4.10 Air Quality

This section describes existing air quality within the project area and surrounding region, describes the associated regulatory framework, presents an analysis of potential impacts on air quality that would result from implementation of the proposed project and alternatives, and identifies mitigation measures.

4.10.1 Affected Environment

Because the project alternatives are all located within the same air basin, the air quality setting is identical for all alternatives. The affected environment section describes the regulatory setting and the existing air quality conditions in the project area.

Regulatory Setting

Air quality management exists at federal, state, and local levels of government. Air quality planning programs have generally been developed in response to requirements established by the federal Clean Air Act (CAA) of 1972 and subsequent amendments to the act; however, the enactment of the California Clean Air Act (CCAA) of 1988 produced additional changes in the structure and administration of air quality management programs in California.

Federal

The federal CAA requires the U.S. Environmental Protection Agency (EPA) to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, respirable particulate matter (PM10 and PM2.5[1]), and lead. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet the specific public health and welfare criteria set forth in the CAA. California has adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as California Ambient Air Quality Standards [CAAQS], or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard. **Table 4.10-1** provides a brief discussion of the related health effects and principal sources for each criteria air pollutant. **Table 4.10-2** presents current national and state ambient air quality standards and attainment status(es). Currently, there are no federal or state ambient air quality standards for any of the six greenhouse gases.[2]

The 1977 amendments to the CAA required the U.S. EPA to identify National Emission Standards for Hazardous Air Pollutants to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Control of HAPs (known as Toxic Air Contaminants (TACs) under California regulations) is achieved through federal, state and local controls on individual sources.

1 PM10 and PM2.5 consist of particulate matter that is 10 microns (a micron is one-millionth of a meter) or less in diameter and 2.5 microns or less in diameter, respectively.

2 The six greenhouse gases are CO_2, methane, (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

TABLE 4.10-1
STATE AND FEDERAL CRITERIA AIR POLLUTANT
SOURCES AND HEALTH EFFECTS

Pollutant	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when reactive organic gases (ROG) and nitrogen oxides (NOx) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
Carbon Monoxide	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, and is destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Respirable Particulate Matter (PM10)	May irritate eyes and respiratory tract, decrease lung capacity, and cause cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
Fine Particulate Matter (PM2.5)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
Lead	Disturbs gastrointestinal system and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.	Present source: lead smelters, battery manufacturing, and recycling facilities. Past source: combustion of leaded gasoline.
Hydrogen Sulfide	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)	Geothermal Power Plants, Petroleum Production and refining
Sulfates	Breathing difficulties, aggravates asthma, reduced visibility	Produced by the reaction in the air of SO2.
Visibility Reducing Particles	Reduces visibility, reduced airport safety, lower real estate value, discourages tourism.	See PM2.5.

SOURCE: CARB, 2005a.

TABLE 4.10-2
STATE AND FEDERAL CRITERIA AIR POLLUTANT STANDARDS

Pollutant	Averaging Time	California Standards[a]		National Standards[b]	
		Concentration	Attainment Status	Concentration[c]	Attainment Status
Ozone	1 hour	0.09 ppm	N	–	–[d]
	8 hours	0.070 ppm	N[e]	0.075 ppm	N[f]
Carbon Monoxide	1 hour	20 ppm	A	35 ppm	A
	8 hours	9.0 ppm	A	9 ppm	A[g]
Nitrogen Dioxide	1 hour	0.18 ppm	A	–	–
	Annual Avg.	0.030 ppm	–	0.053 ppm	A
Sulfur Dioxide	1 hour	0.25 ppm	A	–	–
	24 hours	0.04 ppm	A	0.14 ppm	A
	Annual Avg.	–	–	0.03 ppm	A
Respirable Particulate Matter (PM10)	24 hours	50 µg/m^3	N	150 µg/m^3	U
	Annual Avg.	20 µg/m^3	N[h]	–	A
Fine Particulate Matter (PM2.5)	24 hours	–	–	35 µg/m^3	U[i]
	Annual Avg.	12 µg/m^3	N[h]	15 µg/m^3	A
Lead	Monthly	1.5 µg/m^3	A	–	–
	Quarterly	–	–	1.5 µg/m^3	A
Hydrogen Sulfide	1 hour	0.03 ppm	U	–	–
Sulfates	24 hour	25 µg/m^3	A	–	–
Vinyl Chloride	24 hour	0.010 ppm	–	–	–
Visibility-Reducing Particles	8 hour	–[j]	A	–	–

A=Attainment N=Nonattainment U=Unclassified
mg/m^3=milligrams per cubic meter
ppm=parts per million
µg/m^3=micrograms per cubic meter

[a] California standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter - PM10, and visibility-reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and the PM10 annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average.

[b] National standards other than for ozone, particulates, and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentrations is 0.08 ppm or less. The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m^3. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentiles is less than 65 µg/m^3. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM10 is met if the 3-year average falls below the standard at every site. The annual PM2.5 standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.

[c] National air quality standards are set at levels determined to be protective of public health with an adequate margin of safety. Each state must attain these standards no later than three years after that state's implementation plan is approved by the U.S. EPA.

[d] The national 1-hour ozone standard was revoked by U.S. EPA on June 15, 2005.

[e] This standard was approved by the CARB on April 28, 2005, and became effective on May 17, 2006.

[f] In June 2004, the Bay Area was designated as a marginal nonattainment area of the national 8-hour ozone standard. US EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 PPM (i.e., 75 ppb) effective May 27, 2008. EPA will issue final designations based upon the new 0.75 ppm ozone standard by March 2010.

[g] In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.

[h] In June 2002, CARB established new annual standards for PM2.5 and PM10.

[i] U.S. EPA lowered the 24-hour PM2.5 standard from 65 µg/m^3 to 35 µg/m^3 in 2006. EPA has not yet determined the attainment status of BAAQMD for the new standard.

[j] Statewide Visibility-Reducing Particle Standard: Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

SOURCE: BAAQMD, 2008.

Federal Attainment Status

Pursuant to the 1990 federal CAA amendments, the U.S. EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the national standards have been achieved. Los Vaqueros Reservoir is located in Contra Costa County and is within the boundaries of the San Francisco Bay Area Air Basin. The Bay Area is in attainment or unclassified for all federal criteria pollutant standards, except for the 8-hour ozone standard, which is classified as marginal nonattainment for the national standard. "Unclassified" is defined in the CAA Amendments as any area that cannot be classified on the basis of available information as meeting or not meeting the national primary and secondary air quality standard for the specified pollutant.

Federal Conformity Requirements

Federal projects are subject to either the Transportation Conformity Rule (40 Code of Federal Regulations [CFR], Part 51, Subpart T), which applies to federal highway and transit projects, or the General Conformity Rule (40 CFR, Part 51, Subpart W), which applies to all other federal projects. Because the proposed project and alternatives are not a federal highway or transit project, it is subject to the General Conformity Rule.

The purpose of the General Conformity Rule is to ensure that federal projects conform to applicable state implementation plans (SIPs) so that they do not interfere with strategies employed to attain the National Ambient Air Quality Standards (NAAQS). The rule applies to federal projects in nonattainment areas for any of six criteria pollutants for which the U.S. EPA has established these national standards and in areas designated as "maintenance" areas (an area with a maintenance plan, which is a revision to the applicable SIP, meeting the requirements of section 175A of the CAA). The rule covers direct and indirect emissions of criteria pollutants or their precursors that result from a federal project, are reasonably foreseeable, and can be practicably controlled by the federal agency through its continuing program responsibility. The rule applies to all federal projects, including project approvals, and funding, except:

- Projects specifically included in a transportation plan or program that is found to conform under the federal transportation conformity rule
- Projects with associated emissions below specified "*de minimis*" threshold levels (i.e., levels beyond which an air quality effect is considered significant)
- Certain other projects that are exempt or presumed to conform, listed in 40 CFR, Part 51, Subpart W.

Sources that are exempt include those that require a permit under the New Source Review or Prevention of Significant Deterioration program. Projects presumed to conform are those that are presumed to result in insignificant quantities of emissions, including routine maintenance and repair, routine operations, and prescribed burning.

The San Francisco Bay Area, including the project study area, is in marginal nonattainment of the federal 8-hour ozone standard and moderate maintenance of the federal carbon monoxide standard. The applicable *de minimis* thresholds are 100 tons per year of ROG, NOx, and carbon

monoxide. If the project would result in total direct and indirect emissions in excess of the *de minimis* emission rates, it must be demonstrated through conformity determination procedures that the emissions conform to the applicable SIP for each affected pollutant.

A federal project that does not exceed the *de minimis* threshold rates may still be subject to a general conformity determination if the sum of direct and indirect emissions would exceed 10 percent of the emissions of the nonattainment or maintenance area. If emissions would exceed 10 percent, the federal project is considered "regionally significant," and thus general conformity rules apply. This allows regulatory agencies to address those federal projects that would not exceed the *de minimis* levels but would have the potential to adversely affect the air quality of a region. If the emissions would not exceed the *de minimis* levels and are not regionally significant, then the project is assumed to conform, and no further analysis or determination is required.

State

The California Air Resources Board (CARB) manages air quality, regulates mobile emissions sources, and oversees the activities of county and regional air pollution control districts and air quality management districts. CARB regulates local air quality indirectly by establishing state ambient air quality standards and vehicle emissions and fuel standards and by conducting research, planning, and coordinating activities.

The CAA requires each state to prepare a SIP, a planning document containing emission inventories, emission standards for motor vehicles and consumer products, and attainment plans adopted by local districts and approved by CARB for inclusion in the SIP. The U.S. EPA must review each SIP to determine its compliance with the federal CAA and air quality standards. Amendments to the CAA further require states containing areas that are in nonattainment for NAAQS to amend their SIPs to add additional control measures. Although the state prepares the majority of the SIP, local districts are responsible for adopting air quality attainment plans that are included in the SIP. Each attainment plan must demonstrate its compliance with the CAA and CCAA air quality standards.

Pursuant to Section 39606(b) of the California Health and Safety Code, California has adopted ambient standards that are more stringent than the national standards for some criteria air pollutants (e.g., PM10 daily and annual average standards). In July 2003, CARB's new annual standards for PM10 and PM2.5 took effect. The annual PM10 standard was revised from 30 to 20 micrograms per cubic meter ($\mu g/m^3$), and the annual PM2.5 standard was revised from 15 to 12 $\mu g/m^3$. The state standards are shown in Table 4.10-2.

Toxic Air Contaminants

California law defines TACs as air pollutants having carcinogenic effects. The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807. A total of 243 substances have been designated as TACs under California law; they include the 189 federal HAPs adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; AB 2588 does not regulate air toxics emissions.

Diesel Particulate Emissions

In August of 1998, CARB identified particulate emissions from diesel-fueled engines (diesel particulate matter, or DPM) as TACs. In 2000, CARB developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB, 2000). The document represents a proposal to reduce diesel particulate emissions, with the goal of reducing emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra-low sulfur diesel fuel on diesel-fueled engines. CARB regulations and programs that have been implemented to achieve these goals and that would apply to the project include the following (CARB, 2004):

- **Cleaner Diesel Fuel:** In 2003, the CARB adopted a new regulation lowering the sulfur content of diesel fuel to enable the use of advanced emission control technologies for diesel engines.

- **Standards for New On-Road Diesel Engines:** In 2001, CARB adopted new particulate matter (PM) and NOx emission standards to clean up large diesel engines that power big-rig trucks, trash trucks, delivery vans, and other large vehicles. These standards took effect in 2007 and will reduce DPM emissions by over 90 percent compared with new on-road engines previously sold in California.

- **Standards for New Off-Road Diesel Engines:** In 2004, CARB adopted a new off-road diesel engine emission standards (Tier 4) nearly identical to those adopted by the U.S EPA on May 11, 2004 under the Clean Air Nonroad Diesel Rule. These standards will reduce DPM emission by over 90 percent compared with new off-road engines currently sold in California. New engine standards take effect, based on engine horsepower, starting in 2008. In conjunction, sulfur levels will be reduced in nonroad diesel fuel by 99 percent from current levels by the year 2010.

- **New Regulations for In-Use Diesel Engines:**
  - *Stationary Engines Standards (adopted 2004):* Most stationary diesel-fueled engines in California are used as emergency backup in the event of a power failure. Others are used to pump water in some areas, to run compressors, and to operate other equipment. CARB standards for these engines will bring an approximate 80 percent PM reduction by 2020 through stricter standards for new engines and requirements to retrofit existing engines.

  - *Portable Engines Standards (adopted 2004):* Most portable diesel engines in California are used to power pumps, airport ground support equipment, oil drilling rigs, generators, and a variety of other equipment. CARB's rule requires four stepped reductions in emissions from portable engines, reaching a 95 percent reduction in PM emissions in 2020 with concurrent significant cuts in smog-forming emissions.

- **Carl Moyer Incentive Program:** The Carl Moyer Program was established in 1999 to offer monetary incentives to reduce NOx emissions from diesel engines. These increases in emissions from electricity use would be minimized by implementing the project design features discussed below.

CARB Handbook

CARB recently published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB, 2005b). The primary goal in developing the handbook was to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution. The handbook highlights recent studies that have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities. However, the health risk is greatly reduced with distance. For that reason, CARB provided some general recommendations aimed at keeping appropriate distances between sources of air pollution and sensitive land uses, such as residences. The project would not conflict with any of the general recommendations.

State Attainment Status

Under the CCAA, which has been patterned after the federal CAA, areas are designated as attainment or nonattainment with respect to the state standards. The Bay Area is designated as nonattainment for state ozone, PM10, and PM2.5 standards (BAAQMD, 2008). The Bay Area is designated as attainment for all other criteria pollutants.

AB 32, Reduction of Greenhouse Gases

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger issued Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gases would be progressively reduced, as follows:

- By 2010, reduce greenhouse gas emissions to 2000 levels
- By 2020, reduce greenhouse gas emissions to 1990 levels
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels

In 2006, California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires CARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide greenhouse gas emissions are reduced to 1990 levels by 2020 (representing an approximate 25 percent reduction in emissions).

In June 2007, CARB directed staff to pursue 37 early actions for reducing greenhouse gas emissions under the California Global Warming Solutions Act. The broad spectrum of strategies to be developed—including a Low Carbon Fuel Standard, regulations for refrigerants with high global warming potentials, guidance and protocols for local governments to facilitate greenhouse gas reductions, and green ports (provide an alternative source of power for ships while they are docked)—reflects that the serious threat of climate change requires action as soon as possible (CARB, 2007a). In addition to approving the 37 greenhouse gas reduction strategies, CARB directed staff to further evaluate early action recommendations made at the June 2007 meeting, and to report back to CARB within six months. The general sentiment of CARB suggested a desire to try to pursue greater greenhouse gas emissions reductions in California in the near-term. Since the June 2007 CARB hearing, CARB staff has evaluated all 48 recommendations submitted

by several stakeholder and several internally-generated staff ideas and published the *Expanded List of Early Action Measures To Reduce Greenhouse Gas Emissions In California Recommended For Board Consideration* in October 2007 (CARB, 2007b). Based on its additional analysis, CARB staff is recommending the expansion of the early action list to a total of 44 measures, which are presented in **Table 4.10-3**. The measures that are applicable to the proposed project and alternatives are highlighted. As indicated, most of these measures are not applicable to a project but five measures could be applicable. These measures include (1) above ground storage tanks for fuels (during proposed project construction activities); (2) non-agricultural diesel off-road equipment (during proposed project construction activities); (3) privately owned on-road diesel trucks (primarily during proposed project construction activities); (4) anti-idling enforcement of heavy trucks (during proposed project construction activities); and (5) tire inflation program (during proposed project construction and operational activities).

In December 2007, CARB approved the 2020 emission limit of 427 million metric tons of CO_2 equivalents of greenhouse gases. The 2020 target of 427 million metric tons of CO_2 equivalent (CO_2E) requires the reduction of 169 million metric tons of CO_2E, or approximately 30 percent, from the state's projected 2020 emissions of 596 million metric tons of CO_2E (business-as-usual).

Also in December 2007, CARB adopted mandatory reporting and verification regulations pursuant to AB 32. The regulations will become effective January 1, 2009, with the first reports covering 2008 emissions. The mandatory reporting regulations require reporting for certain types of facilities that make up the bulk of the stationary source emissions in California. Currently, the draft regulation language identifies major facilities as those that generate more than 25,000 metric tons/year of CO_2E. Cement plants, oil refineries, electric-generating facilities/providers, cogeneration facilities, and hydrogen plants and other stationary combustion sources that emit more than 25,000 metric tons/year CO_2E, make up 94 percent of the point source CO_2E emissions in California (CARB, 2007c).

In June, 2008, CARB published its Climate Change Draft Scoping Plan. The Draft Scoping Plan reported that CARB met the first milestones set by AB 32 in 2007: developing a list of early actions to begin sharply reducing greenhouse gas emissions; assembling an inventory of historic emissions; and establishing the 2020 emissions limit. After consideration of public comment and further analysis, CARB released the Climate Change Proposed Scoping Plan in October, 2008. The Proposed Scoping Plan proposes a comprehensive set of actions designed to reduce overall carbon emissions in California. Key elements of the Proposed Scoping Plan include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;

TABLE 4.10-3
CARB RECOMMENDED AB32 GREENHOUSE GAS MEASURES TO BE INITIATED BY CARB BETWEEN 2007 AND 2012

ID #	Sector	Strategy Name	ID #	Sector	Strategy Name
1	Fuels	Above Ground Storage Tanks	23	Commercial	SF_6 reductions from the non-electric sector
2	Transportation	Diesel – Offroad equipment (non-agricultural)	24	Transportation	Tire inflation program
3	Forestry	Forestry protocol endorsement	25	Transportation	Cool automobile paints
4	Transportation	Diesel – Port trucks	26	Cement	Cement (A): Blended cements
5	Transportation	Diesel – Vessel main engine fuel specifications	27	Cement	Cement (B): Energy efficiency of California cement facilities
6	Transportation	Diesel – Commercial harbor craft	28	Transportation	Ban on HFC release from Motor Vehicle AC service / dismantling
7	Transportation	Green ports	29	Transportation	Diesel – offroad equipment (agricultural)
8	Agriculture	Manure management (methane digester protocol)	30	Transportation	Add AC leak tightness test and repair to Smog Check
9	Education	Local gov. Greenhouse Gas (GHG) reduction guidance / protocols	31	Agriculture	Research on GHG reductions from nitrogen land applications
10	Education	Business GHG reduction guidance / protocols	32	Commercial	Specifications for commercial refrigeration
11	Energy Efficiency	Cool communities program	33	Oil and Gas	Reduction in venting / leaks from oil and gas systems
12	Commercial	Reduce high Global Warming Potential (GWP) GHGs in products	34	Transportation	Requirement of low-GWP GHGs for new Motor Vehicle ACs
13	Commercial	Reduction of PFCs from semiconductor industry	35	Transportation	Hybridization of medium and heavy-duty diesel vehicles
14	Transportation	SmartWay truck efficiency	36	Electricity	Reduction of SF_6 in electricity generation
15	Transportation	Low Carbon Fuel Standard (LCFS)	37	Commercial	High GWP refrigerant tracking, reporting and recovery program
16	Transportation	Reduction of HFC-134a from DIY Motor Vehicle AC servicing	38	Commercial	Foam recovery / destruction program
17	Waste	Improved landfill gas capture	39	Fire Suppression	Alternative suppressants in fire protection systems
18	Fuels	Gasoline disperser hose replacement	40	Transportation	Strengthen light-duty vehicle standards
19	Flues	Portable outboard marine tanks	41	Transportation	Truck stop electrification with incentives for truckers
20	Transportation	Standards for off-cycle driving conditions	42	Transportation	Diesel – Vessel speed reductions
21	Transportation	Diesel – Privately owned on-road trucks	43	Transportation	Transportation refrigeration – electric standby
22	Transportation	Anti-idling enforcement	44	Agriculture	Electrification of stationary agricultural engines

NOTE: Highlighted measures would be applicable to the proposed project.

SOURCE: CARB, 2007a.

- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and

- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation. (CARB, 2008)

The Proposed Scoping Plan notes that "[a]fter Board approval of this plan, the measures in it will be developed and adopted through the normal rulemaking process, with public input" (CARB, 2008).

The Proposed Scoping Plan states that local governments are "essential partners" in the effort to reduce greenhouse gas emissions, and that they have "broad influence and, in some cases, exclusive jurisdiction" over activities that contribute to greenhouse gas emissions. It encourages local governments to reduce greenhouse gas emissions by approximately 15 percent from current levels by 2020 (CARB, 2008).

Senate Bill 97

The provisions of Senate Bill 97, enacted in August 2007 as part of the State Budget negotiations, direct the Office of Planning and Research (OPR) to propose CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." SB 97 directs OPR to develop such guidelines by July 2009, and directs the State Resources Agency, the agency charged with adopting the CEQA Guidelines, to certify and adopt such guidelines by January 2010.

OPR Technical Advisory, CEQA and Climate Change

On June 19, 2008, OPR published a technical advisory on CEQA and Climate Change (OPR, 2008). The technical advisory is one in a series of advisories published by OPR as a service to professional planners, land use officials and CEQA practitioners. The advisory provides OPR's perspective on the emerging role of CEQA in addressing climate change and greenhouse gas emissions, while recognizing that approaches and methodologies for calculating greenhouse gas emissions and addressing environmental impacts through CEQA review are rapidly evolving. The advisory recognizes that OPR will develop, and the Resources Agency will adopt amendments to the CEQA Guidelines pursuant to SB 97. In the interim, the technical advisory "offers informal guidance regarding the steps lead agencies should take to address climate change in their CEQA documents" (OPR, 2008).

The technical advisory points out that neither CEQA nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. "This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable" (OPR, 2008). OPR recommends that "the global nature of climate change warrants investigation of a statewide threshold of significance for GHG emissions" (OPR, 2008). Until such a standard is established, OPR advises that each lead agency should develop its own approach to performing an analysis for projects that generate greenhouse gas emissions (OPR, 2008).

OPR sets out the following process for evaluating greenhouse gas emissions. First, agencies should determine whether greenhouse gas emissions may be generated by a proposed project, and if so, quantify or estimate the emissions by type or source. Calculation, modeling or estimation of greenhouse gas emissions should include the emissions associated with vehicular traffic, energy consumption, water usage and construction activities (OPR, 2008).

Agencies should then assess whether the emissions are "cumulatively considerable" even though a project's greenhouse gas emissions may be individually limited. OPR states: "Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment" (OPR, 2008). Individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice (OPR, 2008).

Finally, if the lead agency determines emissions are a cumulatively considerable contribution to a significant cumulative impact, the lead agency must investigate and implement ways to mitigate the emissions (OPR, 2008). OPR states: "Mitigation measures will vary with the type of project being contemplated, but may include alternative project designs or locations that conserve energy and water, measures that reduce vehicle miles traveled (VMT) by fossil-fueled vehicles, measures that contribute to established regional or programmatic mitigation strategies, and measures that sequester carbon to offset the emissions from the project" (OPR, 2008). OPR concludes that "A lead agency is not responsible for wholly eliminating all GHG emissions from a project; the CEQA standard is to mitigate to a level that is "less than significant" (OPR, 2008). The technical advisory includes a list of mitigation measures that can be applied on a project-by-project basis.

Chapter 5.0 discusses the environmental effects of climate change, including potential climate change effects with respect to water supply and water resources. Chapter 5.0 also provides extensive background information on the relationship between emissions of greenhouse gases and climate change.

Local

Bay Area Air Quality Management District

The regional and county air districts are primarily responsible for developing local air quality plans and regulating stationary emissions sources and facilities. The project area lies within the jurisdiction of the BAAQMD. As noted earlier, the federal CAA and the state CCAA require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM10 standard). Plans are also required under federal law for areas designated as "maintenance" for national standards. Such plans are to include strategies for attaining the standards.

Currently, there are two plans for the Bay Area: the *San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* (BAAQMD, 2001), which was developed to meet federal ozone air quality planning requirements, and the *Bay Area 2005 Ozone Strategy* (BAAQMD, 2006a), which was developed to meet planning requirements related to the state ozone standard. These attainment plans depend on BAAQMD's permit authority, which is exercised through

BAAQMD's *Rules and Regulations.* Both federal and state ozone plans rely predominantly on stationary source control measures. In contrast to the ozone plans, the *Carbon Monoxide Maintenance Plan* relies on mobile source control measures.

With respect to the construction phase of the project, applicable BAAQMD regulations would relate to portable equipment (e.g., gasoline- or diesel-powered engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Equipment used during project construction would be subject to the requirements of BAAQMD Regulation 2 (Permits), Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings) and Rule 15 (Emulsified and Liquid Asphalts).

Contra Costa County General Plan

The Conservation Element of the Contra Costa County General Plan (Contra Costa County, 2005) contains air quality goals and policies. These goals and policies include meeting Federal Air Quality Standards for all air pollutants (Goal 8-AA); reducing air pollution in order to protect human and environmental health (Goal 8-AB); and implementing mitigation measures when a proposed project could result in significant impacts to air quality (8-103) (Contra Costa County, 2005). A list of all the goals and policies related to air quality are listed in Appendix E.

Alameda County East County Area Plan – A Portion of the Alameda County General Plan

Alameda County's East County Area Plan (ECAP) also contains goals and policies relevant to the planning and management of air quality. Specifically, the policies in the ECAP include: meeting federal and state air quality standards for local air pollutants of concern (Policy 291); coordination of incorporation of air quality mitigations in the design of large projects that could generate high levels of air pollutants (Policy 299); and review for projects' potential to generate hazardous air pollutants (Policy 300) (East County Area Plan, 2000). These goals and policies are listed in Appendix E.

Regional Setting – General Climate and Meteorology

Emissions from any one project or region would not cause global climate change itself. For greenhouse gases, emissions from all sources on a global scale contribute to the cumulative climate change impact.

Other air pollutants are considered regional in nature, some are considered local, and some have characteristics that are both regional and local. Air pollutants are also characterized as "primary" and "secondary" pollutants. Primary pollutants are those emitted directly into the atmosphere (such as carbon monoxide, sulfur dioxide, lead particulates, and hydrogen sulfide). Secondary pollutants are those formed through chemical reactions in the atmosphere; these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere, and other secondary pollutants. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) compounds

and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Ozone is a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production. In regards to regional emissions, regional air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions (for example, wind speed, wind direction, and air temperature) in combination with local surface topography (for example, geographic features such as mountains and valleys), determine how air pollutant emissions affect regional air quality. Localized emissions are typically analyzed with regards to exposure of specific sensitive receptors to pollutant concentrations (i.e., CO hotspots and TAC health risk). Ambient CO concentrations, for example, are normally considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area out to some distance from vehicular sources.

The project sites lie within the San Francisco Bay Area (Bay Area) Air Basin, which encompasses a nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin, and Napa Counties and the southern portions of Solano and Sonoma Counties. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, which restricts the mobility of cooler marine-influenced air near the ground surface and results in the formation of subsidence inversions. During the winter, the Pacific high-pressure system shifts southward, thereby allowing storms to pass through the region. During summer and fall, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone.

The eastern portions of Contra Costa County are generally well ventilated by winds flowing through the Carquinez Straits and Delta. Terrain does not restrict ventilation, but temperatures are quite warm, which promotes the formation of ozone (BAAQMD, 1999).

Existing Air Quality

The Los Vaqueros Reservoir Expansion Project components would be located primarily in eastern Contra Costa County, although a portion of the Transfer-Bethany Pipeline would be located in Alameda County. The Bay Area Air Quality Management District (BAAQMD) operates a regional monitoring network that measures the ambient concentrations of the six criteria pollutants (ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, respirable particulate matter [(PM10 and PM2.5)], and lead). Existing air quality in the Bay Area can generally be inferred from ambient air quality measurements conducted by the BAAQMD at its monitoring stations. The major pollutants of concern in the Bay Area—ozone, particulate matter, and carbon monoxide—are monitored at a number of locations. The monitoring station closest to the project area is on Rincon Avenue in Livermore, approximately eight miles from Los Vaqueros Reservoir. **Table 4.10-4** shows a five-

TABLE 4.10-4
AIR QUALITY DATA SUMMARY (2002–2006) FOR THE PROJECT AREA

Pollutant	Standard[a]	Monitoring Data by Year				
		2002	2003	2004	2005	2006
Ozone: Rincon Avenue, Livermore						
Highest 1-Hour Average (ppm)[b]	0.09	**0.160**	**0.128**	**0.113**	**0.120**	**0.127**
Days over State Standard		10	10	5	6	13
Highest 8-Hour Average (ppm)[b]	0.08	**0.106**	**0.094**	0.080	**0.090**	**0.101**
Days over National Standard		6	3	0	1	5
Carbon Monoxide: Rincon Avenue, Livermore						
Highest 8-Hour Average (ppm)[b]	9	2.50	1.94	1.81	1.79	1.53
Days over State Standard		0	0	0	0	0
Days over National Standard		0	0	0	0	0
Particulate Matter (PM10): Rincon Avenue, Livermore						
Highest 24-Hour Average ($\mu g/m^3$)[b] – State Measurement	50	**65.9**	32.7	48.8	49.4	**69.2**
Est. Days over State Standard[c]		12.3	0	0	0	17.3
Highest 24-Hour Average ($\mu g/m^3$)[b] – National Measurement	150	63.5	31.5	46.7	48.3	67.8
Est. Days over Nat. Standard[c]		0	0	0	0	0
State Annual Average ($\mu g/m^3$)[b]	20	**25.0**	18.9	20.0	18.8	**21.8**
Particulate Matter (PM2.5): Rincon Avenue, Livermore						
Highest 24-Hour Average ($\mu g/m^3$)[b]	35	61.6	42.0	40.8	32.1	50.8
Days over National Standard[d]		0	0	0	0	0
National Annual Average ($\mu g/m^3$)[b]	12	**13.8**	9.0	10.2	9.0	9.8

[a] Generally, state standards and national standards are not to be exceeded more than once per year.
[b] ppm = parts per million; µg/m3 = micrograms per cubic meter.
[c] PM10 is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.
[d] U.S EPA lowered the 24-hour PM2.5 standard from 65 µg/m3 to 35 µg/m3 in 2006. The CARB website compares monitoring data for these years to the previous PM2.5 standard of 65 µg/m3.

NOTES: Values in bold are in excess of at least one applicable standard. NA = Not Available.

SOURCE: CARB, 2007d.

year summary of ozone, carbon monoxide, and particulate matter monitoring data from the Rincon Avenue air quality station. The table also compares measured pollutant concentrations with state and federal ambient air quality standards.

Air Pollutants of Concern

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of ROG and NOx under the influence of wind and sunlight. Ozone

concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. On-road motor vehicles are the single largest source of ozone precursors in the Bay Area (BAAQMD, 1999).

Once formed, ozone remains in the atmosphere for one or two days. Ozone is then eliminated through chemical reaction with plants (reacts with chemicals on the leaves of plants), rainout (attaches to water droplets as they fall to earth), and washout (absorbed by water molecules in clouds and later falls to earth with rain). The Bay Area is designated as a nonattainment area for ozone, based on both national and state standards.

Carbon Monoxide

Carbon monoxide, a colorless and odorless gas, is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicles. When inhaled at high concentrations, carbon monoxide combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Table 4.10-4 shows that exceedances of ambient carbon monoxide standards have not occurred in the Rincon Avenue station area in the last five years. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, less emissions from new vehicles and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the California Air Resources Board *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas*, shown below:

> "The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the State designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective State 8-hour CO standard, with declining levels beginning to approach that standard."

Particulate Matter

PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and that can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, grading and construction, and motor vehicle use. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as

vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Children are more susceptible to the health risks of PM2.5 because their immune and respiratory systems are still developing.

In the Bay Area, most particulate matter is emitted by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Motor vehicles constitute the single largest source of PM10 in the Bay Area (BAAQMD, 1999).

Greenhouse Gases

Gases that trap heat in the atmosphere are called greenhouse gases. Increases in greenhouse gases are causing global climate change. Global climate change is a change in the average weather on earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the speed of global warming and the extent of the impacts attributable to human activities, most agree that there is a link between increased emission of greenhouse gases and long-term global temperature. What greenhouse gases have in common is that they allow sunlight to enter the atmosphere, but they also trap a portion of the outward-bound infrared radiation and warm up the air. The process is similar to the effect greenhouses have in raising their internal temperature, hence the name greenhouse gases. Both natural processes and human activities emit greenhouse gases.

The accumulation of greenhouse gases in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and motor vehicles have elevated the concentration of greenhouse gases in the atmosphere. This accumulation of greenhouse gases has contributed to an increase in the temperature of the earth's atmosphere and contributed to global climate change. The principal greenhouse gases are carbon dioxide (CO_2), methane, nitrous oxide (N_2O), sulfur hexafluoride, perfluorocarbons, hydrofluorocarbons, and water vapor. Carbon dioxide is the reference gas for climate change. To account for the warming potential of greenhouse gases, and to combine emissions of gases with differing properties, greenhouse gas emissions are often quantified and reported as CO_2 equivalents (CO_2E).

The World Meteorological Organization (WMO) reported that since the start of the twentieth century, the global average surface temperature has risen between 0.6 degrees Celsius (°C) and 0.7°C (1.08 degrees Fahrenheit (°F) and 1.26°F). But this rise has not been continuous. Since 1976, global average temperature has risen sharply, at 0.18°C (0.32°F) per decade. In the

northern and southern hemispheres, the 1990s were the warmest decade, with an average of 0.38°C (0.68°F) and 0.23°C (0.41°F) above the 30-year mean, respectively (WMO, 2005). The 10 warmest years for the earth's surface temperature all occurred after 1990 and the first or second warmest year on record appears to have occurred in 2005. Recent research suggests that warming occurring during the last four decades could be attributable to the increasing atmospheric concentrations of climate change emissions due to human activities (Cayan et al. 2006).

In California and throughout western North America, observations reveal trends in the past 50 years toward warmer winter and spring temperatures, a smaller fraction of precipitation falling as snow instead of rain (Knowles et al. 2006), a decrease in the amount of spring snow accumulation in lower and middle elevation mountain zones (Mote et al. 2005), and an advance in snowmelt of 5 to 30 days earlier in the spring (Stewart et al. 2005).

Climate variability and change would interact with other environmental stresses and socioeconomic changes. Chapter 5.0 discusses climate change effects with respect to water supply and water resources. Air and water pollution and management, habitat fragmentation, wetland loss, coastal erosion, and reduction in fisheries are likely to be compounded by climate-related stresses. An aging populace nationally, and rapidly growing populations in cities, coastal areas, and across the South and West are social factors that interact with and alter sensitivity to climate variability and change (NAST, 2000a). Water resources in the west are particularly susceptible to the impacts of climate change, especially for the West, Pacific Northwest, and Alaska. Reduced summer runoff, increased winter runoff, and increased demands are likely to compound current stresses on water supplies and flood management in the West (NAST, 2000b). Potential impacts are of special concern to regions like California (Kiparsky and Gleick 2003).

A GHG inventory is an accounting of the amount of GHG emitted to or removed from the atmosphere over a specified period of time attributed to activities by a particular entity (e.g., annual emissions and reductions attributed to the State of California). In 2004, total worldwide GHG emissions were estimated to be 20,135 Teragrams[3] (Tg) CO_2E.[4] In 2006, GHG emissions in the U.S. were 7,054.2 Tg CO_2E, a 14.7 percent increase over 1990 emissions.[5] California is the second largest contributor of GHG emissions in the U.S. and the sixteenth largest in the world (CEC, 2006). In 2004, California produced 497 Tg CO_2E, which is approximately 7 percent of 2004 U.S. emissions and 2.4 percent of global emissions (CEC, 2006).

Toxic Air Contaminants

Non-criteria air pollutants, or toxic air contaminants (TACs), are airborne substances capable of causing short-term (acute) or long-term, chronic or carcinogenic (i.e., cancer-causing) illnesses. TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources, including gasoline stations, automobiles, diesel engines, dry cleaners, industrial

3 1 teragram = 1 million metric tons

4 Intergovernmental Panel on Climate Change, 2007. R.B. Alley et al. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers.

5 U.S. Environmental Protection Agency (EPA). 2008. The U.S. Greenhouse Gas Emissions and Sinks: Fast Facts. Office of Atmospheric Programs.

operations, and painting operations. The issue of diesel particulate as a TAC is discussed above, under Regulatory Setting, State Regulations.

Sensitive Receptors

Some receptors are considered more sensitive than others to criteria air pollutants and hazardous air pollutants/toxic air contaminants. The reasons for greater than average sensitivity include preexisting health problems, proximity to the emission source, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are also sensitive to poor air quality because people usually live in one place for extended periods of time.

There are no schools, hospitals, or convalescent homes near the proposed project facility sites. There are two residential communities near the project area: the Town of Discovery Bay and the Town of Byron. No project construction would occur in either of these communities, although project pipeline construction would occur in the roadway adjacent to Discovery Bay. Inside the project area, there is primarily low density, rural residential development. Following, for each alternative, is a list that summarizes the location and approximate number of residences near each proposed project area or facility site.

Alternative 1

Residential uses occur near the proposed facilities as follows:

- *Los Vaqueros Watershed* – reservoir expansion area, in-watershed facilities construction sites, borrow material and staging sites, and recreational facility sites – One residence off Los Vaqueros Road is about 2 miles south of the reservoir. There are also 12 residences on the ridge west of the watershed near Morgan Territory Road, about 1.6 miles from the reservoir and 3 miles from the reservoir dam site. In addition, there are several residences approximately 2.5 miles northeast of the expanded dam site, located off Silver Hills Drive near the north entrance to the watershed.
- *Delta Intake and Pump Station* – The closest sensitive land use to the existing Old River Intake and Pump Station is a house about 3,000 feet to the northwest along SR 4. The closest residence to the proposed new Delta Intake and Pump Station is a single farmhouse on the east side of Old River. Depending on the location selected for this facility it could be between 500 and 1,000 feet from this residence.
- *Delta-Transfer Pipeline* – Construction would occur along the south side of SR 4, as close as 50 feet from the town of Discovery Bay where as many as 120 residences are along the north side of SR 4 along the pipeline alignment. About 16 rural home sites lie within 50 feet of the 6.5-mile pipeline route as it passes along SR 4, Bixler Road, Kellogg Creek Road, and Hoffman Lane.
- *Transfer Facility Expansion* – The nearest residence to the Transfer Facility is along Walnut Avenue, about 1,450 feet west of the anticipated construction site.

- *Transfer-LV Pipeline* – About 5 rural residences along Camino Diablo and Walnut Avenue lie within 50 feet of the Transfer-LV Pipeline alignment.

- *Transfer-Bethany Pipeline* – An estimated 7 rural homesteads near Vasco Road or Armstrong Road lie as close as 50 feet from the Transfer-Bethany Pipeline alignment. The Bethany Reservoir State Recreation Area, with a bikeway along the California State Aqueduct, is along the pipeline alignment (Eastside Option) near the southern terminus of the pipeline. The project construction area at Bethany Reservoir for the tie-in is not accessible to the public and is over 300 feet from a public access area.

- *Power Option 1* – There would be no physical construction activity on the transmission line from Western's existing Tracy substation to the new substation in the project area. The existing Western transmission line would feed the new substation. The nearest rural residences are about 1,275 feet away from the new substation and upgraded transmission line to be extended from the new substation east to the new Delta Intake Pump Station. For the transmission line that would extend west to the Transfer Facility Expansion, the new 21 kV transmission line would be constructed along a portion of SR 4, in the same corridor as the Delta-Transfer Pipeline. An estimated 16 rural home sites lie within 50 feet of the proposed transmission lines.

- *Power Option 2* – Like Power Option 1, Power Option 2 would make use of Western's existing transmission line that extends northwest from it's existing Tracy substation; no facility changes or new construction would occur along this existing transmission line. The existing Western transmission line that extends east to service the Old River Pump Station would be upgraded but this option does not include a new Western sunstation. About 4 rural home sites are 1,275 feet or more from the Western transmission line proposed for upgrade. A new overhead transmission line would be extended from PG&E's existing facilities in Brentwood in the corridor as the proposed Transfer-LV Pipeline. About 5 rural residences along Camino Diablo Road and Walnut Avenue lie within 50 feet of the joint transition line and pipeline alignment. The new PG&E substation required under this option would be on CCWD property with the CCWD Los Vaqueros watershed. The nearest residence to this proposed substation lies within 500 feet and is off Silver Hills Drive.

- *Recreation Facilities* – The recreation facilities that would be replaced and expanded within the Los Vaqueros Watershed would be near and around the reservoir. The closest homes to the reservoir include 12 residences on the ridge west of the watershed near Morgan Territory Road, about 1.6 miles from the reservoir and 3 miles from the Marina Complex site. A single residence off Los Vaqueros Road to the south is located about 2 miles from the reservoir and 4.8 miles from the proposed Marina Complex. In addition, there are several residences approximately 2.5 miles northeast of the expanded dam site, located off Silver Hills Drive near the north entrance to the watershed.

Alternative 2

The sensitive receptors for localized air quality effects associated with Alternative 2 would be the same as those described above for Alternative 1 because Alternative 2 includes all the same proposed facilities and construction activities in the same locations.

Alternative 3

Sensitive receptors for Alternative 3 would be largely the same as those outlined for Alternative 1 with three substantive differences:

- The existing Old River Intake and Pump Station would be expanded under this alternative but not under Alternative 1. Construction activity to expand this facility would occur approximately 3,000 feet from the nearest residence located to the northwest along State Route (SR) 4 (see Figure 4.11-3).

- Alternative 3 would not include construction of a new Delta Intake so there would be no exposure of sensitive receptors to air pollutant emissions associated with this facility, as there would be under Alternative 1.

- Alternative 3 would not include the Transfer-Bethany pipeline, so there would be no exposure of sensitive receptors to air pollutant emissions associated with this facility.

The closest sensitive receptors to the remaining project components would be the same as described above for Alternative 1.

Alternative 4

Alternative 4 would include a dam raise for a 160 TAF reservoir that would be smaller and involve less construction material and construction activity than the dam raise required under Alternative 1 for the 275 TAF reservoir. Under Alternative 4, the closest sensitive receptors to the Expanded Los Vaqueros Reservoir Expansion/Dam Modification site include twelve residences on the ridge west of the watershed located near Morgan Territory Road, located approximately 1.6 miles from the Reservoir and 3 miles from the Marina Complex site. The closest sensitive receptor to the 160 TAF Reservoir Expansion borrow area is a residence located on the southeast corner of Camino Diablo and Walnut Boulevard, over 4,000 feet north of the 160 TAF borrow site.

Alternative 4 would not include expansion of the existing Old River Pump Station or construction of the new Delta Intake and Pump Station, any of the proposed conveyance facilities, or any new power supply facilities. Also, fewer recreation facilities would be relocated or expanded within CCWD watershed lands under Alternative 4 than under Alternative 1.

4.10.2 Environmental Consequences

Methodology

Project-related air quality impacts would fall into two categories: short-term, construction-related impacts and long-term, operations-related impacts. Short-term construction activities would primarily result in the generation of ROG, NOx, PM10 and GHGs from construction equipment. Long-term operational emission sources would result in nominal emissions associated with vehicle trips during routine inspection and maintenance of the project components and infrequent testing of emergency generators. In addition, the independent power plants and facilities that generate the electricity necessary to operate the expanded Los Vaqueros system facilities would emit pollutants, including GHGs.

For the evaluation of construction impacts associated with emissions of criteria pollutants, the BAAQMD does not require a detailed quantification of construction emissions. Instead, it recommends that evaluation of the significance of impacts be based on a consideration of the control

measures to be implemented (BAAQMD, 1999). The BAAQMD CEQA Guidelines recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that is the basis for regional air quality plans. The guidelines note that during construction, PM10 is the pollutant of greatest concern and can potentially lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces. Generally, if appropriate measures are implemented to reduce fugitive dust, then the residual impact can be presumed to be less-than-significant. Without these measures, the impact is generally considered to be significant, particularly if sensitive land uses (e.g., residential) are located in the project vicinity.

Because the proposed project and alternatives would be subject to the General Conformity Rule, construction emissions associated with the proposed project and alternatives were calculated. U.S. EPA's *de minimis* conformity thresholds also were used to determine the significance of criteria pollutants emitted during construction. As recommended by the BAAQMD, construction emissions (including CO_2) were calculated using the CARB OFFROAD2007 model for off-road equipment and the EMFAC2007 model for on-road workers and haul trucks (Vintze, 2005).

For GHG (CO_2E) quantification, the analysis uses OFFROAD2007 for construction activity emissions and Global Warming Potential emission factors from the *California Climate Action Registry General Reporting Protocol* (California Climate Action Registry, 2008), as well as existing and projected pumping rates, associated electrical demand, and power source carbon emissions information (for PG&E or Central Valley Project (CVP)/Modesto Irrigation District (MID)) for indirect electricity generation (CCWD, 2008). The approach to the GHG emissions analysis is discussed in more detailed in Impact 4.10.5, below.

Significance Criteria

For the purpose of this analysis, the following thresholds of significance have been applied. These thresholds are based on the BAAQMD CEQA Guidelines, the State CEQA Guidelines (Appendix G), and the lead agencies' judgment as to the criterion to address the greenhouse gas emissions associated with the proposed project. The thresholds described below also encompass the factors taken into account under NEPA to determine the significance of an action in terms of its context and the intensity of its effects. The project could have a significant effect if it would:

- Generate substantial criteria air pollutants during construction that would contribute to existing nonattainment conditions and further degrade air quality;
- Generate substantial criteria pollutants from operations that would contribute to existing nonattainment conditions or violate applicable air quality standards;
- Expose sensitive receptors to substantial pollutant concentrations, including concentrations of hazardous air pollutants/toxic air contaminants, during construction and/or operations;
- Create objectionable odors affecting a substantial number of people;
- Result in cumulatively considerable contributions to greenhouse gas emissions in light of state goals for reducing greenhouse gas emissions; or

- Result in cumulatively considerable criteria pollutant emissions during construction and operations.

These criteria are defined further as follows:

Short-term construction criteria air pollutant emissions: The BAAQMD emphasizes implementation of effective and comprehensive control measures rather than requiring a detailed quantification of construction emissions. If effective and comprehensive control measures are implemented as appropriate, then short-term constructions impacts would be reduced to a less-than-significant level. These control measures would be deemed to prevent project construction-related emissions of criteria pollutants from resulting in or substantially contributing to emissions concentrations (e.g., ROG, NO_x, and PM10) that exceed the NAAQS and CAAQS.

According to 40 CFR 93.153, conformity determinations are required for federal actions that occur in nonattainment or maintenance areas and result in generation of emissions that exceed established *de minimis* levels. **Table 4.10-5** summarizes the federal emissions thresholds applicable to this project.

TABLE 4.10-5
FEDERAL GENERAL CONFORMITY
CRITERIA AIR POLLUTANT EMISSION THRESHOLDS

Pollutant	Federal Threshold (tons/year)
NOx	100
ROG	100
CO	100

SOURCE: U.S. Department of Energy, Safety and Health Office of NEPA Policy and Assurance, 2000.

A federal project that does not exceed the *de minimis* threshold rates may still be subject to a general conformity determination if the sum of direct and indirect emissions would exceed 10 percent of the emissions of the nonattainment or maintenance area. If emissions would exceed 10 percent, the federal project is considered "regionally significant," and thus general conformity rules apply. If the emissions would not exceed the *de minimis* levels and are not regionally significant, then the project is assumed to conform, and no further analysis or determination is required. These standards are applied to construction emissions associated with this project.

Long-term operational criteria air pollutant emissions: Regional impacts would be considered significant if implementation of the proposed project would result in emissions of ROG, NO_x, or PM10 that exceed the BAAQMD thresholds of 15 tons per year. Localized CO impacts would be considered significant if project implementation would result in or substantially contribute to CO concentrations that exceed the California 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm.

Hazardous Air Pollutant (HAP)/Toxic air contaminant (TAC) emissions: HAP/TAC emissions would be considered significant if incremental increases in emissions from the proposed project

would be calculated to result in the probability of contracting cancer for the Maximally Exposed Individual (MEI) that exceeds 10 in 1 million, or a Hazard Index (HI) of one.

Odors would be considered significant if proposed project implementation would result in excessive nuisance odors to any considerable number of persons or the public, as defined under the California Code of Regulations, Health & Safety Code section 41700, "Air Quality Public Nuisance."

Greenhouse gas emissions would be considered cumulatively considerable if the proposed project would conflict with the state goal of reducing greenhouse gas emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32, the California Global Warming Solutions Act of 2006. The lead agencies consider a conflict with the state goals identified in AB 32 to arise if a project would not comply with requirements adopted by CARB to carry out AB 32, or if a project would not incorporate features designed to reasonably minimize its GHG emissions, consistent with the policy intent of AB 32. The lead agencies have not established numeric thresholds for determining the significance of GHG emissions. Thus, this determination is qualitative, and is based upon the judgment of the lead agencies in light of the project's quantified direct and indirect emissions of GHGs, the severity of cumulative impacts from climate change, and the GHG minimization features included in the project.

Impact Summary

Table 4.10-6 provides a summary of the impact analysis for issues related to air quality based on actions outlined in Chapter 3.

Impact Analysis

No Project/No Action Alternative

Under the No Project/No Action Alternative, no facilities would be constructed. Therefore, this alternative would have no impacts associated with air quality.

Impact 4.10.1: Construction of project alternatives could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, and PM10 that could contribute to existing nonattainment conditions and further degrade air quality. However, project alternatives would not exceed federal general conformity *de minimis* standards for emissions. (Less than Significant with Mitigation)

Introduction

All project alternatives would require land clearing and grubbing, earthmoving for reservoir expansion, cut and fill operations, trenching, soil compaction, and grading. Alternatives 1 through 3 would also require construction of improvements such as roadway surfaces, structures, and facilities. The emissions generated from these construction activities include:

- Dust (including PM10 and PM2.5), primarily from fugitive sources such as soil disturbance and vehicle travel over unpaved surfaces

TABLE 4.10-6
SUMMARY OF IMPACTS – AIR QUALITY

Impact	Project Alternative			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
4.10.1: Construction of project alternatives could generate short-term emissions of criteria air pollutants: ROG, NOx, CO, and PM10 that could contribute to existing nonattainment conditions and further degrade air quality. However, project alternatives would not exceed federal general conformity *de minimis* standards for emissions.	LSM	LSM	LSM	LSM
4.10.2: Operation of project alternatives would not result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions.	LS	LS	LS	LS
4.10.3: Construction and/or operation of project alternatives would not expose sensitive receptors to substantial pollutant concentrations.	LS	LS	LS	LS
4.10.4: Operation of project alternatives would not create objectionable odors affecting a substantial number of people.	LS	LS	LS	LS
4.10.5: Construction and operation of project alternatives would not result in a cumulatively considerable increase in greenhouse gas emissions.	LS	LS	LS	LS
4.10.6: Construction and operation of the project alternatives could result in cumulatively considerable increases of criteria pollutant emissions.	LSM	LSM	LSM	LSM

NOTES:

SU = Significant and Unavoidable
LSM = Less-than-Significant Impact with Mitigation
LS = Less-than-Significant Impact
NI = No Impact

- Combustion emissions of criteria air pollutants (including ROG, NOx, CO, and PM10), primarily from the operation of heavy construction machinery (primarily diesel operated), portable auxiliary equipment, and construction worker automobile and haul truck trips
- Evaporative emissions (ROG) from asphalt paving (except under Alternative 4)
- Combustion emissions of greenhouse gases, discussed in Cumulative Impact 4.10.5 below.

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather.

Construction activities would also result in the emission of pollutants from construction equipment exhaust and construction worker automobile and haul truck trips. Emission levels for construction activities would vary depending on the number and type of equipment, duration of use, operating schedules, and the number of construction workers. Criteria pollutant emissions of ROG and NOx from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during project construction.

Alternative 1

For the worst-case year of construction, it was assumed that construction of all components of Alternative 1 that are anticipated to occur during Year 1 of construction (including reservoir expansion, new Delta Intake and Pump Station, pipeline and electrical facilities) would occur simultaneously. Year 1 was selected because that is the year that the largest amount of construction could occur at the same time. Estimated construction-related fugitive dust emissions, as well as exhaust emissions from construction equipment and worker and haul truck trips are shown in **Table 4.10-7** for the worst-case year.

TABLE 4.10-7
ALTERNATIVE 1 ESTIMATED CONSTRUCTION EMISSIONS (TONS/YEAR) AND FEDERAL GENERAL CONFORMITY THRESHOLDS

		Year 1			
		ROG	**CO**	**NOx**	**PM10**
Reservoir Construction	Off-road Equipment[a]	5	18	37	1
	On-road Vehicles[b]	3	46	31	17
Pipeline, Delta Intake/Pump Station Construction, and Electrical Facility Construction	Off-road Equipment[a]	2	9	16	1
	Pipeline Trucks[c]	0	1	2	0
Fugitive Dust - 15 acres disturbed		0	0	0	20
Total Unmitigated Emissions (tons/year)		10	74	86	39
General Conformity Thresholds – (tons/year)		100	100	100	NA
Significant (Yes or No)?		No	No	No	No

[a] Construction emissions estimates for off-road equipment were made using CARB's OFFROAD2007 model. See Appendix H for more details.
[b] EMFAC2007 emission factors were used to calculate on-road vehicle emissions from truck and worker vehicles. Notably, this value includes worker trips for all other construction components as well as truck trips for all components except for pipeline construction. Refer to Appendix H for more details.
[c] Pipeline trucks were analyzed separately since a portion comes from Southern California and a portion come from Tracy.

NOTES: Values in **bold** are in excess of the applicable General Conformity threshold.

SOURCE: ESA, 2008.

As shown in Table 4.10-7, construction annual emissions would not exceed the Federal General Conformity *de minimis* standards. The general conformity rule also requires that emissions be assessed for regional significance to determine whether the sum of direct and indirect emissions would exceed 10 percent of the emissions of the nonattainment or maintenance area. According to the CARB 2006 Estimated Annual Emissions in the BAAQMD (CARB, 2007e), total emissions of ROG, NOx, and carbon monoxide in the Bay Area Air Basin are approximately 370 tons per day, 525 tons per day, and 1,931 tons per day, respectively. As shown in Table 4.10-7, the annual unmitigated emissions of ROG, NOx, and carbon monoxide generated by Alternative 1 construction would be 10 tons per year (or 0.04 tons per day), 86 tons per year (or 0.3 tons per day), and 74 tons per year (or 0.3 tons per day), respectively. These construction emissions would represent approximately 0.01 percent of the total emissions of ROG in the Bay Area Air Basin, 0.06 percent of the total emissions of NOx in the Bay Area Air Basin, and 0.02 percent of the total emissions

of carbon monoxide in the Bay Area Air Basin. Since the emissions associated with construction are less than 10 percent of the total emissions for ROG, NOx, or carbon monoxide, no further analysis for general conformity is required.

In summary, construction emissions for Alternative 1 are not considered significant under the general conformity rule. However, fugitive dust emissions would be considered significant without BAAQMD construction control mitigation measure implementation.

Alternative 2

The potential air quality impacts associated with Alternative 2 would be the same as those described above for Alternative 1 because Alternative 2 includes all the same proposed facilities and construction activities. In summary, construction emissions for Alternative 2 are not considered significant under the general conformity rule. However, fugitive dust emissions would be considered significant without BAAQMD construction control mitigation measure implementation.

Alternative 3

For the worst-case year during construction, it was assumed that construction of all components of Alternative 3 that are anticipated to occur during Year 1 of construction (including reservoir expansion, Old River Intake and Pump Station expansion, construction of pipelines and electrical facilities) would occur simultaneously. Alternative 3 would not include development of the new Delta Intake and Pump Station or the Transfer-Bethany pipeline. As a result, construction activity for this alternative would be less intense than that described for Alternative 1. Estimated construction-related fugitive dust emissions, as well as exhaust emissions from construction equipment and worker and haul truck trips for Alternative 3 are shown in **Table 4.10-8** for the worst-case year.

As shown in Table 4.10-8, construction annual emissions would not exceed the Federal General Conformity *de minimis* standards.

The general conformity rule also requires that emissions be assessed for regional significance to determine whether the sum of direct and indirect emissions would exceed 10 percent of the emissions of the nonattainment or maintenance area. According to the CARB 2006 Estimated Annual Emissions in the BAAQMD (CARB, 2007e), total emissions of ROG, NOx, and carbon monoxide in the Bay Area Air Basin are approximately 370 tons per day, 525 tons per day, and 1,931 tons per day, respectively. As shown in Table 4.10-8, the annual unmitigated emissions of ROG, NOx, and carbon monoxide generated by Alternative 3 construction would be 10 tons per year (or 0.04 tons per day), 84 tons per year (or 0.3 tons per day), and 73 tons per year (or 0.3 tons per day), respectively. These construction emissions would represent approximately 0.01 percent of the total emissions of ROG in the Bay Area Air Basin, 0.06 percent of the total emissions of NOx in the Bay Area Air Basin, and 0.02 percent of the total emissions of carbon monoxide in the Bay Area Air Basin. Since the emissions associated with alternative construction are less than 10 percent of the total emissions for ROG, NOx, or carbon monoxide, no further analysis for general conformity is required.

TABLE 4.10-8
ALTERNATIVE 3 ESTIMATED CONSTRUCTION EMISSIONS (TONS/YEAR) AND FEDERAL GENERAL CONFORMITY THRESHOLDS

		Year 1			
		ROG	**CO**	**NOx**	**PM10**
Reservoir Construction	Off-road Equipment[a]	5	18	37	1
	On-road Vehicles[b]	3	46	31	17
Pipeline, Old River Intake/Pump Station Expansion, and Electrical Facility Construction	Off-road Equipment[a]	2	8	14	1
	Pipeline Trucks[c]	0	1	2	0
Fugitive Dust - 15 acres disturbed		0	0	0	20
Total Unmitigated Emissions (tons/year)		10	73	84	39
General Conformity Thresholds – (tons/year)		100	100	100	NA
Significant (Yes or No)?		No	No	No	No

[a] Construction emissions estimates for off-road equipment were made using CARB's OFFROAD2007 model. See Appendix H for more details.
[b] EMFAC2007 emission factors were used to calculate on-road vehicle emissions from truck and worker vehicles. Notably, this value includes worker trips for all other construction components as well as truck trips for all components except for pipeline construction. Refer to Appendix H for more details.
[c] Pipeline trucks were analyzed separately since a portion come from Southern California and a portion come from Tracy.

NOTES: Values in **bold** are in excess of the applicable General Conformity threshold.

SOURCE: ESA, 2008.

In summary, construction emissions for Alternative 3 are not considered significant under the general conformity rule. However, fugitive dust emissions would be considered significant without BAAQMD construction control mitigation measure implementation.

Alternative 4

Alternative 4 is the smallest reservoir expansion considered, and has fewer new or expanded facilities than Alternatives 1, 2, and 3. Under Alternative 4, additional intake capacity is not required. The existing pipeline from the Old River Pump Station to the Transfer Facility and up to the reservoir would be used as is, with no capacity expansion required. The pumps at the existing Transfer Facility would be upgraded but all work would be done within the existing structure. No new conveyance pipeline connecting to the SBA system would be constructed. No new power facilities would be required under this alternative.

For the worst-case year of construction, it was assumed that the reservoir expansion construction activities would be the same as those under Alternative 1, 2, and 3. As explained above, no construction of intake, conveyance or electrical facilities would occur. Estimated construction-related fugitive dust emissions, as well as exhaust emissions from construction equipment and worker and haul truck trips for Alternative 4 are shown in **Table 4.10-9** for the worst-case year.

As shown in Table 4.10-9, construction annual emissions would not exceed the Federal General Conformity *de minimis* standards.

TABLE 4.10-9
ALTERNATIVE 4 ESTIMATED CONSTRUCTION EMISSIONS (TONS/YEAR) AND FEDERAL GENERAL CONFORMITY THRESHOLDS

		Year 1			
		ROG	**CO**	**NOx**	**PM10**
Reservoir Construction	Off-road Equipment[a]	5	18	37	1
	On-road Vehicles[b]	3	46	31	17
Fugitive Dust - 10 acres disturbed		0	0	0	13
Total Unmitigated Emissions (tons/year)		8	64	68	31
General Conformity Thresholds – (tons/year)		100	100	100	NA
Significant (Yes or No)?		No	No	No	No

[a] Construction emissions estimates for off-road equipment were made using CARB's OFFROAD2007 model. See Appendix H for more details.
[b] EMFAC2007 emission factors were used to calculate on-road vehicle emissions from truck and worker vehicles. Refer to Appendix H for more details.

NOTES: Values in **bold** are in excess of the applicable General Conformity threshold.

SOURCE: ESA, 2008.

The general conformity rule also requires that emissions be assessed for regional significance to determine whether the sum of direct and indirect emissions would exceed 10 percent of the emissions of the nonattainment or maintenance area. According to the CARB 2006 Estimated Annual Emissions in the BAAQMD (CARB, 2007e), total emissions of ROG, NOx, and carbon monoxide in the Bay Area Air Basin are approximately 370 tons per day, 525 tons per day, and 1,931 tons per day, respectively. As shown in Table 4.10-9, the annual unmitigated emissions of ROG, NOx, and carbon monoxide generated by Alternative 4 construction would be 8 tons per year (or 0.03 tons per day), 68 tons per year (or 0.3 tons per day), and 64 tons per year (or 0.3 tons per day), respectively. These construction emissions would represent approximately 0.008 percent of the total emissions of ROG in the Bay Area Air Basin, 0.06 percent of the total emissions of NOx in the Bay Area Air Basin, and 0.02 percent of the total emissions of carbon monoxide in the Bay Area Air Basin. Since the emissions associated with alternative construction are less than 10 percent of the total emissions for ROG, NOx, or carbon monoxide, no further analysis for general conformity is required.

In summary, construction emissions for Alternative 4 are not considered significant under the general conformity rule. However, fugitive dust emissions would be considered significant without BAAQMD construction control mitigation measure implementation.

Mitigation Measures

Measure 4.10.1: During construction, CCWD will require the construction contractor to implement the measures that are specified under BAAQMD's basic and enhanced dust control procedures. These include:

- Basic Control Measures – CCWD and its contractors will implement the following controls at all construction sites:
  - Water all active construction areas at least twice daily.
  - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
  - Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
  - Sweep daily (with water sweepers) all paved access roads, parking areas, and staging area at construction sites.
  - Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Enhanced Control Measures – CCWD and its contractors will implement the following measures during project construction for project facility sites of 4 acres or greater:
  - Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more).
  - Enclose, cover, water twice daily, or apply (nontoxic) soil stabilizers to exposed stockpiles (such as dirt and sand).
  - Limit traffic speeds on unpaved roads to 15 miles per hour.
  - Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
  - Replant vegetation in disturbed areas as quickly as possible.
- CCWD and its contractors will implement the following additional control measure during reservoir expansion construction due to the large area of disturbance:
  - Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site onto public roads.

Impact Significance after Mitigation: Less than Significant.

Impact 4.10.2: Operation of the project alternatives would not result in emissions of criteria air pollutants at levels that would substantially contribute to a potential violation of applicable air quality standards or to nonattainment conditions. (Less than Significant)

All Alternatives

None of the alternatives would include facility operations that would directly emit criteria air pollutants. However, two other sources of emissions are associated with operation of project facilities. Use of motor vehicles to travel to and from project facilities would generate mobile sources of criteria pollutant emissions, and generation of electricity to serve the project would result in emissions outside of the project area. These are described below.

Mobile Sources. Operation of project facilities under each of the alternatives is anticipated to generate traffic volumes similar to the existing traffic volumes since operation of the expanded system would require fewer than 10 new employees. There would be a very small increase in maintenance worker trips to and from expanded or new facilities, but this increase would be less than a combined total of one round trip per week. Visitor and employee trips associated with use of the recreation facilities at the expanded reservoir are also expected to be similar to current conditions. Therefore, the addition of traffic from project operations would result in a negligible increase in regional emissions of criteria air pollutants.

Electricity. Each of the alternatives would result in additional electricity consumption (approximately 54,300 megawatt-hours per year for Alternative 1, 61,200 megawatt-hours per year for Alternative 2, 22,900 megawatt-hours per year for Alternative 3, and 2,400 megawatt-hours per year for Alternative 4) associated with pumping operations. However, because (1) emissions from electrical generating facilities would generally be located outside the Bay Area Air Basin; (2) the facilities would be equipped with Best Available Control Technology (BACT) and would be permitted as stationary sources; and (3) the emissions would be offset by the use of pollution credits, the emission of criteria pollutants from off-site generation of electricity is excluded from the evaluation of project significance for criteria pollutants (CCWD and Reclamation, 2006). These emissions are, however, considered below under the evaluation of increases in emissions of GHGs.

In summary, the project alternatives would not result in operational emissions that would exceed BAAQMD's thresholds of significance. Consequently, the project-generated emissions would not be anticipated to result in a substantial contribution to a potential violation of NAAQS, CAAQS, or the nonattainment conditions. As a result, this impact would be less than significant.

Mitigation: None required.

Impact 4.10.3: Construction and/or operation of the project alternatives would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)

All Alternatives

Carbon Monoxide (CO) Hotspots

CO is a localized pollutant of concern. The majority of construction activities would occur in the watershed, at a substantial distance from any sensitive receptors. Although portions of pipeline construction could occur approximately 50 feet from sensitive residences, CO background concentrations (where air districts still monitor CO) and the average emissions from vehicles and equipment continue to decline. Construction activities for the proposed project would not emit CO in quantities that could pose health concerns.

Project operations also would not be anticipated to result in or contribute to CO concentrations that exceed the California 1-hour ambient air quality standard of 20 ppm or the 8-hour standard of 9 ppm because of the negligible amount of project-generated trips for operation and maintenance, as discussed above in Impact 4.10.2. The BAAQMD generally does not recommend a detailed air quality analysis for projects generating less than 2,000 trips per day (BAAQMD, 1999). Thus, increases in mobile-source emissions of CO associated with project operations would not be anticipated to result in or contribute substantially to an air quality violation. The project and the alternatives would not result in significant localized concentrations of criteria pollutants.

Toxic Air Contaminants

Construction of the proposed project would result in short-term diesel exhaust emissions (DPM), which are TACs, from on-site heavy-duty equipment. Project construction would generate DPM emissions from the use of off-road diesel equipment required for site grading and excavation, paving, and other construction activities. The dose to which sensitive receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of the proposed construction activities (3 years) would only constitute approximately 4 percent of the total exposure period for Alternatives 1, 2, and 3, or 3 percent of the total exposure period for Alternative 4 (2 years). In addition, the majority of project construction activity would occur in the watershed at a substantial distance from sensitive receptors. Portions of pipeline and electrical transmission line construction could occur approximately 50 feet from residences; however, these construction activities would move along the alignment on a daily basis and would not result in extended exposure of residences to DPM. While the length of construction time in front of any given property would vary, it would not be expected to be greater than two weeks at a single point along the alignment. Because the use of mobilized equipment would be temporary and there are no sensitive receptors located immediately adjacent to areas where construction would occur for prolonged periods, DPM from construction activities would not be anticipated to result in the exposure of sensitive receptors to levels that exceed applicable standards.

In addition, the long-term operation of the project would not result in any non-permitted sources of toxic air emissions. As a result, exposure of sensitive receptors to substantial toxic air emissions from the project alternatives would be less than significant.

Mitigation: None required.

Impact 4.10.4: Operation of the project alternatives would not create objectionable odors affecting a substantial number of people. (Less than Significant)

All Alternatives

Types of land uses that typically pose potential odor problems include agriculture, wastewater treatment plants, food processing and rendering facilities, chemical plants, composting facilities, landfills, waste transfer stations, and dairies. In addition, the occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they can still be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

The project alternatives do not include any of these land use activities or similar land uses. Therefore, none of the proposed project alternatives would create objectionable odors that would affect a substantial number of people during operations. Occasionally, diesel equipment exhaust can generate objectionable odors, but these dissipate very quickly. Thus, neither construction nor the operation of the project alternatives would result in the creation of, or frequent exposure to, an objectionable odor and odor impacts would be less than significant.

Mitigation: None required.

Cumulative Impact 4.10.5: Construction and operation of the project alternatives would not result in a cumulatively considerable increase in greenhouse gas emissions. (Less than Significant)

All Alternatives

The California Energy Commission (CEC) estimated that in 2004 California produced 500 million gross metric tons (about 550 million U.S. tons) of carbon dioxide-equivalent GHG emissions.[6] The CEC found that transportation is the source of 38 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent and industrial sources at 13 percent (CEC, 2006).

In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of the Bay Area's GHG emissions, accounting for just over half of the Bay Area's 85 million tons of GHG emissions in 2002. Industrial and commercial sources were the second largest contributors of GHG emissions with about one-fourth of total emissions. Domestic sources (e.g., home water heaters, furnaces, etc.) account for about 11 percent of the Bay Area's GHG emissions, followed by power plants at 7 percent. Oil refining currently accounts for approximately 6 percent of the total Bay Area GHG emissions (BAAQMD, 2006b).

6 Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

Project GHG emissions

"The most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide" (OPR, 2008). State law defines GHG to also include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These latter GHG compounds are usually emitted in industrial processes, and therefore not applicable to the proposed project. The calculation presented below includes construction emissions in terms of CO_2[7], and annual CO_2E GHG emissions from increased energy consumption. **Appendix H** contains information used in this analysis regarding construction scenario and energy use scenario assumptions as well as the emissions calculations used in this analysis.

Construction Emissions

Project construction would result in temporary increases in GHG emissions associated with transportation of construction materials, most notably pipeline segments and dam construction materials, as well as construction equipment operation and worker transportation. Most of the materials required for construction of the dam raise modification for reservoir expansion would be obtained from on-site borrow areas within the watershed, minimizing the need for materials transport. In addition, much of the material excavated from the proposed pipeline trenches would be reused as backfill, minimizing the need to haul material offsite for reuse or disposal elsewhere. Although the project has been designed to minimize material hauling requirements, some materials would need to be imported to the project area for the dam modification and construction of the pipelines and other facilities (e.g., engineered fill and concrete). In addition, pipeline construction would require import of pipeline segments to the project area from a pipe manufacturer. Because not all pipe manufactures make large diameter pipe of the size that might be used for the project (e.g., 132 inches in diameter), for purposes of calculating materials transportation and associated GHG emission, it was assumed that pipeline segments less than 132 inches in diameter would be manufactured in Tracy, California and that pipeline segments of 132 inches in diameter would be manufactured and transported in southern California. Appendix H provides additional details about the construction scenario assumptions used in this analysis and presents the emissions calculations.

Based on the assumptions regarding materials hauling and construction equipment operation during a worst case year of construction when activity at all project sites would occur simultaneously, construction of the project alternatives would emit approximately 22,550 metric tons CO_2E for Alternatives 1 or 2, approximately 22,285 metric tons CO_2E for Alternative 3, and approximately 19,600 metric tons CO_2E for Alternative 4.

Operational Emissions

Energy Use. Operation of the expanded Los Vaqueros Reservoir system would result in indirect GHG emissions due to increased energy use. **Table 4.10-10** summarizes the GHG emissions resulting from operation of the project under each of the four project alternatives and for Future Without Project conditions. The estimated metric tons of CO_2E for each alternative includes increases

[7] Construction emissions of carbon dioxide (CO_2) were calculated based on OFFROAD2007 and EMFAC2007 emission factors. N_2O and CH_4 were not quantified for construction activities since they contribute insignificant amounts to the total GHGs during construction.

TABLE 4.10-10
INDIRECT GHG EMISSIONS FROM PROJECT ELECTRICITY USE
(METRIC TONS/YEAR)[1]

Operational Emissions	Total Metric Tons/Year CO_2E	Increase in Metric Tons/Year CO_2E[3]
Future Without Project[2]	26,000	n/a
Alternative 1	33,800	7,900
Alternative 2	34,900	9,000
Alternative 3	30,400	4,400
Alternative 4	26,400	500

1 Metric tons/year of CO_2E were calculated using the *California Climate Action Registry General Reporting Protocol* emission factors and methodology. See Appendix H for more details.
2 "Future Without Project" includes power required for pumping at Banks and Jones Pumping Plants needed to deliver water to the SBA, SCVWD via San Luis Reservoir, and power required at CCWD's pumping facilities.
3 "Increase in Metric Tons/Year" shows the increase in the total emissions for each alternative compared to the emissions for "Future Without Project"

SOURCE: ESA, 2008; California Climate Action Registry, 2008; CCWD, 2008

in energy use associated with increased water diversion and pumping through the expanded Los Vaqueros Reservoir system and decreased energy use for the state and/or federal Delta water systems associated with a commensurate reduction in water pumping (See Appendix H for more detailed information about water system pumping). As described in Chapter 4.12 (Utilities and Public Service Systems) of this document, hydroelectric energy is a chief source of the energy delivered to the existing Los Vaqueros Reservoir system now and would be in the future as well. Compared to both existing conditions and future conditions without the project, GHG emissions would increase for all alternatives as a result of increased energy use to support increased pumping through the expanded system. These increases in emissions from electricity use would be minimized by implementing the project design features discussed below.

Reservoir Expansion. There is also the potential for additional GHG emissions (CO_2 and CH_4) from the expanded reservoir. There is apparent agreement within the scientific community that reservoirs can produce carbon dioxide and methane gases as a result of inundation and decomposition of vegetation, but disagreement on exactly how much of these gases are sequestered in reservoirs versus released into the atmosphere. At present there are no established methodologies or emission factors to quantify emission reductions or increases from reservoirs in different regions (Fearnside, 2004; NAST, 2006). However, estimates have been made for the project alternatives.

Methane production in reservoirs results from decomposition of organic matter in anoxic conditions and has been identified in some reservoirs, principally in tropical regions. For the Los Vaqueros Reservoir, submerged biomass will be minimized prior to initial filling to minimize methane emissions caused by inundation. In addition, the Los Vaqueros Reservoir is managed to maintain oxygen levels and avoid anoxic conditions at all levels of the Reservoir as an important part of maintaining water quality. The expanded reservoir will also be managed to avoid anoxic conditions. Generally wind conditions in the Los Vaqueros Reservoir minimize stratification and enhance mixing in a way that oxygen is not depleted in the reservoir. When

oxygen levels deep in the reservoir fall, an oxygenation system is employed to maintain oxygen levels; this operation would be continued in the expanded reservoir. Consequently, no significant increase in methane production is anticipated under any of the project alternatives.

Carbon dioxide production from decay of organic matter in newly inundated areas can be estimated from the vegetation load in those areas. Typically, the Los Vaqueros watershed is managed to have a vegetation load of about 700 pounds per acre when grazed, and less than 2000 pounds per acre when not grazed. Assuming the inundated area is 2000 pounds per acre, and there is no sequestering of this material in the reservoir whatsoever, the maximum amount of carbon dioxide production from decomposition of the inundated area is about 1,600 tons total for Alternatives 1, 2 and 3; this would be released over several years. If 50% of the carbon is sequestered into reservoir sediments, the total amount released would be about 800 tons. Grazing to reduce the vegetation prior to inundation would reduce the 1,600 metric tons to about 600 metric tons total and less if any carbon is sequestered in reservoir sediments. The level for Alternative 4 would be less than half these levels.

Another source of carbon to the reservoir is that which arrives with the water pumped into the reservoir. Typically, source water contains an average of 4.2 mg/l total organic carbon (TOC) during the filling season. Water leaving the reservoir has typical TOC levels of about 3.2 mg/l. Some of the TOC is likely to be sequestered in reservoir sediments, either directly through sedimentation of particulate organic carbon, or indirectly through initial uptake by organisms. If all the net carbon addition to the reservoir is converted to carbon dioxide (i.e., 4.2 mg/l input less 3.2 mg/l released), then the net increase in carbon dioxide production would be at most 135 metric tons per year of CO_2E for Alternatives 1, 2 or 3; Alternative 4 would be less than 15 tons per year. If any of the net carbon addition is sequestered, these levels would be reduced by the amount sequestered.

Algae and vegetation that grows in the reservoir would increase due to increased surface area and shallow water areas. This will take up carbon dioxide from the atmosphere. Some of that carbon would be sequestered in reservoir sediments and some would decay and go back to carbon dioxide, for a likely net sequestering of a small amount of carbon per year.

Overall, the potential net production of greenhouse gases within the reservoir as a result of reservoir expansion is not significant compared to that estimated from net energy use; it is possible that the reservoir could sequester a small amount of carbon; such an amount would also likely be not significant compared to net energy use.

Project Contribution to Cumulative Climate Change Effects from Greenhouse Gas Emissions

The project's incremental increases in GHG emissions associated with construction and electricity use and reservoir expansion would contribute to regional and global increases in GHG emissions and associated climate change effects. Until a statewide threshold has been adopted, for this analysis the following three questions are considered to assess whether the project would be in conflict with the state goals for reducing GHG emissions and make a cumulatively considerable contribution to GHG emissions.

A) Does the proposed project conflict with any measures adopted by CARB for implementation of AB 32?

B) What is the level of emissions for the proposed project in relation to the estimated GHG emissions for the Bay Area, as well as to the major facilities that are required to report GHG emissions (25,000 metric tons/year CO_2E)?

C) Are the basic parameters of the proposed project inherently energy efficient?

With regard to whether the project alternative would conflict with measures adopted by CARB, Table 4.10-3 in the setting section summarizes the most recent list of the CARB early action strategies. Few of these measures are relevant to the project. The five strategies that are relevant to the project alternatives relate primarily to fuel efficient, low emission vehicles and emission reduction methods for vehicles. These measures include (1) above ground storage tanks for fuels; (2) non-agricultural diesel off-road equipment; (3) privately owned on-road diesel trucks; (4) anti-idling enforcement of heavy trucks; and (5) tire inflation program.

CCWD is already in the process of converting its vehicle fleet to fuel efficient, low emission vehicles and the District's current vehicle maintenance procedures implement the recommended tire inflation strategy to maintain fuel efficiency. CCWD personnel working on the project (e.g., engineers, inspectors) would use the District's low emission, fuel efficient fleet vehicles. CCWD would also include anti-idling requirements in contractor specifications to reduce emissions from construction equipment and haul trucks. For these reasons, the project alternatives would not conflict with any of the CARB early action strategies.

With implementation of the project alternatives GHG emissions during construction for a worse-case year would range from approximately 19,600 metric tons CO_2E (Alternative 4) to 22,550 metric tons CO_2E (Alternatives 1 and 2). These construction emissions represent approximately 0.02 to 0.03 percent, of Bay Area GHGs emitted in 2002, respectively.[8] As shown in Table 4.10-8, the increase in indirect GHG emissions from project electricity use for each alternative would be no more than 9,000 metric tons/year CO_2E. This is well under the 25,000 metric tons/year CO_2E threshold used to classify major emitters. In comparison to Bay Area GHG emissions, the project alternatives' future increases in annual operational emissions represent approximately 0.009 percent (Alternative 1), 0.01 percent (Alternative 2), 0.005 percent (Alternative 3), and 0.0006 percent (Alternative 4) of total Bay Area GHGs emitted in 2002. The 2020 GHG emissions limit for California, as adopted by CARB in December of 2007 is approximately 427 million metric tons of CO_2E. The proposed project's annual contribution would be approximately 0.002 percent (Alternative 1), 0.002 percent (Alternative 2), 0.001 percent (Alternative 3), and 0.0001 percent (Alternative 4) of this total 2020 emissions limit.

With respect to the question of energy efficiency, the project alternatives are designed to be energy efficient. The project alternatives include the following features that reduce energy use and consequently minimize GHG emissions.

8 The Bay Area Air Quality Management District reported regional Bay Area GHGs emissions in 2002 at approximately 85 million CO_2E tons. Bay Area 2002 GHG emissions are used as the baseline for determining whether a project's contributions are significant as these are the most recent emissions inventory for the bay area.

- *On-site borrow areas for dam construction materials*. Designated borrow areas have been identified with the Los Vaqueros Watershed for each alternative to supply most of the materials needed for construction of the expanded dam core and shell. This minimizes vehicle miles traveled, and associated emissions, from transportation of materials to the project site.

- *Local acquisition opportunities for construction materials to be imported*. While some construction materials will need to be imported to the project sites, most will be acquired locally from mining operations and manufacturers in northern California, including concrete supply and many of the pipeline segments. Local acquisition limits the potential materials hauling distances required for the project, which also reduces vehicle miles traveled and associated emissions.

- *Efficient (high efficiency) pumping facilities*. All new pumping facilities or pump station upgrades will make use of current, high energy efficiency equipment to minimize energy use and operational cost.

- *Renewable energy generation and energy recovery*. Renewable energy generation and energy recovery will be incorporated into the project design. Solar panels will be incorporated into the roofing of the Marina Complex and new interpretive center. Energy recovery will be implemented through hydroelectric generation incorporated into the proposed Transfer- Bethany pipeline.

- *Fuel efficient / low emission vehicles*. CCWD is already in the process of converting its vehicle fleet to increase the number of fuel-efficient, low emission vehicles. CCWD personnel will use these vehicles during project construction and operations.

CCWD continues to implement measures that reduce its GHG emissions system wide throughout its raw and treated water systems. The District is currently implementing an energy recovery project at its flow control structure #2 located at the Neroly Blending Basin, where the LV Pipeline empties into the Contra Costa Canal. In addition, CCWD has started a pilot program to convert existing treated water pump stations throughout its system to solar power. CCWD also supports wind power generation on its watershed lands, consistent with its water quality and resource management objectives for the watershed. The District has reserved additional wind rights within the watershed and leases its lands for wind power generation.

The District also continues to promote water conservation and efficiency as a way to save both water and energy, thereby reducing GHG emissions. CCWD currently saves approximately 3.3 TAF annually through its conservation program, and estimates savings of about 10 TAF annually by 2050 (CCWD, 2007). Current recycled water use within CCWD is approximately 8.6 TAF annually, and is expected to grow to approximately 13 TAF annually by 2010 (CCWD, 2005). Taken together, conservation and recycling have reduced CCWD's water deliveries from the Delta, reducing associated water pumping and related GHG emissions.

Summary

Based upon the analysis presented above, the project alternatives would not result in a cumulatively considerable increase in GHG emissions such that the project would impair the State's ability to implement AB 32.

Mitigation: None required.

Cumulative Impact 4.10.6: Construction and operation of the project alternatives could result in cumulatively considerable increases of criteria pollutant emissions. (Less than Significant with Mitigation)

All Alternatives

In regards to cumulative construction impacts, the Los Vaqueros Reservoir Expansion project requires BAAQMD dust control measures, which are intended to reduce individual project emissions. Other projects to be constructed would also be required to include similar BAAQMD control measures to reduce emissions. Thus, with mitigation, the Los Vaqueros Reservoir Expansion project would not make a cumulatively considerable contribution to short-term construction emissions.

For long-term operational effects, the BAAQMD recommends a tiered approach to significance determination where a project does not individually have a significant operational air quality impacts, as here. No cumulative impact will be found where:

1. The local general plan is consistent with the latest Clean Air Plan (CAP), which is currently the Bay Area 2005 Ozone Strategy (BAAQMD, 2006a); and

2. The project is consistent with the local general plan.

The Los Vaqueros Reservoir Expansion project does not individually have significant operational air quality impacts. In regards to condition (1), BAAQMD CEQA Guidelines specify that CAP consistency be based on: (a) population projections consistent with CAP and ABAG projections, (b) rate of increase of VMT does not exceed rate of increase in population, (c) CAP transportation control measures (TCMs) are being implemented by the applicable local governments, and (d) buffer zones are provided around sources of odors, toxics, and accidental releases. For criteria (a), as described in Chapter 4.20, the proposed project would improve water supply reliability for some water users in Alameda County, Contra Costa County, and Santa Clara County. The project is not considered to be growth inducing and therefore would not result in increased populations in these areas that would be inconsistent with adopted local land use plans or inconsistent with the BAAQMD CAP. For criteria (b), the project would result in a negligible long-term increase in VMT since there would be less than 10 new employees. The project would not result in an increase in population growth or a noticeable increase in VMT, so the rate of increase of VMT would not exceed the rate of growth of population. For criteria (c), **Table 4.10-11** identifies those TCMs that local governments should implement through local plans. The project is in the jurisdiction of Contra Costa County and Alameda County. The Contra Costa County General Plan (Contra Costa County, 2005) and the Alameda County East Area Plan (Alameda County, 2002) each incorporate policies to implement the TCMs in the Transportation Element of the respective General Plan. For criteria (d), as described in Impact 4.10.3 and Impact 4.10.4, the project would not be a source of substantial TAC emissions or odors.

TABLE 4.10-11
TCMS IN THE BAY AREA OZONE STRATEGY TO BE IMPLEMENTED BY LOCAL GOVERNMENTS

1. Support Voluntary Employer-Based Trip Reduction Programs
2. Improve Bicycle Access and Facilities
3. Improve Arterial Traffic Management
4. Local Clean Air Plans, Policies and Programs
5. Conduct Demonstration Projects
6. Pedestrian Travel
7. Promote Traffic Calming Measures

SOURCE: BAAQMD, 2006a.

For condition (2), the proposed project would not require a general plan amendment, and would therefore be consistent with the applicable general plans. Furthermore, as discussed above under Impact 4.10.2, the project would result in minimal criteria pollutant emissions during long-term operations since pumps would be electrically powered and there would be negligible VMT from the less than 10 new employees.

Based on criteria (1) and (2) described above, the proposed project would result in a less than significant cumulative impact.

Implement Mitigation Measure 4.10.1.

Impact Significance after Mitigation: Less than Significant.