technological and economic factors.

For non-major sources, the SCAQMD rules provide that when updating BACT, "economic and technical feasibility shall be considered in establishing the class or category of sources and the applicable requirements." (Rule 1303(a)(2)). However, BACT for non-major sources shall not be less stringent than defined in state law. (Rule 1303(a)(3)). BACT is defined in state law at Health and Safety Code section 40405 as follows: "an emission limitation that will achieve the lowest achievable emission rate for the source to which it is applied." Subject to subdivision (b), "lowest achievable emission rate, as used in this section, means the more stringent of the following:

> (1) The most stringent emission limitation that is contained in the state implementation plan for the particular class or category of source, unless the owner or operator of the source demonstrates that the limitation is not achievable.
>
> (2) The most stringent limitation that is achieved in practice by that class or category of source.

> (b) Lowest achievable emission rate shall not be construed to authorize the permitting of a proposed new source or a modified source that will emit any pollutant in excess of the amount allowable under the applicable new source standards of performance."

The definition of BACT for non-major sources is less stringent than for major sources in two ways: First, it does not include the third prong of the test for major sources that allows the SCAQMD to specify BACT more stringent than required by state law. Second, the California Air Resources Board, which is responsible for assuring that air districts properly implement this code section, has interpreted state-law BACT to allow consideration of technological and economic factors in setting the class or category to which a BACT standard will apply, although not in setting BACT for an individual source. This is unlike EPA, which does not allow consideration of cost in setting achieved in practice standards. Nevertheless, the state law definition of BACT remains as stringent as the CEQA definition of feasible, which would allow consideration of cost and technological factors, even for an individual source.

Thus, BACT for nonattainment pollutants and their precursors is at least as stringent as the CEQA definition of feasible, for both major and non-major sources.

For air toxics, SCAQMD Rule 1401 requires T-BACT for any facility that emits identified toxic air contaminants and results in a maximum individual cancer risk of more than one in a million. Rule 1401(e) requires staff to bring to the Board proposed amendments to the rule whenever the state Office of Environmental Health Hazard Assessment (OEHHA) establishes risk values for additional compounds, or updates risk values for existing listed compounds.

The definition of T-BACT requires the maximum feasible reductions in emissions rate of toxic air contaminants. T-BACT is defined as: "the most stringent emissions limitation or control technique which:

> (A) has been achieved in practice for such permit unit category or class of source; or
>
> (B) is any other emissions limitation or control technique, including process and equipment changes of basic and control equipment, found by the Executive Officer to be technologically feasible for such class or category of sources, or for a specific source."

Thus, T-BACT does not allow consideration of cost, and hence is more stringent than the CEQA definition of feasible.

Based on the foregoing, SCAQMD rules require the maximum feasible mitigation in terms of emissions rate from individual new or modified sources.

The PEA finds potential adverse impacts on localized concentrations of pollution for the criteria pollutants NO2 and PM2.5. Under SCAQMD Rule 1303, if an individual source would exceed the SCAQMD's thresholds for localized concentrations of NO2 and PM10, the permit would be denied. Although Rule 1303 does not currently include a modeling requirement for PM2.5, since PM2.5 is a subset of PM10, and the CEQA significance thresholds for PM2.5 are the same as those for PM10, any facility emitting PM2.5 in excess of the significance threshold would necessarily be captured by the PM10 modeling; if it exceeded significance thresholds, the permit would be denied.

The above analysis does not apply for tar pots and abrasive blasting equipment, the two categories that exceeded the localized PM2.5 significance thresholds by the greatest amounts nor for tar pots and soil vapor extraction, which exceed significance thresholds for NO2. These types of equipment are not subject to modeling under Rule 1303 because they are portable equipment. (See Rule 1304(a)(3) and (a)(7)).

However, as discussed above, the SCAQMD requires BACT for all permitted equipment, including portable equipment. Therefore, the maximum feasible reduction in emissions from such portable equipment is being required.

With regard to the new federal AAQS for lead (adopted by the USEPA in 2008), a rolling three-month average of 0.15 micrograms per cubic meter of air ($\mu g/m^3$) is required while CARB's recently adopted lead regulation is a 30-day average of 1.5 $\mu g/m^3$. The SCAQMD has a rule in effect (Rule 1420) that applies to any facility that uses or processes lead-containing materials, and prevents emissions from any such facility from exceeding 1.5 $\mu g/m^3$ beyond the property line on a monthly average basis. SCAQMD is in the process of adopting a new rule (Rule 1420.1) and amending its existing rule (Rule 1420) to prohibit emission exceeding the new federal NAAQS.

Greenhouse Gases

Existing Sources

It is expected that CARB will adopt in October 2010 a greenhouse gas reduction cap and trade program for many of the sources that will be receiving permits under the proposed project. CARB greenhouse gas reduction measures are required to "achieve the maximum technologically feasible and cost-effective greenhouse gas reductions from sources or categories of sources" (Health & Safety Code § 38560). CARB has published a scoping plan, as required by Health and Safety Code section 38561 that identifies additional measures CARB intends to adopt that will reduce GHG emissions. The scoping plan is required to identify measures that will achieve "the maximum feasible and cost-effective reductions of greenhouse gas emissions by 2020." (Health and Safety Code § 38561(b)).

As is shown above, all CARB GHG measures are required to meet the "maximum feasible and cost-effective" reductions test. This test is equally as stringent as the CEQA definition of "feasible." Given that CARB has been working on this statutory mandate for four years, and has an entire office and staff devoted to GHG rulemaking, it would not be feasible for SCAQMD staff to develop generally applicable greenhouse gas reduction measures that go beyond CARB measures. Thus, application of CARB rules will require the maximum feasible GHG reductions for existing sources.

New Sources

SCAQMD rules do not currently require BACT for GHG, except GHGs that are also ozone depleters. (Rule 1303(a)(1).) By 2011, SCAQMD will be required under federal law to specify GHG BACT for larger sources of GHG emissions. On June 3, 2010, EPA published in the Federal Register its Greenhouse Gas Tailoring Rule (75 Fed. Reg. 31513).

EPA has stated that because there is no national ambient air quality standard for CO2, or any of the other primary GHGs, and EPA does not plan to promulgate any, the "nonattainment" NSR program, discussed above under criteria pollutants, will not apply to GHGs. "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Proposed Rule" ("Tailoring Rule Proposal") 74 Fed. Reg. 55292, 55297 (October 27, 2009). However, the new source review program that applies for attainment pollutants, prevention of significant deterioration (PSD), will apply. PSD applies to any "major stationary source" of pollutants subject to regulation under the Clean Air Act. The Title V program for existing sources will also apply. EPA has issued its interpretation that GHGs become regulated pollutants as of the time its greenhouse gas reduction rules for motor vehicles becomes effective, i.e. January 2011. SCAQMD staff concludes it would not be feasible to begin requiring GHG BACT prior to January 2011, because it is necessary to amend the agency's rules in order to do so.

EPA has decided to adopt a phased-in approach to regulation of GHG.

In Step 1, which begins January 2, 2011, only facilities that would already be subject to Title V or PSD would be subject to GHG requirements under these programs. In addition, a facility modification would only trigger PSD for .GHGs if the modification resulted in an increase of 75,000 tpy CO2e. Therefore, SCAQMD would begin to require GHG BACT for sources already subject to PSD and having a GHG increase of 75,000 tpy or more, effective January 2, 2011.

In Step 2, which begins July 1, 2011, facilities with the potential to emit 100,000 tpy CO2e or more per year would be subject to Title V and PSD, regardless of whether they would otherwise be subject to these programs as a result of emissions of other pollutants. Therefore, SCAQMD would begin to require GHG BACT for all new and modified facilities having the potential to emit 100,000 tpy of CO2e and having an increase of at least 75,000 tpy effective July 1, 2011.

For future phases of the program, EPA has committed to a further rulemaking to be completed in 2012 which will consider whether it is feasible to further lower the thresholds for GHG coverage under these programs. However, it is unknown at this time whether the thresholds will be further lowered. EPA has, however, committed that the threshold will not be lowered below 50,000 tpy until at least May 1, 2016.

Although the definition of federal BACT for PSD sources is somewhat different from the definition of BACT that SCAQMD uses for nonattainment NSR, this definition is still at least as stringent as the CEQA definition of feasible. Pursuant to Clean Air Act section 169(3) (42 U.S.C. §7479(3)), the term "best available control technology" means in pertinent part "an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation under this chapter emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant." Therefore, GHG BACT is at least as stringent as CEQA's definition of feasible mitigation, which similarly allows consideration of economic, technological and environmental factors. Thus, application of BACT will require the maximum feasible reductions of GHGs at new sources.

Level of Significance after Mitigation

In light of the uncertainty associated with the effects of future individual stationary sources that have not yet been proposed for approval, and given that the emissions estimates for the proposed project and cumulative project scenarios do not include construction activities and mobile source emissions, the PEA concludes that the adoption and implementation of feasible mitigation will not reduce significant air quality, health, and climate change impacts to a less-than-significant level. Accordingly, the project-level and cumulative impacts identified as significant in this chapter cannot feasibly be mitigated to a less-than-significant level and remain significant and unavoidable.