

4.2 AIR QUALITY

4.2.1 Introduction

This section addresses the potential for the Proposed Project to impact air quality. Following an overview of the existing air quality setting in **Subsection 4.2.2** and the relevant regulatory setting in **Subsection 4.2.3**, project-related impacts and recommended mitigation measures, if any, are presented in **Subsection 4.2.4**.

4.2.2 Environmental Setting

Local air quality is influenced greatly by regional climate, topography, and pollutant sources. The physical characteristics of the Sacramento Valley Air Basin (SVAB) and the surrounding region have the potential for high concentrations of pollutant, which are emitted locally and from areas outside the SVAB.

Climate and Topography

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the Sacramento Valley (Valley) region. During the year the temperature may range from 20 to 115 degrees Fahrenheit (°F) with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

The mountains surrounding the Sacramento Valley create a barrier to airflow, which can trap air pollutants when meteorological conditions are right. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the Valley. The lack of surface wind during these periods and the reduced vertical flow, which is caused by cooler land mass, reduces the influx of outside air and allows air pollutants to become concentrated in the stagnate air above the Valley floor. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air, fog, and pollutants near the ground.

The project area is often subject to strong winds from the southwest, referred to as the "Delta breeze". Delta breeze winds are caused by an onshore thermal gradient from the mixing of hot Central Valley air with cooler coastal air, typically between the cities of Suisun and Davis that produces not only a marked temperature decrease, but also a wind shift. This phenomenon results in generally southwest to southeast winds at the project site. In the Delta, where the project is located, these winds can gust to over 30 mph, and can persist throughout the night and into the late morning. Winds in the project area are typically from the SSW for nine months out of the year, including during the summer months when odor control is an issue. Winds from the SSE occur for three months out of the year during the winter months when odors are generally low

Criteria Air Pollutants

The U.S. Environmental Protection Agency (USEPA) has identified six criteria air pollutants (CAPs) that are both common and detrimental to human health. These CAPs are used as indicators of regional air quality. The six CAPs include: ozone (O₃), carbon monoxide (CO), particulate matter (PM₁₀ and PM_{2.5}), nitrogen dioxide (NO₂), and sulfur dioxide (SO₂). California identified four additional CAPs: sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles.

CAPs are classified in each air basin, county, or, in some cases, within a specific area. The classification is determined by comparing actual monitoring data with federal and California standards. If a CAP's concentration is lower than the standard or not monitored in an area, the area is classified as attainment or unclassified, unclassified areas are considered attainment areas. If an area exceeds the standard, the area is classified as non-attainment for that CAP.

Existing Air Quality

Table 4.2-1 shows the federal and California attainment status for the Yolo/Solano Air Quality Management District (YSAQMD). As shown in the table eight- and one-hour ozone and PM₁₀ are designated nonattainment under the California standards and eight-hour and PM₁₀ are designated nonattainment under the federal standards. These pollutants are considered pollutants of concern for the SVAB. Although carbon monoxide is designated attainment under federal and California standards, there is a potential for high concentration to accumulate under certain conditions, such as prolonged vehicle idling at intersection that have reached or exceed their capacity.

TABLE 4.2-1. AMBIENT AIR QUALITY STATUS

Pollutant	Standard		Status	
	California	Federal	California	Federal
Ozone (1-hour)	0.09 ppm	-	Nonattainment	Nonattainment
Ozone (8-hour)	0.07 ppm	0.075 ppm	Nonattainment	N/A
PM ₁₀ (24-hour)	50 µg/m ³	150 µg/m ³	Nonattainment	Unclassified
PM _{2.5}	-	35 µg/m ³	N/A	Partial Nonattainment
Carbon Monoxide (8-hour)	9.0 ppm	9.0 ppm	Attainment	Attainment
Nitrogen Oxide	0.18 ppm	-	Attainment	Attainment
Lead (30 day average)	1.5 µg/m ³	-	Attainment	Attainment
Sulfur Dioxide (24-hour)	0.04 ppm	0.14 ppm	Attainment	Attainment
Visibility Reducing Particles	-	N/A	Attainment	N/A
Sulfates	25 µg/m ³	N/A	Attainment	N/A
Vinyl Chloride	0.01 µg/m ³	N/A	Attainment	N/A
Hydrogen Sulfide	0.03 ppm	N/A	Unclassified	N/A

Note: PM₁₀ and PM_{2.5} = particulate matter 10 and 2.5 microns in size, respectively.
N/A = Not applicable
Source: YSAQMD, 2009a.

The health effects associated with the Sacramento Valley Air Basin (SVAB) pollutants of concern and diesel particulate matter (DPM) are summarized below:

Ozone

O₃ is created in the presence of sunlight through a photochemical reaction involving reactive organic gas (ROG) and nitrogen oxide (NO_x). ROG and NO_x are a result of incomplete combustion of fossil fuels, which is the largest source of ground-level ozone (O₃). Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. As a photochemical pollutant, O₃ is formed only during daylight hours under appropriate conditions, but is destroyed throughout the day and night. O₃ is considered a regional pollutant, as the reactions forming it take place over time and are often most noticeable downwind from the sources of the emissions.

Particulate Matter

PM is a mixture of microscopic solids and liquid droplets suspended in air. PM is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). Particulate matter is regulated as either PM₁₀ (PM of 10 microns or less in size) or PM_{2.5} (PM of 2.5 microns or less in size), which are the upper limit size restrictions for reaching deep into the lungs PM₁₀ or reaching the bloodstream PM_{2.5}.

Carbon Monoxide

CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes approximately 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute approximately 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. CO is described as having only a local influence because it dissipates quickly. High CO concentrations occur in areas of limited geographic size are sometimes referred to as hot spots. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations. The Proposed Project does not and would not create vehicle delays which would create high concentrations of CO.

Diesel Particulate Matter

DPM is defined as a Toxic Air Contaminant (TAC). TACs are substances that are known or suspected to be emitted in California and have potential adverse health effects. Currently, there are 244 TACs listed by CARB. According to the California Air Resources Board (CARB), the estimated health risk from TACs can be primarily attributed to relatively few compounds. DPM differs from many other TACs in that it is not a single substance, but rather a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are defined as PM, which includes carbon particles or "soot."

Monitoring

Monitors that collect air quality data are located at monitoring stations throughout Solano County (County), SVAB, and the State of California. Some monitoring stations collect data on all federal and California CAPs, while others are specialized and only collect data for certain CAPs. **Table 4.2-2** shows federal and California pollutants of concern data collected at the City of Vacaville's (City's) Ulatis Drive and Tuolumne monitoring stations.

TABLE 4.2-2. EXCEEDANCES OF FEDERAL AND CALIFORNIA AIR POLLUTION STANDARDS

Pollutant	2006	2007	2008
Ozone (1-hour)¹			
Highest (ppm)	0.108	0.103	0.113
Days>0.09 ppm	4	1	5
Ozone (8-hour)¹			
Highest (ppm)	0.087	0.078	0.103
Days>0.07 ppm (California)	10	4	9
Days>0.75 ppm (federal)	6	2	6
PM10²			
Federal Highest (µg/m3)	46.6	49.1	42.1
California Highest (µg/m3)	50.1	52.4	43.6
Days>50 µg/m3 (California)	0	2	0
Days>150 µg/m3 (federal)	0	0	0
Notes			
¹ Data provided by the Vacaville Ulatis Drive monitoring station.			
² Data provided by the Vacaville Tuolumne monitoring station.			
Source: CARB, 2008.			

Sources

There are many sources of criteria pollutants in the SVAB. These sources can be divided into three categories; mobile, stationary, and "area" sources. Mobile sources consist of on-road vehicles and off-road recreational vehicles, as well as mobile construction equipment. Stationary sources consist of large industrial or commercial polluters that generally emit via a stack. Stationary sources can also be smaller, as in the case of small emergency generators or boilers. Area source emissions are normally produced by processes and products that are individually small, but are numerous and widely dispersed. Normally, these sources are associated with everyday activities such as landscape maintenance, painting, and the use of fireplaces and barbecues. CARB maintains an emission inventory of air pollutants for California's air basins as well as for the counties inside those air basins. **Table 4.2-3** presents the latest emission inventory of criteria pollutants for the County.

TABLE 4.2-3. SOLANO COUNTY EMISSIONS INVENTORY

Source Category	ROG	CO	NOx	SOx	PM ₁₀	PM _{2.5}
	tons per day					
Stationary Sources						
Fuel Combustion	0.35	3.91	6.97	0.29	0.43	0.43
Waste Disposal	2.68	0.04	0.01	0.01	0.00	0.00
Cleaning and Surface Coatings	2.60	0.00	0.01	0.00	0.04	0.04
Petroleum Production and Marketing	1.97	0.06	0.00	17.03	0.30	0.27
Industrial Processes	1.19	0.40	0.63	0.18	0.69	0.50
Area-Wide Sources						
Solvent Evaporation	4.51	-	-	-	-	-
Miscellaneous Processes	1.22	12.01	0.99	0.04	18.51	4.24
Mobile Sources						
On-Road Motor Vehicles	8.26	85.60	25.23	0.08	1.36	1.07
Other Mobile Sources	8.74	33.26	14.32	0.35	0.97	0.85
Total Solano County	31.54	135.28	48.15	17.98	22.29	7.41
Source: CARB, 2009a.						

Climate Change

Introduction

It is anticipated that the average global temperature could rise 0.6 Celsius (°C) (1.08 °F) to 4.0 °C (7.2 °F) between the years 2000 and 2100 (IPCC, 2007). The extent to which human activities affect global climate change is a subject of considerable scientific debate. While many in the scientific community contend that global climate variation is a normal cyclical process that is not necessarily related to human activities, the International Panel on Climate Change (IPCC) report identifies anthropogenic green house gases (GHGs) as a contributing factor to changes in the Earth's climate (IPCC, 2007). Preferring to error on the side of caution, the analysis in this Environmental Impact Report (EIR) assumes anthropogenic GHGs are in fact contributing to global climate changes.

The U.S. Supreme Court has held that CO₂ (a GHG) falls under the Clean Air Act's (CAA's) definition of an "air pollutant", such that the EPA has statutory authority to regulate the emissions of this gas. Further, *Massachusetts v. Environmental Protection Agency, U.S., 1275 S.Ct. 1438, 1462* (2007), concluded that GHG emissions from human activities would result in an additional warming of the Earth's surface. The U.S. Court of Appeals, stated succinctly, that the potential for GHG emissions impacting climate change must be analyzed in National Environmental Policy Act (NEPA) documents, *Center for Biological Diversity v. National Highway Safety Administration, 508 F.3d 508 (9th Cir. 2007)*.

The Greenhouse Effect and Climate Change

The Earth's temperature is regulated by a system known as the "greenhouse effect." GHGs are primarily water vapor (H₂O), CO₂, methane (CH₄), and nitrous oxide (N₂O) that trap the heat of the sun, preventing radiation from dissipating into space. Water vapor is the most abundant GHG and CO₂ is a distant second. Without the effect of these GHGs, which are both naturally occurring and anthropogenic, the

average temperature on the Earth would be approximately $-18\text{ }^{\circ}\text{C}$ ($-64.4\text{ }^{\circ}\text{F}$), instead of the current average of $15\text{ }^{\circ}\text{C}$ ($59\text{ }^{\circ}\text{F}$).

IPCC modeling estimates that anthropogenic CO_2 in the lower atmosphere has increased by approximately 31 percent since 1750. At the same time, average temperature in the lower atmosphere has increased approximately $0.6\text{ }^{\circ}\text{C}$ ($1.08\text{ }^{\circ}\text{F}$) to $0.8\text{ }^{\circ}\text{C}$ ($1.44\text{ }^{\circ}\text{F}$). Due to the challenges inherent in modeling the complexities of the Earth's climate, the proportional importance of anthropogenic activities as opposed to natural feedback systems is exceptionally difficult to establish. Nonetheless, the IPCC concludes that "Most of the observed increase in globally-averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations." As noted above, this EIR assumes that an increase in anthropogenic GHG concentration is in fact contributing to global warming.

IPCC theorizes that a continuation of this warming trend could have profound implications, including flooding, erratic weather patterns, increased sea levels, and reduced arctic ice. The IPCC projects a number of future GHG emissions scenarios leading to a varying severity of impacts on the environment and the global economy. According to the 2007 IPCC report if anthropogenic GHG continue to increase in the atmosphere there will be a point at which the above impacts would become irreversible, this point is commonly referred to as the "tipping point." Although the 2007 IPCC Report states the tipping point may be as far off as 20 years, some experts contend the tipping point has already been reached.

Table 4.2-4 illustrates the state contribution to the global increase in GHG emissions. The 2020 estimation assumes "business as usual." As shown, without modifications in human activities or the introduction of new technologies, GHG emissions are anticipated to increase and may reach a "tipping point at some time in the future. Tipping point, according to some scientists, refers to a theoretical future point in time at which the impacts created by excess GHG in the atmosphere cannot be reversed.

TABLE 4.2-4. GLOBAL AND CALIFORNIA GREENHOUSE GAS EMISSIONS

Regions	Estimated GHG Emissions
	million metric tons per year of CO_2e^1
1990	
Global Emissions	626,395
California Emissions	427
2020	
Global Emissions	882,246
California Emissions	600
Note: ¹ Carbon Dioxide Equivalent (see clarification of CO_2e below)	
Source: IPCC, 2007.	

Carbon Dioxide Equivalent

Carbon dioxide equivalent (CO₂e) is a method by which GHGs values other than CO₂ are converted to a CO₂-like emissions value based on a heat-capturing ratio. As shown in **Table 4.2-5**, CO₂ is used as the base and is given a value of one.

TABLE 4.2-5. GREENHOUSE GAS CO₂ EQUIVALENT

GHG Gases	CO ₂ e Value
CO ₂	1
CH ₄	21
N ₂ O	310
HFCs/PFCs	140 -23,900
SF ₆	23,900
Source: IPCC, 2007.	

CH₄ has the ability to capture 21 times more heat than CO₂; therefore, CH₄ is given a CO₂e value of 21. Emissions are multiplied by the CO₂e value to achieve one GHG emission value. By providing a common measurement, CO₂e provides a means for presenting the relative overall effectiveness of emission reduction measures for various GHGs in reducing project contributions to global climate change.

Odor

The most recent expansion of the Easterly Wastewater Treatment Plant (EWWTP), completed in 2004, expanded the treatment capacity of the plant from 6 million gallons per day (mgd) to 15 mgd. The expanded capacity was provided through the development of new facilities, collectively referred to as the South Plant (refer to **Section 3.0** for further discussion). Because the expansion project resulted in the development of facilities which have the potential to emit odors, mitigation and project design features were implemented to reduce odors emitted by expansion project components to non-detectable levels at sensitive receptor locations. These measures are shown in the 1998 City of Vacaville Easterly WWTP Expansion Final EIR (City of Vacaville, 1998) and are listed below:

Off-site improvements

- Ferric Chloride Feed Station: Construction and operation of an iron chloride feed station on the Elmira Trunk Sewer.
- Prechlorination: The existing plant prechlorination system was upgraded to improve odor control.
- Elmira: Seal manholes and install a drop inlet at the B Street lift station in Elmira.
- Operation: Limit the use of the existing headworks, influent pumps, screens, grit chamber, and primary clarifiers.

On-site improvements

- Influent Junction Box: The metering flume and junction box structure will be enclosed and ventilated in an odor control bed.

- Influent Pumping: The new influent pumps will be covered and ventilated and the exhaust air will be filtered.
- Headworks: The new headworks facilities will have covered channels from the influent pumps to the grit chambers and the aerated grit chamber will be covered. The screening handling and grit classifier/washer area will be enclosed in a separate room with full ventilation. All exhaust air from these areas will be filtered in an odor control bed.
- Primary Clarifiers: The primary clarifiers will incorporate continuous sludge removal, effective surface sprays and scum removal to maximize their performance.
- Digested Sludge Lagoons: Continuous aeration will continue at the sludge lagoons.
- Biosolids Storage: dewatered sludge will be conveyed to a new biosolids storage and drying area located south of the existing plant. Biosolids will be dried in smaller windrow-style piles for faster drying.

An odor analysis was performed on September 11, 2009 to determine the extent that odors are emitted. With the implementation of the above odor control improvement measures, odor emissions from facilities in the South Plant have been reduced to non-detectable levels at sensitive receptor locations. However, the existing aeration basins and secondary clarifiers located in the north plant, which have the potential to produce odors, are located in the northwest corner of the project site boundaries, approximately 690 feet from the nearest sensitive odor receptors. Due to the location of the treatment facilities in the north plant, and lack of odor control due to the age of the structures, temporary and intermittent odors from these facilities have a propensity to reach near-by sensitive odor receptors. There have been eight odor complaints registered with the YSAQMD over the last 12 years by five people. Five of the eight complaints are from two residences on Lewis Road approximately 1,500 feet east of the project site. The other three complaints were from residents of Elmira. The last odor complaint was registered on August 16, 2007 by one of the residences located on Lewis Road (YSAQMD, 2009b). It should be noted that odor complaints primarily occurred prior to 2005 when the North Plant was used exclusively, including its headworks and primary treatment facilities. Between 2005 and the end of 2007, the North Plant was not used at all, and after 2007, only the secondary treatment processes have been used in the North Plant.

Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include pre-existing health problems, proximity to emissions and odor sources, or duration of exposure to air pollutants or odors. 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 distress and other air quality related health problems. Residential areas are considered sensitive to poor air quality, because people usually stay home for extended periods of time, with greater associated exposure to ambient air quality. Recreational uses are also considered sensitive due to the greater exposure to ambient air quality conditions because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The land surrounding the project site is primarily agricultural with some residences northwest of the project site. The nearest residential sensitive receptors are located in the Town of Elmira, approximately 150 feet from the EWWTP boundaries to the west (or approximately 550 feet (ft) northwest of the

proposed primary/secondary flow equalization basin) and approximately 1,000 feet from the EWWTP boundaries to the east. The closest school is Sierra School of Solano County, which is located approximately 1,550 feet north of the project site on Holdener Road. The nearest medical facility is Vaca Valley Hospital located 2.5 miles west of the project site on Nut Tree Road.

4.2.3 Regulatory Context

Federal

The Federal Clean Air Act (CAA) was enacted for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity.

In 1971 the United States Environmental Protection Agency (USEPA) developed primary and secondary National Ambient Air Quality Standards (NAAQS). Six pollutants of primary concern were designated: CO, O₃, suspended PM, sulfur dioxide, NO_x, and lead. The primary NAAQS must "protect the public health with an adequate margin of safety" and the secondary standards must "protect the public welfare from known or anticipated adverse effects (aesthetics, crops, architecture, etc.)". The primary standards were established, with a margin of safety, considering long-term exposures to the most sensitive groups in the general population. The EPA allows states the option to develop different (stricter) standards. California elected this option and adopted standards that are more stringent.

If an air basin is not in federal attainment (e.g. does not meet federal standards) for a particular pollutant, the basin is classified as a marginal, moderate, serious, severe, or extreme nonattainment area.

Nonattainment areas must take steps towards attainment by a specific timeline. These steps include establishing a transportation control program and clean-fuel vehicle program, decreasing the emissions threshold for new stationary sources and major sources, and increasing the stationary source emission offset ratio to at least 1.3:1. The above programs are published in the State Implementation Plan (SIP), which is approved by the EPA.

The SIP is a number of documents that set forth the state's strategies for achieving federal air quality standards. The Code of Federal Regulations (CFR Title 40, Chapter I, Part 52, Subpart F, §52.220) lists all of the items that are included in the California SIP. The SIP is not a single document, but a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, State regulations, and Federal controls. Many of California's SIPs detail control strategies, including emission standards for cars and heavy trucks, fuel regulations, and limits on emissions from consumer products. Local air districts and other agencies, such as the Bureau of Automotive Repair, prepare SIP elements and submit them to CARB for review and approval. State law makes CARB the lead agency for all purposes related to the SIP.

Federal General Conformity

The General Conformity Rule of the federal CAA, implements Section 176(c) of the CAA, and establishes minimum thresholds for volatile organic compounds (VOCs) and NO_x (ozone precursors), PM₁₀, and other regulated constituents for non-attainment and maintenance areas.

Title 40 Part 93 of the Code of Federal Regulations (CFR) was promulgated in order to determine conformity of Federal actions to the SIP. A lead agency must make a determination that a federal action conforms to the applicable SIP before the action is taken. A conformity determination is required for each pollutant where a total of direct and indirect emissions in a nonattainment or maintenance area caused by the federal action are greater than de minimus thresholds as listed in CFR Section 93.153(b).

These thresholds provide simple and direct guidance for federal agencies to ensure that they comply with an approved SIP. The general conformity rule includes a procedure for determining whether the rule is applicable to the actions of a federal agency.

There are two phases to assessing the general conformity of a federal action:

- 1) The Conformity Review process entailing a review of each analyzed alternative to assess whether a full conformity determination is necessary; and
- 2) The Conformity Determination process, which demonstrates how an action would conform to the applicable SIP.

The first step compares emissions estimates for the project to the appropriate general conformity de minimis threshold based on nonattainment type. If the emission estimates from step one are below the thresholds, then a general conformity determination is not necessary, step two is not required, and the Proposed Project is considered to conform to the appropriate state implementation plan.

Climate Change

In 1997 the Council on Environmental Quality (CEQ) circulated an internal draft memorandum on how global climate change should be treated for the purposes of evaluating climate change in environmental documents (CEQ, 1997a). The CEQ draft memorandum advised federal lead agencies to consider how proposed actions subject to environmental review would affect sources and sinks of GHGs. During the same year, CEQ released guidance on the assessment of cumulative effects in environmental documents (CEQ, 1997b). Consistent with the CEQ draft memorandum, climate change impacts were offered as one example of a cumulative effect.

State

CARB, a part of the California Environmental Protection Agency (CEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets state ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's SIP, for which it works closely with the Air Quality Management District's (AQMDs) and the USEPA.

California Clean Air Act

The California Clean Air Act (CCAA) of 1988 requires nonattainment areas to achieve and maintain the state ambient air quality standards by the earliest practicable date, as well as requiring local air districts to develop plans for attaining the state O₃, CO, sulfur dioxide, and NO_x standards.

Climate Change

California has been a leader among the states in outlining and aggressively implementing a comprehensive climate change strategy that is designed to result in a substantial reduction in total statewide GHG emissions in the future. California's climate change strategy is multifaceted and involves a number of state agencies implementing a variety of state laws and policies. Laws and policies are summarized below:

Assembly Bill 1493

Signed by the Governor in 2002, Assembly Bill (AB) 1493 requires that the CARB adopt regulations requiring a reduction in GHG emissions emitted by cars in the state. EPA granted California's waiver request enabling the state to enforce its greenhouse gas emissions standards for new motor vehicles. With the granting of the waiver on June 30, 2009, it is expected that the regulations will reduce GHG emissions from California passenger vehicles by about 22 percent in 2012 and about 30 percent in 2016 (CARB, 2009b).

Executive Order S-3-05

Executive Order (EO) S-3-05 was signed by the Governor on June 1, 2005. EO S-3-05 established the following statewide emission reduction targets:

- Reduce GHG emissions to 2000 levels by 2010
- Reduce GHG emissions to 1990 levels by 2020
- Reduce GHG emissions to 80 percent below 1990 levels by 2050

EO S-3-05 created a "Climate Action Team" or "CAT" headed by the CEPA and including several other state jurisdictional agencies. The CAT is tasked by EO S-3-05 with outlining the effects of climate change on California and recommending an adaptation plan. The CAT is also tasked with creating a strategy to meet the target emission reductions. In April 2006 the CAT published an initial report that accomplished these two tasks.

Assembly Bill 32

Signed by the Governor on September 27, 2006, AB 32 codifies a key requirement of EO S-3-05, specifically the requirement to reduce statewide GHG emissions to 1990 levels by 2020. AB 32 tasks CARB with monitoring state sources of GHGs and designing emission reduction measures to comply with the law's emission reduction requirements. However, AB 32 also continues the CAT's efforts to meet the requirements of EO S-3-05 and states that the CAT should coordinate overall state climate policy.

In order to accelerate the implementation of emission reduction strategies, AB 32 requires that CARB identify a list of discrete early action measures that can be implemented relatively quickly. In October 2007, CARB published a list of early action measures that could be implemented and would serve to meet about a quarter of the required 2020 emissions reductions (CARB, 2006). In order to assist CARB in identifying early action measures, the CAT published a report in April 2007 that updated their 2006 report and identified strategies for reducing GHG emissions (CAT, 2007). In the October 2007 report, CARB cited the CAT strategies and other existing strategies that may be utilized in achieving the remainder of the emissions reductions. AB 32 required that CARB prepare a comprehensive “scoping plan” that identifies all strategies necessary to fully achieve the required 2020 emissions reductions. On October 8, 2008 CARB released the Climate Change Scoping Plan, 2008 and on December 12, 2008, CARB approved the Climate Change Scoping Plan (CARB, 2007). CARB provided an update to the December, 2008 Scoping Report in November, 2009. The update provided additional reduction strategies and an overview of methods to further reduce GHG emissions in California; however, no definitive numerical GHG emissions threshold was provided.

Executive Order S-01-07

EO S-01-07 was signed by the Governor on January 18, 2007. It mandates a statewide goal to reduce the carbon intensity of transportation fuels by at least 10 percent by 2020. This target reduction was identified by CARB as one of the AB 32 early action measures identified in their October 2007 report.

Senate Bill 97

Signed by the governor on August 24, 2007, Senate Bill (SB) 97 required that the Governor’s Office of Planning and Research (OPR) prepare California Environmental Quality Act (CEQA) guidelines for evaluating the effects of GHG emissions and for mitigating such effects. The bill required that the Natural Resources Agency certify and adopt these guidelines by January 1, 2010.

In April 2009, OPR released the CEQA Guidelines Section Proposed to be Added or Amended, which included guidelines for evaluating the effects of GHG emissions and for mitigating such effects. On December 30, 2009 the Natural Resources Agency adopted CEQA Guideline Amendments for the quantification and mitigation of greenhouse gas emissions. The CEQA Guidelines Amendments that were adopted will not be effective until 30 days after the Office of Administrative Law transmits them to the Secretary of State. The adopted guidelines provide the following direction for consideration of climate change impacts in a CEQA document:

- The determination of significance of GHG emissions calls for a careful judgment by the lead agency.
- The lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of GHG emissions resulting from a proposed project.
- A model or methodology shall be used to quantify GHG emissions resulting from a CEQA project.
- Significance may rely on qualitative analysis or performance based standards.
- The lead agency may adopt thresholds of significance previously adopted or recommended by other public agencies or recommended by experts.

- The CEQA document shall discuss regional and/or local GHG reduction plans.
- A CEQA document shall analyze GHG emissions if they are cumulatively considerable.
- A description of the effects of climate change on the environment shall be included in CEQA documents.
- A CEQA document shall contain mitigation measures, which feasibly reduce GHG emissions.
- GHG analysis in a CEQA document may be Tiered or Streamlined.

The methodology and basis of calculation for estimating and analyzing GHG emissions resulting from the Proposed Project is based on scientific and factual data and is consistent with the methodology and guidance identified in the CEQA guideline amendments recently adopted by the National Resources Agency.

Senate Bill 375

SB 375 was approved by the Governor on September 30, 2008. SB 375 provides for the creation of a new regional planning document called a “sustainable communities strategy” (SCS). An SCS is a blueprint for regional transportation infrastructure and development that is designed to reduce GHG emission from cars and light trucks to target levels that will be set by CARB for 18 regions throughout California. Each of the various metropolitan planning organizations and the Association of Bay Area Governments (ABAG) must prepare an SCS and include it in that region’s regional transportation plan. The SCS would influence transportation, housing, and land use planning. CARB will determine whether the SCS will achieve the region’s GHG emissions reduction goals. CARB is not anticipated to approve any SCS prior the January 1, 2010. Under SB 375 certain qualifying in-fill residential and mixed-use projects would be eligible for streamlined CEQA review.

Toxic Air Contaminants

Regulation of TACs is achieved through federal and state controls on individual sources. Under the CAA TACs are referred to as Hazardous Air Pollutants (HAPs). The 1990 federal CAA Amendments offer a comprehensive plan for achieving significant reduction in both mobile and stationary source emissions of certain designated HAP.

Air Toxics Hot Spots Information and Assessment Act of 1987

The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588), California Health and Safety Code Section 44300 et seq., is the primary air contaminant legislation in California, which provides for the regulation of over 200 TACs, including DPM. Under AB 2588, local air districts may request that a facility account for its TAC emissions. Local air districts then prioritize facilities on the basis of emissions, and high priority designated facilities are required to submit a health risk assessment and communicate the results to the affected public.

Assembly Bill 1807

AB 1807, enacted in September 1983, sets forth a procedure for the identification and control of TACs in California. CARB is responsible for the identification and control of TACs, except pesticide use.

Senate Bill 656

In October 2000, CARB released a report entitled Risk Reduction Plan to Reduce PM Emissions from Diesel-Fueled Engines and Vehicles. This report identifies DPM as the predominant TAC in California and proposes methods for reducing diesel emissions. California propagated Senate Bill 656 in 2003, which was implemented to reduce PM (including DPM) in California. CARB approved a list of the most readily available, feasible, and cost-effective control measures that can be employed by air districts to reduce PM in 2004. The list is based on rules, regulations, and programs existing in California as of January 1, 2004, for stationary, area-wide, and mobile sources. As a second step air districts must adopt implementation schedules for selected measures from the list.

Local***Yolo/Solano Air Quality Management District***

The YSAQMD is the primary agency responsible for planning to meet federal and state ambient air quality standards in the City and the larger Sacramento Federal Nonattainment Area (SFNA). In order to demonstrate the area's ability to eventually meet the federal ozone standards, the YSAQMD, along with the other air districts in the SFNA, maintain the region's portion of the SIP for ozone. The Nonattainment Area's part of the SIP is a compilation of regulations that govern how the region and State will comply with the CAA requirements to attain and maintain the federal ozone standard. The compilation of rules that comprises the SFNA's portion of the SIP is contained in a document called the Sacramento Area Regional Ozone Attainment Plan (Plan). The most recent update of the Plan was adopted on 1992. Currently, the YSAQMD is working to update the 1992 Plan in recognition of the new federal eight-hour standard for ozone.

Local Air District Rules

The YSAQMD has several rules that relate to the proposed project, which are summarized below:

Rule 3.1 – General Permit Requirements: Requires any project that includes the use of certain equipment capable of releasing emission to the atmosphere as part of project operation to obtain a permit from the YSAQMD prior to operation of the equipment. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact the YSAQMD to determine if a permit is required. Portable construction equipment with an internal combustion engine over 50 horsepower are required to have a YSAQMD permit or a CARB portable equipment registration.

Rule 2.11 – Particulate Matter: Sets limit on unpermitted emissions of particulate matter.

Rule 2.14 – Architectural Coatings: Sets volatile organic compound (VOC) limits for coatings that are applied to stationary structures or their appurtenances. The rule also specifies storage and cleanup requirements for these coatings.

Rule 2.3 – Ringelmann Chart: Prohibits individuals from discharging into the atmosphere from any single source of emissions whatsoever any air contaminant whose opacity exceeds certain specified limits.

Rule 2.5 – Nuisance: No person or entity shall emit air pollutant which would cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public

Vacaville General Plan (1990)

The City General Plan (1990) contains air quality policies and implementation programs in the Conservation Element. The Conservation and Transportation Elements of the General Plan provides direction for the City with regards to air quality. Section 8.3 provides specific policies and programs. The following are the applicable air quality policies and implementation programs:

Conservation Element Policies

- 8.3-G1 Maintain good air quality in the Vacaville Planning Area.
- 8.3-G2 Cooperate with regional agencies in developing and implementing air quality management plans.
- 8.3-I1 Encourage project design that conserves air quality and minimizes direct and indirect emissions of air contaminants.
- 8.3-I2 Encourage the use of alternative fuel vehicles through the implementation of alternative fuel infrastructure and purchase of alternative fuel, low emission vehicles by the City, transit operator and residents when considering new vehicle purchase.

Transportation Element Policies

- 6.4-G1 Establish a minimum 20 percent trip reduction goal during peak time periods for a Transportation Systems Management (TSM) program for new and existing uses in new and existing employment areas.
- 6.4-I1 Implement TSM measures to achieve a 20 percent trip reduction goal and continue to fund adequate administration to promote and achieve compliance with the TSM program.
- 6.4-I3 Favor TSM programs that limit vehicle use over those that extend the commute hour.

County of Solano General Plan (2008)

The County of Solano 2008 General Plan contains air quality policies and implementation programs in the Health and Safety Element (Solano County, 2008). The Public Health and Safety Element of the General Plan provides direction for the County with regards to climate change. Table HS-5 of the Public Health and Safety Element provides specific policies and programs, which are contained in other elements of the General Plan. The following are the applicable air quality policies and implementation programs:

Policies

HS.P-43: Support land use, transportation management, infrastructure and environmental planning programs that reduce vehicle emissions and improve air quality.

- HS.P-44:** Minimize health impacts from sources of toxic air contaminants, both stationary (e.g., refineries, manufacturing plants) as well as mobile sources (e.g., freeways, rail yards, commercial trucking operations).
- HS.P-45:** Promote consistency and cooperation in air quality planning efforts.
- HS.P-46:** Coordinate with and provide incentives to agricultural producers to minimize the impacts of operations on air quality.
- HS.P-47:** Promote GHG emission reductions by supporting carbon efficient farming methods (e.g., methane capture systems, no-till farming, crop rotation, cover cropping, residue farming); installation of renewable energy technologies; protection of grasslands, open space, and farmlands from conversion to other uses; and encouraging development of energy-efficient structures.
- HS.P-53:** Evaluate the potential effects of climate change on Solano County's human and natural systems and prepare strategies that allow the County to appropriately respond and adapt.

Implementation Programs

- HS.I-54:** Require that when development proposals introduce new significant sources of toxic air pollutants, they prepare a health risk assessment as required under the Air Toxics "Hot Spots" Act (AB 2588, 1987) and, based on the results of the assessment, establish appropriate land use buffer zones around those areas posing substantial health risks.
- HS.I-59:** Require the implementation of best management practices to reduce air pollutant emissions associated with the construction of all development and infrastructure projects.
- HS.I-64:** Assess air quality impacts using the latest version of the California Environmental Quality Act Guidelines and guidelines prepared by the applicable Air Quality Management District.
- HS.I-73:** Develop and adopt a climate action plan for Solano County. It is the intent of Solano County to coordinate and seek participation with other cities in preparation of a countywide baseline study and in preparation and implementation of the Climate Action Plan (CAP).

4.2.4 Impacts and Mitigation Measures

Method of Analysis

The analysis in this section focuses on the nature and magnitude of the change in the air quality environment due to construction and operation of the Proposed Project. Emissions resulting from implementation of the Proposed Project are analyzed in two distinct phases, construction and operation. Construction emissions are temporary in nature and do not overlap with operational emissions. During

the construction phase, pollutants of concern for the alternatives are NO_x, ROG, and PM₁₀. During construction, PM₁₀ emissions are primarily produced during mass and fine grading activities. NO_x, ROG, PM₁₀, and PM_{2.5} are emitted from earth moving activities, combustion of diesel and gasoline fuels by heavy-duty construction equipment, and employee vehicles.

Operational emissions consist of area sources, produced by combustion of heating fuels and WWTP processes, and employee and maintenance vehicle emissions. Operational pollutants of concern are the same as construction.

Criteria Air Pollutants - Construction

URBEMIS 9.2.4 was used to estimate emissions from all construction-related sources. The results of the URBEMIS 9.2.4 modeling are discussed below and output files are provided in **Appendix D**.

URBEMIS 9.2.4 provides default values when site-specific inputs are not available. The default values are provided in **Appendix D**. The following site-specific traffic inputs and assumptions were used for the purposes of air quality modeling:

- Phases 1 and 3 of construction would occur simultaneously over a period of 24 months
- 21,620 square feet (sq ft) of new building will be constructed
- 54,735 sq ft of existing structures will be demolished
- 35.20-acres of grading for new and upgraded basins, tank, and landscaping
- 33,000 cubic yards (cy) of soil will be imported to the site.
- 3,000 cy of demolished concrete would be exported from the site to Hays Road Landfill

Resulting emission estimates associated with construction were compared to applicable YSAQMD CEQA thresholds to evaluate the effects of construction activities on air quality.

Criteria Air Pollutants - Operation

Because the project would not increase the operational capacity of the plant, operational emissions from stationary sources would not increase. The additional five round-trip employee vehicle trips per day that could potentially occur during operation were evaluated using an EPA approved Mobile 6.2 emission factor. Vehicle emissions were then compared to the YSAQMD operational threshold of 10 tons per year for NO_x and ROG, and 80 pounds per day of PM₁₀.

Climate Change

The CARB and the Climate Action Team (CAT) have recently identified approximately 126 strategies and measures that may be utilized by the state to meet its emissions reduction targets in 2010, 2020, and 2050. Most of these measures focus on statewide action meant to curb emissions by changes in statewide planning or policies rather than changes to individual development projects. However, some of the measures may be directly applicable to specific industries or individual commercial developments. To date neither CARB nor the YSAQMD has issued a numerical threshold of significance for Green House Gases. For the purpose of this analysis, should the project comply with all directly applicable CAT reduction strategies, it is assumed that the project would support the State's efforts to significantly reduce

its cumulative contribution to global climate change consistent with the targets set forth in AB 32. This performance based methodology, along with the quantification of project related GHG emissions, is consistent with the methodology provided in the CEQA Guideline Amendments adopted by the Natural Resource Agency on December 30, 2009.

Construction GHG emissions were estimated using URBEMIS 9.2.4. Operational emissions were estimated using emission factors for wastewater treatment plants from the Climate Action Registry, General Reporting Protocol, version 1.1. A detailed discussion of the methodology used to estimate operational GHG emissions resulting from the Proposed Project is provided in a technical memorandum prepared by HDR Engineering, included within **Appendix D**.

Odors

Odor is subjective and in most cases not quantifiable. Potential odor impacts were analyzed based on an examination of the existing odor sources and control measures at the EWWTP, potential odor effects of the project, and a comparison of those effects to the significance criteria listed below.

Federal General Conformity

Operational and construction related criteria pollutant emissions were analyzed using URBEMIS 9.2.4. The results were compared to de minimus thresholds as outlined in 40 CFR 93.153.

Thresholds of Significance

Criteria for determining the significance of impacts to air quality have been developed based on Appendix G of the CEQA *Guidelines* and relevant agency thresholds. Impacts to air quality would be considered significant if the proposed project would:

- Conflict with or obstruct implementation of the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Result in a cumulatively considerable net increase in any CAP for which the project region is non-attainment under an applicable federal or state ambient air quality standard
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people
- For purposes of this analysis, the project's incremental contribution to climate change would not be considered cumulatively considerable if the project complies with directly applicable emission reduction measures that would support the State's efforts to significantly reduce its cumulative contribution to global climate change and the associated impacts. These would include each of the project-applicable strategies currently identified by CARB or CAT to comply with Executive Order S-3-05 or AB 32.

Based on the above CEQA standards of significance, the YSAQMD has provided the following CEQA significance thresholds for pollutants of concern (YSAQMD, 2007):

- If the project's construction or operational emissions are above 10 tons per year for ROG or NO_x and/or 82 pounds per day of PM₁₀ then project emissions would be considered significant.
- An air quality analysis should address a project's cumulative impact on ozone and localized pollutants. Any proposed project that would individually have a significant air quality impact (see above for project level Thresholds of Significance) would also be considered to have a significant cumulative impact.
- The project would not generate odorous emission in quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public (YSAQMD Rule 2.5).

Additionally, in accordance with General Conformity Rule 40 CFR 93.152 of the CAA, the Proposed Project would be considered to have a significant effect if all of the following are applicable:

- The project is in a nonattainment area for criteria pollutants
- The project emits criteria pollutants
- The project's construction or operational emissions are above 50 tons per year for ROG or NO_x

Project Specific Impacts

Construction Effects

Impact

4.2-1 Construction of the Proposed Project would generate emissions of NO_x, ROG and PM₁₀.

Emissions generated from demolition, grading, and building construction activities resulting from the Proposed Project would be short-term, intermittent, and temporary in nature. However, construction activities have the potential to represent a significant air quality impact. The grading and construction of the Proposed Project would result in the generation of ROG, NO_x, and PM₁₀ emissions. PM₁₀ is generally the direct result of site grading, excavation, road paving, and exhaust associated with construction equipment. PM₁₀ emissions are largely dependent on the amount of ground disturbance associated with site preparation activities. Emissions of NO_x and ROG are generally associated with employee vehicle trips, delivery of materials, and construction equipment exhaust.

During construction, contractors would be required to comply with the City's Grading Standards provided in Chapter 14.19.244.010 of the City's Municipal Code. The City's Municipal Code states that all grading shall be subject to the Grading Standards dictated by the City in addition to the standards contained in the California Building Code, including those within Appendix J of the code. The City's Grading Standards require that adequate measures are taken to prevent windblown debris (City's Municipal Code 14.19.242.080).

Table 4.2-6 shows unmitigated emissions from construction activities. Construction emissions are compared to the YSAQMD thresholds to determine if the construction emissions of the proposed project would have a significant impact on regional air quality. As shown in **Table 4.2-6** the Proposed Project would not exceed the YSAQMD thresholds or the conformity de minimus levels; therefore, construction of the Proposed Project would have a less-than-significant impact on local and regional air quality. **Less than Significant.**

TABLE 4.2-6. UNMITIGATED CONSTRUCTION EMISSIONS

Year	Pollutants of Concern		
	ROG	NOx	PM ₁₀
	tons per year		pounds per day
Phase 1 and 3 (Contracts 1, 2 and 4)			
2011	0.52	4.29	14.01
2012	4.57	7.83	18.51
Phase 2 (Contract 3)			
2012	0.14	1.07	6.93
2013	0.57	4.26	14.47
2014	0.46	2.11	0.93
Highest Emission Year	4.71	8.90	24.04
YSAQMD Thresholds	10	10	80
Conformity De Minimus Levels	50	50	N/A
Exceed Thresholds/Levels	No	No	No
Source: URBEMIS 9.2.4, 2009.			

Impact

4.2-2 Construction of the Proposed Project would have the potential to generate objectionable odors.

Construction activities have the potential to emit odors from diesel equipment, paints, solvents, fugitive dust, and adhesives. Odors from construction are intermittent and temporary and general do not extend beyond the projects boundary. The nearest sensitive odor receptor is 550 feet from where construction activities would be carried out. Given the distance to the nearest sensitive receptor and the temporary and intermittent nature of construction odors, a less than significant odor impact would occur during the construction phase of the Proposed Project. **Less than Significant.**

Operational Effects

Impact

4.2-3 Operation of the Proposed Project would generate emissions of ROG, NOx, and PM₁₀.

Operation of the Proposed Project would create up to five additional round trips per day due to an increase in employees. There would be no increase in wastewater flow to the EWWTP as a result of the Proposed Project. ROG, NOx, and PM₁₀ emissions would occur due to employee trips; however, using the EPA approved Mobile 6.2 emissions factor for NOx (0.00093 pounds per mile) and assuming an average vehicle use of 12,000 miles per year, emissions per vehicle would be approximately 0.0056 tons per year of NOx per vehicle. NOx is generally the most prevalent criteria pollutant in vehicle emissions. The additional five round-trip employee vehicle trips per day that could potentially occur during operation could generate a maximum of 0.028 tons per year of NOx, which is far less than the YSAQMD significance threshold of 10 tons per year. The addition of ten vehicle trips would not exceed the 10 tons per year threshold for NOx.

Additionally, supplemental standby power facilities may be provided to support increased electrical loads anticipated following construction of tertiary facilities. It is assumed that supplemental standby power facilities would consist of a one-megawatt diesel emergency generator. The YSAQMD requires an authority to construct and permit to operate for engines with a nameplate rating of 50 horsepower. Depending on the horsepower rating of the diesel emergency generator, a YSAQMD authority to construct and permit to operate would be warranted. The permit could include emissions restrictions, hours of operation restrictions, odor rule compliance, maintenance requirements, etc.

Assuming a diesel generator with an emission factor for NOx of 4.93 grams per horsepower-hours, a maximum load of 1,200 horsepower (derived from Caterpillar diesel generator specifications), and 500 hours run time, the resulting emissions for NOx would be 3.26 tons per year. This coupled with the potential project related operational vehicle emissions would result in 3.54 tons per year of NOx, which is less than the 10 tons per year significance threshold provided by the YSAQMD.

Therefore, operation of the Proposed Project would have a less than significant impact on regional air quality. **Less than Significant.**

Impact

4.2-4 Operation of the Proposed Project would have the potential to generate objectionable odors.

With the 2004 expansion of the EWWTP and construction of the South Plant, a number of odor control improvement measures were incorporated throughout the treatment process to reduce odor output. Although it is virtually impossible to eliminate odor emission at a WWTP, there are design and improvement measures that can significantly reduce these odors. The yearly wind

direction for the area in which the project site is located provides significant odor reduction. Winds are from the SSW for nine months out of the year, including during the summer months when odor control is an issue. Winds from the SSE occur for three months out of the year during the winter months when odors are generally low.

Existing operational odor emitting facilities at the EWWTP include primary and secondary clarifiers, aeration basins, influent pumping, equalization basins, biosolid lagoons, biosolid drying beds and headworks. The existing headworks and primary clarifier within the north plant do not have odor control facilities, and have historically been a significant contributor to odor emissions at the EWWTP. Both of these facilities would be demolished and replaced with new facilities at the South Plant, south of Delivery Road, approximately 1,550 feet further from odor sensitive receptors. Relocation of these facilities and the implementation of odor control measures in the replacement facilities in the South Plant would significantly reduce or eliminate odors perceived at the nearest sensitive receptors. The proposed headworks and influent pumps would be enclosed, as well as all channels to the primary clarifiers and the primary clarifier effluent launderers replacing older equipment. The air from these facilities would be vented to the atmosphere via a biofilter which removes odors.

The proposed equalization basin on the west side of the facility, would be located approximately 550 feet from the nearest sensitive receptor and would be used to store primary and secondary effluents produced by the plant during high flow events. Primary effluent would be stored during wet weather events that occur during the winter when the flow into the plant exceeds the capacity of the plant's secondary treatment system. Secondary effluent would be stored in the summer months during events when the flow into the plant exceeds the capacity of the tertiary filtration and disinfection system. All effluent stored in the basins will be rerouted back to the plant headworks for treatment.

Use of the basins for the storage of primary effluent during extreme wet weather inflow events could occur at a frequency of once every five years when the plant has reached its design capacity. Prior to the plant reaching its design capacity, the frequency of storage events would be less. These events would occur during the winter season when cooler atmospheric temperatures and wet weather conditions would minimize the potential of odor generation in the stored effluent. The temperature and pollutant concentration of the primary effluent would also be reduced due to the inflow of rainwater into the collection system. Any stored effluent will be removed as soon as possible following a wet weather event and the basin would be washed down to remove any materials left behind.

High volume events requiring the equalization of secondary effluent are expected to occur approximately five times per year when the plant has reached its design capacity. Prior to the plant reaching its design capacity, the frequency of storage events would be less. Since secondary effluent has very little organic matter remaining in it, its potential for odor generation is negligible provided that it is removed within a reasonable period of time before vegetation and other growths can become established.

Several design features will be incorporated to minimize the potential for generating odors when the equalization basin is used. First, the basin will be compartmentalized to minimize the amount of washdown required after each event and provided with piped washdown water facilities to facilitate cleanup after drainage. Effluents will be introduced into a single compartment which will overflow into the next compartment in line when the first compartment is full. Second, floor slopes in the first compartments that receive primary effluent will be steeper than the slopes in the remaining compartments. This will facilitate the rapid removal of any material that has settled in the compartment from the primary effluent. Finally, high volume washdown systems will be provided around the perimeters of all four basins to assist plant staff in rapidly removing any material from the diverted effluents that does immediately drain back to the headworks.

The biosolids lagoons are located on the east side of the project site approximately 1,100 feet from sensitive receptors located northeast of the project site. The proposed improvements to these facilities are not required for permit compliance but have been included in the project to further reduce the potential for offsite odor. These facilities would be lined with concrete, which would allow for rapid cleaning to reduce odors generated by residual biosolids after the basins are emptied. The proposed modifications to these facilities would reduce odors at the nearest sensitive odor receptor.

As discussed above, the Proposed Project includes a number of odor control measures that would improve existing odor conditions on the site, including removal of odor sources from the North Plant (headworks and primary clarifiers closest to sensitive receptors) and the concrete lining of the equalization and emergency storage basins and the bio-solid lagoons for improved wash-down capabilities. The only project component that would add a potentially new odor source on the site is the proposed equalization basin; however, this facility would be used on a temporary and intermittent basis during conditions that would minimize the potential for odor impacts to occur. Therefore, the overall effect would be a net decrease in odor emissions at the EWWTP and potential effects to sensitive receptors. The project would not generate odorous emission in quantities as to cause detriment, nuisance, or annoyance to any persons or to the public (YSAQMD Rule 2.5). This impact is considered less than significant. **Less than Significant.**

Cumulative Impacts

Impact

4.2-5 Operation of the Proposed Project under cumulative conditions could create objectionable odors.

Operations of the Proposed Project in combination with other facilities in the immediate area could have a cumulative odor impact. The only potential project in the immediate area of the Proposed Project is the Competitive Power Ventures (CPV) Vaca Station electrical power generation facility located adjacent to the southeast portion of the project site. The power plant project is subject to approval by the California Energy Commission, which is also the lead agency for environmental analysis of the project. The CPV power station would discharge an insignificant

amount of odorous air pollutions and would comply with the YSAQMD Rule 2.5 and the California Health and Safety Code §40001, which is administered by the YSAQMD and CARB. The proposed equalization basin, which has the greatest potential for odors, is located approximately 1,700 feet northwest of the proposed CPV power plant, given this distance odors from the Proposed Project would not comingle with odors from the CPV power station. Therefore, odors from the Proposed Project in combination with odors from other sources in the area are considered a less than significant impact. **Less than Significant.**

Impact

4.2-6 Operation of the Proposed Project has the potential to contribute cumulatively considerable emissions of greenhouse gases.

The Proposed Project's operational GHG emissions were determined using methodologies from The Climate Registry Protocol, version 1.1, January 2009. A complete methodology and emissions inventory calculations are provided in **Appendix D**. **Tables 4.2-7** shows the estimated GHG emissions resulting from operation of the EWWTP in the near term (ADWF of 9 MGD) under No Project Conditions (existing treatment processes) and under Plus-Project Conditions (with proposed improvements). **Tables 4.2-8** shows the estimated GHG emissions that would result from future operation of the EWWTP in the year 2035 at buildout capacity (ADWF of 15 MGD) under No Project Conditions (existing treatment processes) and under Plus-Project Conditions (with proposed improvements). As shown in the table, the GHG emissions that would result from implementation of the Proposed Project would be approximately 794 tpy of CO₂e more in the cumulative year than would occur under existing conditions at the EWWTP (approximately 10 percent increase).

However, the project design incorporates a number of elements that have been recognized in the Attorney General May 2008 White Paper as measures that reduce the impact of global warming. These components of the Tertiary Project include the following:

- Efficient lighting and lighting control systems.
- Installation of LEDs for outdoor lighting.
- Limited hours of outdoor lighting (also an on-going practice at the EWWTP)
- Significant landscape buffer that would result in extensive tree plantings
- Water efficient landscapes would be incorporated as required by the City's Landscape standards
- Use reclaimed water for landscape irrigation
- Low-impact development practices that maintain existing hydrologic character and manage storm water to protect environment (all storm water would be retained on-site)

Further, the City anticipates that co-generation electrical facilities would be used at the EWWTP in the future, which would result in a reduction of indirect electricity usage and associated GHG emissions. In the event that co-generation facilities are utilized for the Proposed Project, the

GHG emissions that would result from implementation of the Proposed Project would be approximately 136 tpy of CO₂e less in the cumulative year than would occur using existing treatment processes at the EWWTP.

As shown in **Table 4.2-9**, the Proposed Project would be consistent with the three applicable state implemented climate change strategies. Therefore, because the Proposed Project would be consistent with the applicable California GHG emission reduction strategies, and measures have been incorporated into the project design that are considered to reduce the impact of global warming, the project's contribution to cumulative effects associated with climate change is considered less than significant. **Less than Significant.**

TABLE 4.2-7. EWWTP NEAR-TERM GHG EMISSIONS (ADWF 9 MGD)

	Electricity	Natural Gas	Diesel Fuel	Digester Gas	Nitrification/De-nitrification
	Metric Tons of CO ₂ e				
EWWTP Emissions – No Project	3,976	589	36	87	0
EWWTP Emissions – Plus Project	4,228	589	36	87	209
<i>Project Related GHG Emissions</i>	<i>252</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>209</i>
Total Project Related GHG Emissions	461				
< > = reduction in GHG emissions. Source: HDR, 2009 (refer to Appendix D).					

TABLE 4.2-8. EWWTP FUTURE GHG EMISSIONS (ADWF 15 MGD)

	Electricity	Natural Gas	Diesel Fuel	Digester Gas	Nitrification/De-nitrification
	Metric Tons of CO ₂ e				
EWWTP Emissions – No Project	6,640	983	60	92	0
EWWTP Emissions – Plus Project	7,094	983	60	145	287
<i>Project Related GHG Emissions</i>	<i>454</i>	<i>0</i>	<i>0</i>	<i>53</i>	<i>287</i>
Total Project Related GHG Emissions	794				
< > = reduction in GHG emissions. Source: HDR, 2009 (refer to Appendix D).					

TABLE 4.2-9. CONSISTENCY WITH APPLICABLE CALIFORNIA GHG EMISSIONS REDUCTION STRATEGIES

CAT Strategies	Project Consistency
Vehicle Climate Change Standards: AB 1493 (Pavley) required the state to develop and adopts regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the CARB in September 2004.	These are CARB enforced standards; vehicles that access the proposed project would be required to comply with the standards.
Low Carbon Fuel Standard (LCFS): The goal of LCFS is to reduce the “carbon intensity” of California’s vehicle fuel by at least 10 percent by 2020.	This would be a State mandated program; thus, reducing carbon emissions from all vehicles arriving and leaving the proposed project.
Diesel Anti-Idling: In July 2004, the CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.	CARB adopted standard. Vehicles that access the proposed project would be required to comply with the standards in accordance with California law.
<p>Note: AB= Assembly Bill; CARB= California Air Resource Board Source: CARB, 2007; Climate Action Team, 2006</p>	