CHAPTER 13

AIR QUALITY

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CHAPTER 13 AIR QUALITY

INTRODUCTION

This chapter describes the existing ambient air quality conditions in the Santa Clarita Valley and applicable air quality regulations. Also included in this chapter are VWRP current operating emission levels, estimates for VWRP expansion-related air emissions from direct and indirect sources, identification of potential air quality impacts, and recommendations for feasible air quality mitigation measures related to implementation of the 2015 Plan. Due to the minor nature of the proposed upgrade at the SWRP (reference Chapters 7 and 8) and its minimal potential impact on air quality both during construction and operation, no analysis of the baseline air quality conditions at the SWRP was conducted.

Facts and data presented in this chapter were obtained from County Sanitation Districts of Los Angeles County (1994 and 1996), SCAQMD (1993 and 1996), SCAG (1994) and the Joint Emissions Inventory Program (1993). Reference Appendix C for methodologies, assumptions, and additional information used to determine air quality impacts associated with the recommended project.

SETTING

Regional Setting

The SCVJSS is located in the South Coast Air Basin as defined by California Air Resources Board. The SCAB covers an area of approximately 6,600 square miles and comprises all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside Counties. It is bounded by the Pacific Ocean to the west, the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east, and the San Diego County line to the south (SCAQMD, 1996).

Climate and Meteorological Conditions in the South Coast Air Basin

The SCAB lies within the semipermanent high-pressure zone of the eastern Pacific Ocean. This area is characterized by warm, dry summers and mild winters with moderate rainfall, which is typical of coastal zones along the western shores of continents at lower latitudes.

The SCAB's climate and topography are conducive to the formation and transport of photochemical pollutants throughout the region. Prevailing daily winds in the region are westerly, with a nighttime return flow. This pattern is typically broken five to ten days a year when strong northeasterly winds, commonly known as "Santa Ana winds," sweep down from the desert.

Although atmospheric emissions are roughly constant throughout the year, the heaviest concentrations of photochemical pollutants occur from late spring to early fall when photochemical reactions are greatest due to higher sunlight intensity and lower elevation daytime inversion layers. An inversion layer forms when cooler, denser air is trapped by warmer, lighter air. The inversion layer traps pollutants close to the ground and when the pollutants are exposed to high intensity sunlight smog is created. Photochemical pollution levels of the SCAB are the highest in the United States, and some of the pollutants are transported to adjacent air basins (i.e., Mojave Desert Air Basin and Salton Sea Air Basin). Carbon monoxide concentrations are highest during winter, when relatively stagnant air conditions result in an accumulation of this pollutant. Highest CO concentrations are found near heavily traveled and heavily congested roadways (SCAG, 1994).

Air Quality in the South Coast Air Basin

Both the state of California and the federal government have established ambient air quality standards for several different pollutants, referred to as criteria pollutants. For some of the criteria pollutants, separate standards have been set for different averaging periods. Most ambient standards have been set to protect public health and reduce exposure to air pollution; for some noncriteria pollutants, however, standards have been based on other values, such as protection of crops, protection of materials, or avoidance of nuisance conditions.

Health-based air quality standards for ozone, carbon monoxide, nitrogen dioxide, fine particulate matter, sulfur dioxide, and lead have been established by both the state of California and federal government. For all criteria pollutants the California standard is either equivalent to or more stringent than the federal standard. In addition to the federal criteria pollutants, California has also established standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. Currently, the SCAB is designated as a nonattainment area for federal and state standards for O_3, PM_{10}, and CO. The SCAB is also designated as a nonattainment area for the federal NO_2 standards. Since 1993, however neither the federal nor state NO_2 standards have been exceeded in the SCAB. Consequently, California is in the process of seeking a redesignation to attainment status for NO_2 from the federal government (SCAQMD, 1996).

Because NO_2 emissions contribute to elevated O_3 levels and PM_{10} formation, NO_2 emissions reductions are still targeted by the SCAQMD in the *1997 Air Quality Management Plan*. Similarly, reductions in SO_2 emissions are also targeted by the SCAQMD in the 1997 AQMP, since SO_2 emissions are also considered precursors to PM_{10} and sulfates. In 1995, the SCAB exceeded the state sulfates standard. However, sulfate standards and associated health effects are not addressed in this section since there are no measurable sulfate emissions anticipated as a result of the recommended project. Similarly, the SCAB exceeded the state visibility standard during 1995. Since emissions from this project do not approach the federal prevention of significant deterioration (PSD) or SCAQMD visibility analysis criteria and are not expected to measurably contribute to the degradation of visibility in the SCAB, visibility impacts will not be addressed in this chapter.

Table 13-1 presents the federal and state standards and a summary of air quality monitoring data in the SCAB for nonattainment criteria pollutants (O_3, CO, PM_{10}, and NO_2) as designated by the federal government. Included in Table 13-1 for each of the subject nonattainment pollutants are corresponding maximum monitored concentrations in the SCAB and the number of days federal and state air quality standards were exceeded in 1995. Health effects, state and federal standards, and monitoring results for each of the subject nonattainment pollutants are described below.

Ozone

- *Health Effects:* Unlike primary criteria pollutants that are emitted directly from an emission source, O_3 is considered a secondary pollutant. Short-term and long-term exposure to O_3 is a public health concern. Exposure to O_3 produces alterations in respiration resulting in shallow, rapid breathing and a decrease in pulmonary performance. Not only does O_3 affect breathing patterns, exposure can also result in increased susceptibility to infections, inflammation of lung tissue, and some immunological changes. In addition, O_3 can cause substantial damage to leaf tissues of crops and natural vegetation, and it damages many materials by acting as a chemical oxidizing agent. People who suffer from

Table 13-1
SUMMARY OF 1995 MONITORING DATA FOR CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN

	AIR QUALITY STANDARDS		MAXIMUM MONITORED CONCENTRATION		NUMBER OF DAYS STANDARD EXCEEDED[a]	
	FEDERAL	STATE	CONCENTRATION	TIME PERIOD	FEDERAL	STATE
Ozone	0.12 ppm (1 hour)	0.09 ppm (1 hour)	0.26 ppm	1 hour	73	123
Carbon Monoxide	9.0 ppm (8 hours) 35 ppm (1 hour)	9.0 ppm (8 hours) 20 ppm (1 hour)	13.86 ppm 17 ppm	8 hours 1 hour	13 none	15 none
Fine Particulate Matter	150 $\mu g/m^3$ (24 hours) 50 $\mu g/m^3$ (AAM)	50 $\mu g/m^3$ (24 hours) 30 $\mu g/m^3$ (AGM)	219 $\mu g/m^3$ 69 $\mu g/m^3$ 51.8 $\mu g/m^3$	24 hours AGM AAM	4 none none	38 none none
Nitrogen Dioxide	0.053 ppm (AAM)	0.25 ppm (1 hour)	0.0464 ppm 0.24 ppm	annual average 1 hour	none[b] none[b]	none[b] none[b]

Source: South Coast Air Quality Management District, 1996.

Notes: a) National and state standards differ. Please see the text for an explanation of differences.
b) Although there have been no exceedances of the state and federal NO_2 standards since 1993 and 1991 respectively, SCAB has not yet been officially designated as an attainment area for NO_2. California is in the process, via the 1997 AQMP, of seeking a redesignation to attainment status for NO_2 from the federal government.

respiratory diseases such as asthma, emphysema, and chronic bronchitis are the most sensitive to the effects of O_3.

- *State and Federal Standards:* Both the state and federal O_3 standards are based on a 1-hour averaging period. The state and federal 1-hour O_3 standards are 0.09 and 0.12 parts per million, respectively. An O_3 attainment area cannot exceed the state standard at any time and cannot exceed the federal standard more than three times in any three-year period.

  Both federal and state O_3 standards are commonly exceeded in the SCAB; exceedances occurred on 73 and 123 days, respectively, during 1995. In the Santa Clarita Valley during 1995, the federal and state standards were exceeded 26 and 72 days, respectively.

Carbon Monoxide

- *Health Effects:* Incomplete combustion of fuels results in the formation of CO, which is a colorless and odorless gas. There are no direct toxic effects associated with inhaled CO. However, CO levels are a public health concern because this pollutant competes with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin that results in a reduction in the rate at which oxygen is transported in the blood stream. Low concentrations of CO can significantly affect the amount of oxygen in the blood stream because CO binds to hemoglobin 220 to 245 times more strongly than oxygen. Both the cardiovascular system and the central nervous system can be affected when 25 to 40 percent of the hemoglobin in the blood stream is bound to CO rather than to oxygen. People who suffer from health conditions where a deficient volume of blood is supplied to the

heart are more susceptible to the adverse effects of CO exposure. Both state and federal ambient air quality standards for CO were established at levels intended to protect persons whose medical condition already compromises their circulatory system's ability to deliver oxygen.

- *State and Federal Standards:* State and federal CO standards have been set for both 1-hour and 8-hour averaging periods. The state and federal 1-hour CO standards are 20 and 35 ppm, respectively. State and federal standards are both 9.0 ppm for an 8-hour averaging period. State CO standards are presented as values not to be exceeded. Federal CO standards are established as values not to be exceeded more than once per year.

  The 1-hour state and federal CO standards were not exceeded in the SCAB during 1995. However, both federal and state 8-hour CO standards were exceeded on 13 and 15 days, respectively, during 1995. Neither the federal nor the state 8-hour standard were exceeded during 1995 in the Santa Clarita Valley.

Particulate Matter (Under 10 Microns in Diameter)

- *Health Effects:* A mixture of man-made and natural substances make up suspended particulate matter referred to as PM_{10}. PM_{10} emissions can arise from such sources as road dust, diesel soot, combustion products, construction operations, and wind storms. PM_{10} is also formed in the atmosphere from reactions of NO_2 and SO_2 with ammonia.

  Public health concerns associated with suspended particles focus on those particles small enough to reach and penetrate the lungs when inhaled. Particles larger than 10 microns in diameter typically do not reach the lungs. PM_{10}, alone or in combination with other pollutants, compose a serious health hazard. For example, inhaled particles can actually physically damage the alveoli of the lungs or the particle may contain adsorbed toxic substances that are injurious, and in either case may result in permanent lung damage. PM_{10} can also have a damaging effect on health by interfering with the body's mechanism for clearing the respiratory tract. The population most susceptible to the effects of PM_{10} are those who have pre-existing respiratory and/or cardiovascular disease, particularly the elderly and children.

- *State and Federal Standards:* State and federal PM_{10} standards have been set for 24-hour and annual averaging times. The state and federal 24-hour PM_{10} standard equals 50 and 150 $\mu g/m^3$, respectively. The state annual PM_{10} standard is 30 $\mu g/m^3$ (based on an annual geometric mean), whereas the federal annual PM_{10} standard is 50 $\mu g/m^3$ (based on an annual arithmetic mean). Federal and state 24-hour PM_{10} standards may not be exceeded more than one day per year, and both annual standards may not be exceeded.

  The state 24-hour PM_{10} standard was exceeded on 38 days in the SCAB during 1995. The federal 24-hour PM_{10} standard was exceeded on only four days in the SCAB during 1995. Neither the state nor the federal annual standard was exceeded in the Santa Clarita Valley during 1995. However, during 1995 the state 24-hour standard was exceeded 13 days in the Santa Clarita Valley.

Nitrogen Dioxide

- *Health Effects:* Nitrogen oxides emissions typically result from combustion of fuels.

NO_x is formed by either or both of two mechanisms, thermal NO_x or fuel NO_x (Cooper and Alley, 1986). The principal form of nitrogen oxide produced by combustion is nitric oxide, but NO reacts with oxygen to form NO_2, creating a mixture of NO and NO_2. NO_2 acts as an acute respiratory irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in young children (2-3 years old) has been observed at concentrations below 0.3 ppm.

NO_2 is a brownish gas formed in the atmosphere through a rapid photochemical reaction and results in reduced visibility. NO_2 also contributes to the formation of PM_{10} by combining with ammonia. Additionally, when subjected to photochemical reactions, NO_2 will react with other pollutants (reactive organic gases) in the atmosphere to form O_3. It is believed that when exposed to lower levels of NO_2, people who suffer from asthma and/or chronic obstructive pulmonary disease are more susceptible to larger decreases in lung capacities than healthier individuals.

- *State and Federal Standards:* The averaging period for state and federal NO_2 standards are different. For example, the state NO_2 standard is 0.25 ppm based on a 1-hour period and the federal standard is 0.053 ppm based on an annual arithmetic mean. An attainment area cannot not exceed the state or federal NO_2 standards. The nonattainment designation for NO_2 is based on the current federal classification. SCAB has not exceeded the federal annual NO_2 standard since 1991 and the state one-hour NO_2 standard has not been exceeded since 1993.

Inventory of Existing Regional Emissions

An estimate of 1993 emissions of ROG, CO, NO_x, SO_x, and PM_{10} in the Los Angeles County portion of the SCAB is provided in Table 13-2. ROG is a class of volatile organic compound emissions that are precursors to the formation of O_3.

As shown in Table 13-2, ROG and SO_x emissions from mobile sources are moderately greater than those from stationary sources in the SCAB. Mobile sources emit substantially more CO and NO_x than do stationary sources. Conversely, stationary sources emit almost 10 times more PM_{10} than do mobile sources.

Regulatory Setting

Air quality management in California is governed by the federal and California Clean Air Acts and the California Health and Safety Code. The EPA oversees implementation of the CAA. The CARB, a department of the Cal-EPA, oversees air quality planning and control throughout California and regulates mobile-sources and consumer products. The CARB divides the state into air basins, based on meteorological and geographical conditions and, to the extent feasible, political boundaries.

The SCAQMD is a special district created by the California legislature to manage air quality in the SCAB, including all of Los Angeles County. However, effective on July 1, 1997 the desert portion of Los Angeles County will be placed under the jurisdiction of the Antelope Valley Air Pollution Control District (AVAPCD) which was established in September 1996. The SCAQMD is responsible for stationary and indirect source control, air monitoring, and preparation of air quality management plans.

Table 13-2
1993 INVENTORY OF CRITERIA POLLUTANT EMISSIONS IN THE SCAB
(Average Annual Day)

MAJOR SOURCE CATEGORY	REACTIVE ORGANIC GASES		NITROGEN OXIDES		CARBON MONOXIDE		SULFUR OXIDES		PARTICULATE MATTER	
	TONS PER DAY	PERCENT OF TOTAL	TONS PER DAY	PERCENT OF TOTAL	TONS PER DAY	PERCENT OF TOTAL	TONS PER DAY	PERCENT OF TOTAL	TONS PER DAY	PERCENT OF TOTAL
Stationary Sources:										
Fuel Combustion	11	0.9	136	11.4	65	0.9	8	10.1	10	2.4
Waste Burning	1	0.1	3	0.3	17	0.2	2	2.5	2	0.5
Solvent Use	331	26.7	0	0.0	0	0.0	0	0.0	1	0.2
Petroleum Process, Storage & Transfer	58	4.7	8	0.7	5	0.1	11	13.9	2	0.5
Industrial Processes	17	1.4	6	0.5	1	0.0	2	2.5	15	3.6
Misc. Processes[a]	32	2.6	1	0.1	11	0.2	0	0.0	344	82.7
Subtotal	450	36.3	154	12.9	99	1.4	23	29.1	374	89.9
Mobile Sources:										
On-road Vehicles	676	54.5	794	66.5	5,682	80.7	25	31.6	27	6.5
Off-road Vehicles	114	9.2	246	20.6	1,264	17.9	31	39.2	15	3.6
Subtotal	790	63.7	1,040	87.1	6,946	98.6	56	70.9	42	10.1
Total of All Sources	**1,240**	**100.0**	**1,194**	**100.0**	**7,045**	**100.0**	**79**	**100.0**	**416**	**100.0**

Source: Draft 1997 Air Quality Management Plan.

Note: a) Travel related road dust included.

The CAA requires that the appropriate authorities prepare air quality plans designed to achieve national ambient air quality standards. The SCAQMD is responsible for preparing an AQMP. After CARB's review and approval, the AQMP for the SCAB is combined with approved plans from the other districts throughout the state to form what is collectively referred to as the SIP. The SIP is then submitted to EPA Region IX for approval. A separate attainment demonstration plan is required by EPA for each nonattainment pollutant.

If the SIP, which is submitted by the CARB, is deemed insufficient, EPA is required to prepare a Federal Implementation Plan (FIP) to attain the national ambient air quality standards.

Federal Implementation Plan

The 1977 CAA Amendments required all areas of the United States to submit O_3 and CO plans in 1979 and in 1982 that demonstrated attainment of the national health-based standards by 1987. Because massive emission reductions were needed to meet the standards in certain areas of California, including the SCAB, the SCAQMD determined that such plans were not feasible. EPA opted to work with the local districts rather than reject their AQMPs. As a result of a lengthy litigation process in which public interest groups successfully challenged EPA's decision not to disapprove the 1982 AQMPs for the SCAB and other California air districts, EPA was mandated to prepare an FIP for those regions by July 31, 1990. An FIP for the SCAB was completed and published in the Federal Register as required. However, EPA argued that it no longer had an obligation to issue the FIP under the CAA Amendments of 1990 because Congress had established comprehensive new state planning requirements and attainment deadlines. The EPA was again challenged in court relative to its FIP obligation, and a court ruling determined that a new FIP for O_3 and CO was required. Consequently, EPA was under a court order to prepare an FIP for the

SCAB that demonstrates attainment for O_3 and CO. The EPA Administrator signed the California FIP for the South Coast, Ventura, and Sacramento regions in 1995. Subsequent to the signing, the U.S. Congress rescinded the California FIP. The attainment schedule for compliance with state and federal national ambient air quality standards for CO, PM_{10}, and O_3 standards currently remains unchanged from that proposed in SCAQMD's 1994 AQMP (SCAQMD, 1996).

State Implementation Plan

The SCAQMD has developed its own AQMP, as required by the CAA Amendments of 1990. The 1997 AQMP is an update of the 1994 AQMP, which was incorporated into California's 1994 O_3 SIP. The 1997 AQMP includes a new attainment plan for meeting the federal PM_{10} standards, updated O_3 and CO attainment demonstrations, and a request for a redesignation to attainment for the federal NO_2 standard, and a new maintenance plan for NO_2. Upon CARB approval of the 1997 AQMP, the SIP will be updated. (SCAQMD, 1996.)

EPA has developed a conformity procedure for determining whether projects that are considered federal actions conform to applicable SIPs (40 CFR Parts 51 and 93). Conformity procedures that are at least as stringent as those proposed by EPA must be incorporated into the applicable SIP. In the absence of a fully federally approved SIP containing general conformity procedures, all federally funded projects must be shown to conform to the requirements in the federal conformity guidance, as shown later in this chapter.

Southern California Association of Governments

SCAG is a metropolitan planning organization with an executive council of 70 members. SCAG is responsible for, among other things, preparing regional growth forecasts for the SCAB. The SCAQMD has entered into a memorandum of understanding to use SCAG's growth forecasts in developing the AQMPs.

Valencia Water Reclamation Plant

Criteria Pollutants Sources and Emissions

Criteria pollutant emissions associated with the operation of the VWRP and as reported to the SCAQMD for emission inventory reporting year 1996 (July 1, 1995 through June 30, 1996) are shown in Table 13-3. The emissions are broken down into five categories consisting of: *Primary Treatment, Secondary Treatment, Solids Handling, Permitted Combustion Equipment,* and *Other.* The category referred to as *Other* includes emissions from all on-site permit-exempt activities (reference SCAQMD Rule 219). Permitted emissions are those produced by sources that require an air quality permit to operate, such as primary treatment, secondary treatment, and solids handling (which are all included on two facility permits, reference application numbers 229188 and 229192). The majority of the emissions from the VWRP are a result of burning digester gas on-site (approximately 0.18 million cubic feet per day) in a variety of permitted combustion equipment, which includes two flares, one resource recovery engine, and one boiler.

Sources and Emissions of Toxic Pollutants

In accordance with the California Air Toxics "Hot Spots" Information and Assessment Act of 1987 (Assembly Bill 2588), the Districts prepared and submitted to the SCAQMD on February 11, 1994, an air toxics inventory report (ATIR) for reporting year 1991 (County Sanitation Districts of Los Angeles County, 1994). The ATIR contains a summary of toxic substances emitted from the VWRP processes. Because the VWRP is not considered as a significant source of toxic emissions by the state, a baseline

Table 13-3
CRITERIA POLLUTANT EMISSIONS AT VWRP FOR EMISSIONS INVENTORY REPORTING YEAR 1996

EMISSION SOURCE	AMOUNT OF EMISSIONS (TONS PER YEAR)				
	REACTIVE ORGANIC GASES	NITROGEN OXIDES	SULFUR OXIDES	CARBON MONOXIDE	PARTICULATE MATTER
Primary Treatment	0.08	0.00	0.00	0.00	0.00
Secondary Treatment	0.53	0.00	0.00	0.00	0.00
Solids Handling	0.11	0.00	0.00	0.00	0.00
Permitted Combustion Equipment	0.34	1.14	0.05	8.05	0.58
Other (e.g., solvent use)	0.75	0.00	0.00	0.00	0.00
TOTAL	**1.81**	**1.14**	**0.05**	**8.05**	**0.58**

Source: County Sanitation Districts of Los Angeles County, 1996.

health risk assessment was not performed in conjunction with the ATIR. However, as part of the evaluation for determining significance of the recommended project, a health risk assessment (HRA) was conducted pursuant to SCAQMD Rule 1401. The results of the HRA are discussed later in this chapter.

Sources of Odors and Number and Frequency of Odor Complaints

Hydrogen sulfide is typically the primary odor causing compound emitted from a wastewater treatment facility. This compound is produced by the activity of anaerobic organisms which are present in septic collection systems (sewers) and in anaerobic treatment processes, such as the biodegradation of solids in digesters. Another common odorous compound associated with wastewater treatment is non-ionized ammonia. This compound is prevalent and will volatilize if the wastewater pH increases (becomes less acidic and more alkaline). There are numerous other organic compounds that can contribute to odorous conditions, however, these compounds are typically emitted in concentrations below a detectable odor threshold.

The Districts have already implemented its odor control policy at the VWRP in an effort to eliminate occurrences of off-site odors. As part of the odor control policy, the Districts have integrated odor control features with the existing design of the VWRP. For instance, several existing treatment processes were previously identified at the VWRP to have the potential to cause odors that could possibly migrate off-site. These processes are the inlet works, primary sedimentation, dissolved air flotation, and the flow equalization basin (FEB). All of these sources have been equipped with odor control devices which were specifically installed to mitigate off-site odors and are currently in service. Off-gas from the covered inlet works (cominutors) and the primary treatment process (covered primary sedimentation tanks) is vented directly to a dual chemical odor scrubber which is operated continuously. Additionally, the off-gas from the inlet works and primary treatment process can also be mixed with process air and delivered to the aeration tanks where the odor causing compounds are subsequently biodegraded. This mode of operation is only utilized when supplemental or standby odor control at the inlet works and/or primary treatment is deemed necessary by plant operators. The DAF process is equipped with a carbon odor

scrubber which is operated continuously. Off-gas from the FEB vents to a dual chemical odor scrubber. This odor scrubber is only operated when the FEB is being filled.

Besides odor scrubbers, other odor control technologies are employed at the VWRP, such as the installation of process covers wherever feasible, utilization of portable carbon odor scrubbers during maintenance activities and/or upset conditions, and chemical treatment of the wastewater and solids with ferrous chloride to inhibit the production of hydrogen sulfide.

All of the aforementioned odor control technologies have proven to be effective in controlling odors at the VWRP. A demonstration of the odor control effectiveness is a review of the facility's odor complaint history. For example, during 1996 only two odor complaints were received, both of which were on the same day and were associated with a maintenance activity. The Districts have procedures in place for receiving, investigating, and responding to odor complaints and implementing corrective actions immediately. Typically, most odor complaints are responded to and investigated within 30 minutes.

With respect to future modifications to the VWRP, process odor control is mandated by a variety of regulations. For instance, SCAQMD Rule 402 prohibits the discharge from any source which causes an odor nuisance to the public. Additionally, the SCAQMD's Best Available Control Technology for new or modified POTW sources requires that primary treatment processes be covered and the off-gas be vented to a carbon scrubber. Although the BACT requirement for a carbon scrubber was established to control ROG emissions, in certain applications (e.g., treatment of primary treatment off-gas) carbon scrubbers, similar to dual chemical wet scrubbers, have also proven to be very effective in controlling odors. Impending regulations such as the 1990 CAA Amendments' Title III maximum achievable control technology for toxics standards may eventually require the implementation of additional air pollution control systems, which, as a corollary effect, may further reduce process-related odor levels.

Local Wind Rose

Wind rose diagrams are used, among other purposes, to indicate the predominant wind patterns in an area. Wind patterns can be used to indicate odor and emissions dispersion trends. Wind roses for the Newhall meteorological station located near the VWRP show the percentage of time wind is blowing in each direction and the corresponding frequency and range in wind speed at the station for each season of the year (Figures 13-1 through 13-4). During the winter, summer, and fall seasons the predominant wind originates from the south-southeast. During spring, the predominant wind originates from the south.

Sensitive Receptors

Areas adjacent to the VWRP are currently zoned either heavy agricultural, unlimited commercial, commercial/recreational, commercial/manufacturing or restricted manufacturing. The nearest residential receptor is located approximately one-half mile west-northwest of the VWRP. The northeast border of the VWRP is flanked by the Golden State Freeway. The nearest commercial receptor is located approximately 1,000 feet northeast of the facility. The residential receptor described above has been identified as the nearest sensitive receptor to the VWRP. Therefore, no sensitive receptors are currently located within a one-quarter mile radius of the existing facility.

IMPACTS AND MITIGATION MEASURES OF THE 2015 PLAN ALTERNATIVES

Methodology and Assumptions for Impact Analysis

Construction Activities

The recommended project will be constructed in two phases, Stage V and Stage VI. The analysis of air quality impacts resulting from construction activities is broken down into direct and indirect emissions for both Stages V and VI. Direct emissions are defined as emissions resulting from the on-site activities (including but not limited to grading, excavation, demolition, painting, heavy-duty equipment on unpaved roads, and loading, and unloading trucks). Indirect emissions are associated with construction workers' commuting trips. In addition, a microscale CO analysis was conducted to determine air quality impacts of commuting construction workers at the nearest and busiest intersection near the VWRP. The methods and assumptions used are described in Appendix C.

Operational Activities

Similar to the assessment of air quality impacts from construction, the operational related emissions are also broken down into direct and indirect emissions. With respect to operational activities, indirect emissions include air emissions associated with the transportation of biosolids within SCAB boundaries (for direct land application and/or disposal) and additional Stage V and VI employee commute trips. Direct emissions represent air emissions associated with the operation of the newly constructed Stage V and Stage VI processes/equipment.

The analysis of air quality impacts from the operation of the recommended project is divided into four sections: criteria pollutants, air toxics, accidental release of acutely hazardous materials, and odors. The data, methods and assumptions used to estimate emissions are described in Appendix C.

Criteria for Determining Significance

Criteria used for determining the significance of air quality impacts for the recommended project are contained in Chapter 6 of the CEQA Handbook (SCAQMD, 1993) and SCAQMD Rules 1401 (New Source Review of Carcinogenic Air Contaminants) and 1403 (Asbestos Emissions from Demolition/ Renovation Activities). These criteria are summarized below.

Construction Activities

Emissions (direct and indirect) associated with a project's construction activities are estimated on a tons per quarter (three consecutive months) basis. These emission estimates (within SCAB boundaries) are compared with the following CEQA Handbook thresholds to determine project significance:

- 2.5 tons per quarter of ROG
- 2.5 tons per quarter of NO_x
- 24.75 tons per quarter of CO
- 6.75 tons per quarter of PM_{10}
- 6.75 ton per quarter of SO_x

The SCAQMD has also established the following significance thresholds that are based on calculations of daily construction-related emissions estimates:

- 75 pounds per day of ROG
- 100 pounds per day of NO_x
- 550 pounds per day of CO

- 150 pounds per day of PM_{10}
- 150 pounds per day of SO_x

Estimating emissions associated with a project's construction on a daily basis is extremely difficult since it is virtually impossible to predict to the exact day when a piece of construction equipment will be operated on-site. Utilizing the calendar-quarter estimation of construction-related emissions for determining project significance is considered the more reliable and representative approach. Therefore, the calendar-quarter significance thresholds are used in this section to determine the significance of impacts to air quality. Whenever emission estimates (including direct and indirect sources) from a proposed project exceed the CEQA Handbook quarterly thresholds within the SCAB boundaries, the impact is considered significant.

SCAQMD Rule 1403 is used as the criterion for determining the significance of asbestos-related impacts for the recommended project. Rule 1403 specifies work practice requirements for demolition and renovation activities and the associated disturbance of asbestos-containing material. Rule 1403 requirements for demolition or renovation operations include notification, removal techniques for asbestos-containing material, cleanup procedures, and waste storage and disposal requirements. Asbestos emissions resulting from demolition or renovation work that is not performed in compliance with SCAQMD Rule 1403 could potentially pose a threat to public health and safety. Such emissions are considered a significant impact.

Operational Activities

Both direct and indirect emission estimates (within SCAB boundaries) are considered when determining whether or not the recommended project exceeds the following CEQA Handbook significance thresholds:

- 55 pounds per day of ROG
- 55 pounds per day of NO_x
- 550 pounds per day of CO
- 150 pounds per day of PM_{10}
- 150 pounds per day of SO_x
- California 1-hour or 8-hour CO standard

Whenever emission estimates (including direct and indirect) associated with the operation of a proposed project exceed any of the above emission thresholds within SCAB, the project is considered to have significant air quality impacts. These thresholds will be used to determine the significance of operation-related air quality impacts collectively for Stages V and VI.

Air Toxic Emissions

Since the VWRP is considered an insignificant source (not designated a high priority facility by the CARB) of air toxics, only the cancer risk in the surrounding population (residential and commercial) is evaluated to determine project significance. Similarly, because the VWRP is considered an insignificant source of air toxics, neither the chronic nor acute health hazard indices were evaluated for the recommended project.

In accordance with the CEQA Handbook a project is determined to be significant if the maximum individual cancer risk (MICR) associated with the cumulative impact of emissions from the proposed project exceeds 1 in a million or 10 in a million if the project is constructed with T-BACT using the procedures in SCAQMD Rule 1401 (New Source Review of Carcinogenic Air Contaminants).

Accidental Release of Acutely Hazardous Materials

The potential accidental release of acutely hazardous materials is discussed in Chapter 19, Public Health.

Odors

A project is determined to be significant if it creates objectionable off-site odors that could impact sensitive receptors.

Consistency

Consistency is a requirement under Section 15125(b) of the State CEQA Guidelines. It requires that an EIR identify and discuss any inconsistencies between the recommended project and applicable general and regional plans. Other chapters of the 2015 Plan and EIR discuss the consistency of the recommended project with applicable plans, including the City of Santa Clarita's General Plan, the Los Angeles County General Plan, SCAG's RCPG and RMP, RWQCB's Basin Plan, and MTA's CMP. This chapter specifically focuses on the consistency of the recommended project with the AQMP. The population projections used to develop the recommended project are based on SCAG's latest projections (see Chapter 5). The SCAQMD, under a memorandum of understanding with SCAG, utilizes population projections developed by SCAG for modeling purposes in order to estimate the projected emissions for the AQMP. Therefore, since the recommended project is based on those same population projections, the requirement for consistency with the AQMP is satisfied.

Conformity

Conformity determination is a requirement under Section 176(c) of the CAA which requires that all federal actions conform to an EPA approved state implementation plan. The intent of a conformity determination is to ensure that federal actions do not cause or contribute to a degradation of air quality in areas with existing air quality problems. EPA's general conformity rule (40 CFR Parts 6, 51, and 93), for non-transportation projects, took effect January 31, 1994, and was followed by the September 9, 1994, adoption of SCAQMD's general conformity rule (Rule 1901) which includes EPA's rule by reference.

Federal financial assistance, by EPA's definition, is considered a federal action. Districts Nos. 26 and 32 are seeking SRF loans for the construction of the recommended project. Since the SRF loan process is considered a federal action, a conformity determination is required. However, Section 51.853 of the federal rule contains provisions which do not require a conformity determination for specific federal actions. For example, a conformity determination is not required if the totals of direct and indirect emissions associated with the federal action are below the *de minimis* emission threshold levels specified in Section 51.853(b)(1).

The direct and indirect emissions (from both construction and operational activities) associated with the recommended project were estimated to determine if any of the Section 51.853(b)(1) emission threshold levels were exceeded and would consequently necessitate a conformity determination.

The recommended project emission totals were determined to be significantly below the *de minimis* emission threshold limits, as shown in Appendix C. Therefore, the recommended project is not subject to federal conformity determination requirements.

The Recommended Project

VWRP Expansion Construction Impacts

Impact: *Potential for Short-Term Increase in Emissions of Nitrogen Oxides Resulting from Construction at the VWRP.* Construction of new and modified sources at the VWRP will result in emissions of NO_x. Table 13-4 shows emission estimates associated with the recommended project's construction activities. As specified in Chapter 9 of the CEQA Handbook, estimates of construction-related emissions are prepared for each calendar quarter during the construction period.

As shown in Table 13-4, the NO_x emissions (direct and indirect) associated with Stage V of the project reach a maximum of approximately 0.019 tons per quarter for three consecutive quarters beginning with the fourth quarter of 1999. The NO_x emissions associated with Stage VI of the project reach a maximum of approximately 0.013 tons per quarter in the fourth quarter of 2007. The majority of the emissions for both stages of construction are associated with indirect sources (e.g., construction worker commute trips). NO_x emission estimates for every construction quarter are significantly less than the CEQA Handbook threshold of 2.5 tons per quarter. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Short-Term Increase in Emissions of Sulfur Oxides Resulting from Construction at the VWRP.* Construction of new and modified sources at the VWRP will result in emissions of SO_x. Table 13-4 shows emission estimates associated with the recommended project's construction activities. As specified in the CEQA Handbook, estimates of construction-related emissions were prepared for each calendar quarter during the construction period.

Table 13-4 shows SO_x emissions (both direct and indirect) associated with Stage V and Stage VI construction activities. The construction-related SO_x emissions reach a maximum of approximately 0.002 tons per quarter for a total of 12 quarters during the Stage V and Stage VI construction periods. For every construction quarter, the SO_x emission estimates are significantly less than the CEQA Handbook threshold of 6.75 tons per quarter. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Short-Term Increase in Emissions of Carbon Monoxide Resulting from Construction at the VWRP.* Construction of new and modified sources at the VWRP will result in emissions of CO. Table 13-4 shows emission estimates associated with the recommended project's construction activities. As specified in the CEQA Handbook, estimates of construction-related emissions were prepared for each calendar quarter during the construction period.

Table 13-4 shows that CO emissions (both direct and indirect) associated with Stage V reach a maximum of approximately 0.168 tons per quarter for three consecutive quarters beginning the fourth quarter of 1999. During the Stage VI construction period the CO emissions reach a maximum of 0.93 tons per quarter in the fourth quarter of 2007. CO emission estimates for every construction quarter are significantly less than the CEQA Handbook threshold of 24.75 tons per quarter. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Short-Term Increase in Emissions of Reactive Organic Gases Resulting from Construction at the VWRP.* Construction of new and modified sources at the VWRP will result in the generation of ROG emissions. As specified in

Chapter 9 of the CEQA Handbook, estimates of construction-related emissions are prepared for each calendar quarter during the construction period.

Table 13-4 shows estimated ROG emissions that will result from construction activities at the VWRP. ROG emissions (direct and indirect) associated with Stage V of the project reach a maximum of approximately 1.2 tons per quarter in the second quarter of 2001. The emissions associated with Stage VI of the project reach a maximum of approximately 0.36 tons per quarter for two consecutive quarters beginning with the second quarter of 2009. The majority of the emissions for both stages of construction are associated with architectural coatings (e.g., paints and primers compliant with SCAQMD Rule 1113). The use of architectural coatings and the associated generation of ROG emissions are typically concentrated near the end of the construction period when coatings are applied to installed equipment, piping, and buildings. ROG emission estimates for every construction quarter are less than the CEQA Handbook threshold of 2.5 tons per quarter. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Short-Term Increase in Emissions of Inhalable Particulates Resulting from Construction at the VWRP.* Construction of new and modified sources at the VWRP will result in the generation of PM_{10} emissions. As specified in Chapter 9 of the CEQA Handbook, estimates of construction related emissions are prepared for each calendar quarter during the construction period.

PM_{10} emissions (direct and indirect) associated with construction of the Stage V reach a maximum of approximately 11 tons per quarter for seven consecutive quarters beginning the fourth quarter of 1999. The emissions associated with construction of Stage VI reach a maximum of approximately 10 tons per quarter for five consecutive quarters beginning with the fourth quarter of 2007. This impact is considered significant because the amount of estimated PM_{10} emissions exceeds the significance criterion of 6.75 tons per quarter. As shown in Table 13-4, this significance threshold would be exceeded a total of 12 quarters collectively throughout the construction period. The majority of the direct PM_{10} emissions are associated with fugitive dust resulting from earth moving and excavation activities. Therefore, this impact is considered significant and unavoidable where feasible mitigation measures are insufficient to reduce the impact to a less than significant.

It should be noted that the SCAQMD is currently in the process of revising emission factors used to estimate PM_{10} emissions from construction activities. The SCAQMD now recognizes that the existing emission factors significantly over-predict PM_{10} construction emissions. Through the cooperative efforts of the Best Available Control Measure (BACM) Working Group, the SCAQMD recently embarked on an accelerated project to correct previously identified fugitive dust inventory deficiencies. The emissions inventory project included studies aimed at improving emission factors for fugitive sources emitting PM_{10} such as construction activities. Based on this study the SCAQMD concluded that emission factors used for entrained paved road dust and construction are significantly lower than previous estimates (SCAQMD, 1996). Unfortunately, the revised PM_{10} emission factors are not yet available from the SCAQMD for use at the time this document was prepared.

Mitigation: Implementation of the following mitigation measures would not reduce this impact to a less than significant level. Table 11-4 of the CEQA Handbook presents mitigation measures for construction-related PM_{10} emissions. The following

Table 13-4
VWRP EXPANSION CONSTRUCTION-RELATED EMISSIONS

YEAR	QTR	REACTIVE ORGANIC GASES (TONS PER QUARTER)			NITROGEN OXIDES (TONS PER QUARTER)			CARBON DIOXIDE (TONS PER QUARTER)			SULFUR DIOXIDE (TONS PER QUARTER)			PARTICULATE MATTER (TONS PER QUARTER)		
		Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total	Direct	Indirect	Total
Stage V																
1999	3	0.001	0.007	0.009	0.004	0.009	0.013	0.010	0.086	0.097	0.000	0.001	0.001	6.475	0.002	6.477
1999	4	0.001	0.014	0.015	0.002	0.017	0.019	0.005	0.162	0.168	0.000	0.002	0.002	10.851	0.004	10.855
2000	1	0.001	0.014	0.015	0.002	0.017	0.019	0.005	0.162	0.168	0.000	0.002	0.002	10.851	0.004	10.855
2000	2	0.001	0.014	0.015	0.002	0.017	0.019	0.005	0.162	0.168	0.000	0.002	0.002	10.851	0.004	10.855
2000	3	0.001	0.013	0.013	0.002	0.017	0.018	0.005	0.150	0.155	0.000	0.002	0.002	10.851	0.004	10.855
2000	4	0.001	0.013	0.013	0.002	0.017	0.018	0.005	0.150	0.155	0.000	0.002	0.002	10.851	0.004	10.855
2001	1	0.500	0.013	0.513	0.000	0.017	0.017	0.000	0.150	0.150	0.000	0.002	0.002	10.851	0.004	10.854
2001	2	1.150	0.013	1.163	0.000	0.017	0.017	0.000	0.150	0.150	0.000	0.002	0.002	10.851	0.004	10.854
2001	3	1.150	0.006	1.156	0.000	0.008	0.008	0.000	0.069	0.069	0.000	0.001	0.001	6.475	0.002	6.477
2001	4	0.500	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.099	0.000	2.099
Stage VI																
2007	3	0.001	0.003	0.004	0.004	0.006	0.009	0.007	0.048	0.055	0.000	0.001	0.001	6.060	0.002	6.062
2007	4	0.000	0.005	0.006	0.002	0.011	0.013	0.003	0.090	0.093	0.000	0.002	0.002	10.021	0.004	10.025
2008	1	0.000	0.005	0.005	0.002	0.010	0.012	0.003	0.086	0.089	0.000	0.002	0.002	10.021	0.004	10.025
2008	2	0.000	0.005	0.005	0.002	0.010	0.012	0.003	0.086	0.089	0.000	0.002	0.002	10.021	0.004	10.025
2008	3	0.000	0.005	0.005	0.000	0.010	0.010	0.000	0.086	0.086	0.000	0.002	0.002	10.021	0.004	10.025
2008	4	0.000	0.005	0.005	0.000	0.010	0.010	0.000	0.086	0.086	0.000	0.002	0.002	10.021	0.004	10.025
2009	1	0.153	0.002	0.155	0.000	0.005	0.005	0.000	0.041	0.041	0.000	0.001	0.001	6.060	0.002	6.062
2009	2	0.357	0.001	0.358	0.000	0.002	0.002	0.000	0.016	0.016	0.000	0.000	0.000	2.099	0.001	2.099
2009	3	0.357	0.001	0.358	0.000	0.002	0.002	0.000	0.016	0.016	0.000	0.000	0.000	2.099	0.001	2.099
2009	4	0.153	0.001	0.154	0.000	0.002	0.002	0.000	0.016	0.016	0.000	0.000	0.000	2.099	0.001	2.099

Notes: Direct emissions are primarily related to on-site construction vehicle exhaust, surface coatings and dust due to construction.
Indirect emissions are primarily related to construction employee commute trips.
Estimation of direct emissions based on procedures described in South Coast Air Quality Management Districts CEQA Guidelines, 1993
Estimation of indirect emissions based on the Mobile Assessment for Air Quality Impacts (MAAQI) model.

are mitigation measures from Table 11-4 that have quantifiable emission reductions. Although fugitive dust emissions from construction projects occurring in the SCAB are currently governed by SCAQMD's Rule 403 (Fugitive Dust) some of the mitigation measures discussed below (Mitigation Measures 13-1 through 13-8) go beyond the reasonably available control measures specified in the rule.

Reducing PM_{10} emissions below the significance threshold would require an overall reduction of approximately 40 percent. The CEQA Handbook presents an estimated level of effectiveness for each of the mitigation measures. This estimated level of effectiveness applies to the treated source category. For example, applying a soil stabilizer to unpaved parking areas, staging areas, and construction roads is estimated to reduce PM_{10} emissions by up to 85 percent. However, the 85 percent reduction applies only to emissions generated by unpaved parking areas, staging areas, and construction roads, not other sources of PM_{10} emissions. The anticipated effectiveness of mitigation measures presented in the CEQA Handbook range from 7 to 92.5 percent, depending on the emission source. Therefore, although implementing the following mitigation measures would reduce the significance of PM_{10} air quality impacts, a 40 percent overall reduction does not appear to be practically achievable.

Implementation of the following mitigation measures would reduce PM_{10} emissions from graded surfaces.

- **Mitigation Measure 13-1:** *Apply Nontoxic Soil Stabilizers to All Inactive Construction Areas.* Reduce PM_{10} emissions by applying nontoxic soil stabilizers according to manufacturers' specifications to all inactive construction areas (previously graded areas inactive for 10 days or more). The CEQA Handbook (Table 11-4) indicates that implementation of this mitigation measure would reduce emissions from the treated source by 30 to 65 percent.

- **Mitigation Measure 13-2:** *Establish a Vegetative Ground Cover to Disturbed Areas.* Plant ground cover in disturbed areas as quickly as possible to reduce fugitive PM_{10} emissions. CEQA Handbook (Table 11-4) indicates that implementation of this mitigation measure would reduce emissions from the treated source by 15 to 49 percent.

- **Mitigation Measure 13-3:** *Enclose, Cover, Water Twice Daily, or Apply Nontoxic Soil Binders to Exposed Piles.* Reduce fugitive PM_{10} from exposed piles (i.e., gravel, sand, dirt) with five percent or greater silt content by enclosing, covering, watering twice daily, or applying nontoxic soil binders according to manufacturers' specifications. CEQA Handbook (Table 11-4) indicates that emissions from the treated source would be reduced by 30 to 74 percent, depending on the selected implemented mitigation measure.

- **Mitigation Measure 13-4:** *Apply Water to Active Sites.* Water active sites (heavily trafficked areas) at least twice daily to reduce fugitive PM_{10} emissions. CEQA Handbook (Table 11-4) indicates that implementation of this mitigation measure would reduce emissions from the treated source by 34 to 68 percent.

The following mitigation measures would reduce PM_{10} emissions from paved road surfaces.

- **Mitigation Measure 13-5:** *Cover or Maintain Freeboard Requirements When Hauling Loose Material.* Ensure that all trucks hauling dirt, sand, soil, or other loose material are covered, or maintain freeboard in accordance with CVC Section 23114. CEQA Handbook (Table 11-4) indicates that implementation of this mitigation would reduce emissions from the treated source by 7 to 14 percent.

The following mitigation measure would reduce PM_{10} emissions from paved road surfaces.

- **Mitigation Measure 13-6:** *Sweep Paved Public Streets at End of Day to Remove Visible Soil.* At the end of the day sweep streets with water sweepers if visible soil is carried onto adjacent public roads. CEQA Handbook (Table 11-4) indicates that implementation of this mitigation measure would reduce emissions from the treated source by 25 to 60 percent.

The following mitigation measures would reduce PM_{10} emissions from unpaved road surfaces.

- **Mitigation Measure 13-7:** *Apply Nontoxic Soil Stabilizers to Unpaved Parking and Staging Areas.* Apply nontoxic soil stabilizers to all unpaved parking and staging areas to reduce fugitive PM_{10} emissions. According to information presented in CEQA Handbook (Table 11-4), implementation of this mitigation measure would reduce emissions from the treated source by 45 to 85 percent.

- **Mitigation Measure 13-8:** *Limit Traffic Speeds on All Unpaved Roads.* Limit traffic speeds on all unpaved roads to 15 mph or less to reduce fugitive PM_{10} emissions. According to information presented in CEQA Handbook (Table 11-4), implementation of this mitigation measure would reduce emissions from the treated source by 40 to 70 percent.

The Districts will contractually require that all project-related contractors and subcontractors comply with Mitigation Measures 13-1 through 13-8 and SCAQMD Rule 403. The mitigation measures would be in effect during periods when PM_{10} emissions exceed the significance threshold of 6.75 tons per quarter. According to information presented in Table 11-4, implementation of these mitigation measures would reduce construction-related PM_{10} emissions by approximately 28 percent.

Impact: *Potential for Short-Term Increase in Microscale Carbon Monoxide Levels Resulting from Construction at the VWRP.* Construction at the VWRP will generate additional on-road vehicle trips. These trips would be associated with both construction employee commute travel and transport of construction equipment. The additional vehicle travel would result in increases in CO levels along commute routes and equipment hauling routes.

An evaluation of VWRP's location and the surrounding roadway network led to the conclusion that the intersection of The Old Road and Magic Mountain Parkway is the location most likely to be affected by project-related travel. However, the addition of the project-related travel to this intersection is insignificant because Magic Mountain Parkway is the primary access to the neighboring Six Flags Magic Mountain Amusement Park. CEQA screening methods were used to determine project impact as described in Appendix C.

CO concentrations for existing conditions and for year 2000 conditions (both with and without the project) were evaluated. The year 2000 conditions were evaluated because project-related travel (resulting in indirect emissions from construction worker related commuting) and the potential for increased traffic congestion would be at a maximum during that year. However, when considering the predicted growth in normal traffic volume per hour for the year 2000 at the Magic Mountain Parkway and The Old Road intersection, the increases in the 1-hour and 8-hour CO concentrations associated with the recommended project are negligible. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Release of Asbestos Resulting from Construction at the VWRP.* Construction at the VWRP will involve renovation of the digester heater building which has been identified as containing asbestos. Specifically, the roofing materials used on this building were identified as containing asbestos.

For all demolition or renovation work involving asbestos-containing materials at the VWRP, the Districts would comply with SCAQMD Rule 1403. As a result, no threat to public health and safety would occur as a result of the recommended project. Asbestos-containing areas in affected buildings have been previously identified by consultants, are clearly marked on Districts' drawings, and are limited to small areas. The Districts believe that all asbestos-containing materials required to be removed as part of the demolition/renovation activities can be done safely by qualified contractors with little or no impact on the environment. Therefore, the recommended project is determined to have a less than significant impact with respect to asbestos emissions.

Mitigation: No mitigation is required.

VWRP Expansion Operations Impacts

Impact: *Potential for Long-Term Increase in Emissions of Reactive Organic Gases, Nitrogen Oxides, Carbon Monoxide, Sulfur Oxides, and Particulates Resulting from Increase in Operations at the VWRP.* Operation of new and modified sources at the VWRP will increase emissions (collectively from direct and indirect sources) of ROG, NO_x, CO, SO_x, and PM_{10}. Table 13-5 shows estimated emissions (both direct and indirect) that would result from operation of facilities at the VWRP. For each of the pollutants shown in Table 13-5, emissions estimates are broken down into four categories: *No Project, Stage V, Stage VI,* and *Total Project-Related.* Estimates of pollutant emissions are also divided into the major emission sources at the VWRP.

Direct emissions shown under the category of *No Project* represent the actual estimated emissions reported to the SCAQMD for emissions inventory reporting year 1996. Indirect emissions shown under the category of *No Project* reflect existing employee commute related emissions and existing biosolids transportation related emissions.

Operation of VWRP's Stages V and VI will result in direct emission increases in the SCAB of 6.11 pounds per day of ROG. There are no direct emissions of NO_x, CO, SO_x, and PM_{10} associated with the recommended project since there are no plans to add new or to modify existing combustion equipment. Emission limits on existing SCAQMD permits for combustion equipment (including flares, resource recovery engines, and boilers) located at the VWRP will not be exceeded when the facility is operating at its full future flow capacity (27.6 mgd). Table 13-6 shows the predicted future cumulative direct emissions associated with the operation of the VWRP at a capacity of 27.6 mgd.

Operation of new and modified sources at the VWRP will result in indirect emissions increases in the SCAB of approximately 0.93 pounds per day of ROG, 2.7 pounds per day of NO_x, 0.30 pounds per day of PM_{10}, 0.21 pounds per day of SO_x, and 10 pounds per day of CO. The majority of these emissions increases are associated with the hauling of biosolids to disposal and/or land application sites. Currently, the VWRP biosolids are transported to various destinations within Kern County for use as an agricultural soil amendment.

Existing electrical requirements at the VWRP are partially satisfied by resource recovery engine No. 1 with the SCE grid providing additional power. Prior to 2015, resource recovery engine No. 1 will be replaced with a new engine and a second engine, resource recovery engine No. 2, will be installed (both engines are addressed in the 1992 Negative

Table 13-5
FUTURE YEAR VWRP OPERATIONAL RELATED EMISSIONS - STAGE V, STAGE VI, AND NO PROJECT
(POUNDS PER DAY)

EMISSION SOURCE	REACTIVE ORGANIC GASES				NITROGEN OXIDES				CARBON DIOXIDE				SULFUR DIOXIDE				PARTICULATE MATTER			
	NO PROJECT	STAGE V	STAGE VI	TOTAL PROJECT RELATED	NO PROJECT	STAGE V	STAGE VI	TOTAL PROJECT RELATED	NO PROJECT	STAGE V	STAGE VI	TOTAL PROJECT RELATED	NO PROJECT	STAGE V	STAGE VI	TOTAL PROJECT RELATED	NO PROJECT	STAGE V	STAGE VI	TOTAL PROJECT RELATED
Direct Sources																				
Primary Treatment	0.44	0.39	0.29	0.68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Secondary and Tertiary Treatment	2.89	2.58	1.91	4.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Solids Handling	0.61	0.54	0.40	0.94	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Permitted Combustion Equipment	1.89	—	—	—	6.25	—	—	—	44.12	—	—	—	0.28	—	—	—	3.19	—	—	—
Other (e.g., solvent use)	4.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	***9.92***	***3.51***	***2.60***	***6.11***	***6.25***	***0.00***	***0.00***	***0.00***	***44.12***	***0.00***	***0.00***	***0.00***	***0.28***	***0.00***	***0.00***	***0.00***	***3.19***	***0.00***	***0.00***	***0.00***
Indirect Sources																				
Employee Commute Trips	0.33	0.22	0.09	0.31	0.26	0.20	0.12	0.32	3.72	2.90	1.96	4.86	0.02	0.01	0.01	0.03	0.03	0.03	0.03	0.06
Transportation of Biosolids (SCAB)	0.91	0.35	0.27	0.62	2.87	1.27	1.16	2.43	8.22	3.26	2.08	5.34	0.20	0.09	0.09	0.18	0.31	0.13	0.11	0.24
Subtotal	***1.24***	***0.57***	***0.36***	***0.93***	***3.13***	***1.47***	***1.28***	***2.74***	***11.94***	***6.16***	***4.04***	***10.20***	***0.21***	***0.11***	***0.10***	***0.21***	***0.34***	***0.16***	***0.14***	***0.30***
TOTALS	**11.16**	**4.08**	**2.96**	**7.04**	**9.38**	**1.47**	**1.28**	**2.74**	**56.06**	**6.16**	**4.04**	**10.20**	**0.50**	**0.11**	**0.10**	**0.21**	**3.53**	**0.16**	**0.14**	**0.30**

Notes: No Project emissions based on 1995-1996 emissions inventory and current plant flow of 9.08 mgd.
Existing SCAQMD permitted flow capacity is 13.5 mgd.
Emissions associated with Stage V are based on an adjusted incremental flow increase of 8.1 mgd (21.6 mgd - 13.5 mgd) for a total plant flow of 21.6 mgd.
Emissions associated with Stage VI are based on an incremental flow increase of 6.0 mgd for a total plant flow of 27.6 mgd.

Table 13-6
ESTIMATED CUMULATIVE CRITERIA POLLUTANT EMISSIONS FOR VWRP AT FUTURE DESIGN CAPACITY (27.6 MGD)

DIRECT EMISSION SOURCE	AMOUNT OF EMISSIONS (TONS PER YEAR)				
	REACTIVE ORGANIC GASES	NITROGEN OXIDES	SULFUR OXIDES	CARBON MONOXIDE	PARTICULATE MATTER
Primary Treatment[a]	0.24	—	—	—	—
Secondary Treatment[a]	1.60	—	—	—	—
Solids Handling[a]	0.34	—	—	—	—
Permitted Combustion Equipment[b]	11.32	9.13	0.73	29.93	1.46
Other (e.g., solvent use)[c]	0.75	—	—	—	—
TOTAL	**14.24**	**9.13**	**0.73**	**29.93**	**1.46**

Notes: a) Estimated emissions are based on a total plant flow 27.6 mgd.
b) Estimates reflect emission limits from two SCAQMD Rule 1110.2 compliant resource recovery engines (emissions from three flares, two boilers, and one emergency gas turbine are not included since equipment operates in standby mode).
c) No increase in emissions are anticipated.

Declaration prepared for the VWRP Stage IV - Solids Processing Facilities). Both new engines will comply with SCAQMD Rule 1110.2 and are expected to be fully operational by the year 1999. The addition of resource recovery engine No. 2 will substantially increase the capability of the VWRP to generate electricity for on-site use. With the simultaneous operation of both new resource recovery engines No. 1 and No. 2 at full load conditions, the electrical import requirements for 2015 are estimated to be similar to the current facility demand. Currently, the facility imports approximately 700 kW per hour on average from SCE.

Before operating the new and modified sources at the VWRP, the Districts will be required to comply with the SCAQMD NSR Regulation XIII. The NSR regulation requires that the BACT be applied to reduce emissions associated with the new and modified sources of direct emissions. For example, as previously mentioned, BACT requires the installation of a carbon scrubber to vent the off-gas from primary sedimentation. NSR also requires that dispersion modeling be conducted to show that increases of NO_X, CO, and PM_{10} emissions from both new and modified direct sources will not cause local violations of the state and federal pollutant standards. However, no dispersion modeling of criteria pollutants will be performed since there are no increases in NO_X, CO, or PM_{10} permitted emissions associated with the recommended project.

Finally, NSR requires that the net increase in emissions after installation of BACT be completely offset. Offsets are obtained by the use of emission reduction credits (ERCs), use of NSR Priority Reserve for essential public services, or by making compensating emission reductions at other processes within the VWRP. Consequently, NSR requires that the project result in no net increases of O_3 precursors, PM_{10}, CO, or NO_x emissions. SO_2 emission offsets are not required because the SCAB is designated by the federal government as an SO_2 attainment area. As a result of these requirements, offsetting of ROG emissions from direct sources will be required to obtain SCAQMD permits. If ERCs are unavailable at the time of SCAQMD permitting, emission offsets will be obtained from the priority reserve. However,

regardless of NSR offsetting requirements, the estimated project-related emission increases of each criteria pollutant (prior to any offsetting actions) are less than the CEQA Handbook thresholds. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Long-Term Increases in Odor Levels at the VWRP.* Although some of the new and modified processes at the VWRP may be considered potential sources of odors, no increases in property line odor levels are anticipated because strict adherence to the Districts' previously described odor control policy will continue. In an effort to reduce overall project-related odors, the Districts will provide integral odor control to treat off-gas from all new primary treatment processes. In addition, the Districts will utilize state of the art wastewater treatment process covers whenever feasible to reduce the possibility of fugitive odors from primary treatment processes.

Based on the recent success and the continued implementation of the Districts odor control policy, no measurable increases in odors associated with the recommended project are anticipated. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Increase in Health Risk Resulting from Emissions of Toxic Air Pollutants at the VWRP.* Table 13-7 shows the results of the cancer health risk assessment associated with each stage and the total project. The health risk assessment is based on the maximum incremental increase in cancer risk associated with increasing the VWRP flow from the existing SCAQMD permitted capacity of 13.5 mgd to 27.6 mgd. The project-related estimated maximum individual cancer risk of 0.011 in a million occurs at a residential receptor approximately one-half mile west-northwest of the facility. Because the project-related cancer risk is significantly less than the CEQA Handbook threshold of one in a million, acute and chronic health hazard indices were not evaluated. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

SWRP and VWRP Upgrade Construction Impacts

Impact: *Potential for Short-Term Increase in Emissions of Reactive Organic Gases, Nitrogen Oxides, Carbon Monoxide, Sulfur Oxides, and Particulates Resulting from Construction at the SWRP and VWRP.* Due to the minor nature of the proposed upgrades at the SWRP and VWRP, the ROG, NO_X, CO, SO_X, and PM_{10} emissions associated with the construction activities are anticipated to be minimal. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Short-Term Increase in Microscale Carbon Monoxide Levels Resulting from Construction at the SWRP and VWRP.* Not only is the entire construction effort associated with the proposed upgrades at the SWRP and VWRP on a very small scale, but it is also estimated to be relatively short in duration. Any additional on-road vehicle trips associated with construction employee commute travel and transport of construction equipment would be minimal. The additional vehicle travel should not result in any measurable increases in CO levels along commute routes and equipment hauling routes. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Table 13-7
INCREMENTAL CANCER HEALTH RISK IMPACTS ASSOCIATED WITH THE PROPOSED VWRP EXPANSION

SCENARIO	MAXIMUM INDIVIDUAL CANCER RISK, COMMERCIAL/INDUSTRIAL (In a Million)	MAXIMUM INDIVIDUAL CANCER RISK, RESIDENTIAL (In a Million)
Stage V	0.0049	0.0069
Stage VI	0.0017	0.0045
TOTAL PROJECT	**0.0066**	**0.0114**

Note: See Appendix C for discussion of the assumptions used to conduct the health risk assessment.

SWRP and VWRP Upgrade Operations Impacts

Impact: *Potential for Long-Term Increase in Emissions of Reactive Organic Gases, Nitrogen Oxides, Carbon Monoxide, Sulfur Oxides, and Particulates Resulting from Operations of the Upgrades at the SWRP and VWRP.* Operation of the proposed upgrades at the SWRP and VWRP is not expected to result in any measurable increase in ROG emissions and no increases in NO_X, CO, SO_X, and PM_{10} emissions from the facilities. Therefore, with respect to these five pollutants, operation of the upgrades at both facilities would have a less than significant impact on air quality.

Mitigation: No mitigation is required.

Impact: *Potential for Long-Term Increases in Odor Levels at the SWRP and VWRP.* No measurable increases in property line odor levels are anticipated as a result of operating the upgraded processes at both the SWRP and VWRP. Strict adherence to the Districts' odor control policy, as previously described, will continue. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Increase in Health Risk Resulting from Emissions of Toxic Air Pollutants at the SWRP and VWRP.* Operation of the proposed upgrades at the SWRP and VWRP is not expected to measurably increase the respective facility's resultant health risk. Since no measurable increase in health risk is anticipated as a result of the proposed upgrades there would be a less than significant impact to off-site receptors.

Mitigation: No mitigation is required.

Biosolids Disposal and Reuse Impacts

Impact: *Potential for Generation of Criteria Pollutants and Odors Resulting from Biosolids Disposal and Reuse.* Implementation of the 2015 Plan would increase the amount of biosolids generated by the Districts at the VWRP, which in turn would result in increased disposal and reuse activities. Land application and/or disposal of additional biosolids could increase process emissions, particulate matter, and odors. However, the Districts will only use sites that are properly permitted, that have addressed all site-specific impacts through the preparation of site-specific environmental documents, and that comply with applicable air quality regulations. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

Impact: *Potential for Generation of Nitrogen Oxides Emissions from Truck Transport of Biosolids.* Table 13-5 shows estimated indirect emissions that would be generated by truck transport of biosolids (resulting from the VWRP operating at the Stage V and VI capacities) to disposal and reuse sites. This operation will result in a negligible increase in emissions of SO_x, ROG, and PM_{10} and an increase in emissions of approximately 2.4 pounds per day of NO_x and approximately 5.3 pounds per day of CO in the SCAB. These increases are significantly below the CEQA Handbook thresholds. Therefore, this impact is considered less than significant.

Mitigation: No mitigation is required.

No Project Alternative

Under the No Project Alternative, the VWRP would not be expanded and the current SCAQMD permitted flow capacity of 13.5 mgd would not be exceeded. Therefore, no construction-related air quality impacts would occur. However, in all likelihood wastewater flows to the VWRP will continue to increase to the maximum permitted capacity as a result of population growth in the service area, and emissions associated with this increased flow would consist primarily of ROG from primary treatment activities. Biosolids would continue to be hauled to offsite locations via truck for disposal and/or reuse. Emissions associated with hauling would increase somewhat over the current levels as a result of increasing flow at the VWRP to the maximum currently permitted capacity.