15
GREENHOUSE GAS EMISSIONS

15.1 INTRODUCTION

This section addresses the potential impacts to greenhouse gas (GHG) emissions from implementation of the proposed Santa Clarita Valley Sanitation District (SCVSD) Chloride Compliance Project (proposed project). The section provides a discussion of global climate change, existing regulations pertaining to global climate change, and potential GHG emissions resulting from the proposed project alternatives. The methods of analyzing emissions are consistent with the recommendations of the South Coast Air Quality Management District (SCAQMD) and Ventura County Air Pollution Control District (VCAPCD).

15.2 ENVIRONMENTAL SETTING

15.2.1 Existing Conditions

15.2.1.1 Climate

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place (Ahrens 2003). The majority of the proposed project area is located in Los Angeles County, which lies within the South Coast Air Basin (SCAB). In addition, a small portion of the proposed project area is located in Ventura County (immediately adjacent to the Los Angeles-Ventura County line), which lies within the South Central Coast Air Basin (SCCAB). The distinctive climate within a basin is determined by its terrain and geographic location. The general region where the proposed project area is located lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climate is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. The area is in a climatic zone characterized as dry summer subtropical or Mediterranean.

15.2.1.2 Climate Change Overview

Various gases in the earth's atmosphere, classified as GHGs, play a critical role in determining its surface temperature. Solar radiation enters earth's atmosphere from space, and a portion of the radiation is absorbed by the earth's surface. The earth re-radiates this energy back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation (that otherwise would have escaped back into space)

is now retained in the atmosphere and results in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), chlorofluorocarbons (CFCs), and sulfur hexafluoride (SF_6). Much of the scientific literature suggests that human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of earth's climate, known as global climate change or global warming. While there is some debate regarding this issue, it is unlikely that the global climate change of the past 50 years can be explained without contribution from human activities (IPCC 2007).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is generally understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks, and the remaining 46 percent stays in the atmosphere (Seinfeld and Pandis 1998).

Similarly, GHG impacts are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that would ultimately result in climate change is not precisely known; however, it is clear that the quantity is enormous, and no single project would contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

15.2.1.3 Greenhouse Gas Emission Sources

According to much of the scientific literature on this topic, GHG emissions that contribute to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors (CARB 2010). CO_2 emissions are byproducts of fossil fuel combustion. Methane, a highly potent GHG, is largely associated with agricultural practices and waste decomposition in landfills. Nitrous oxide is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb take up CO_2 through absorption and dissolution, respectively, and are the two most common processes of CO_2 sequestration.

California is the twelfth to sixteenth largest emitter of CO_2 in the world (CEC 2006). California produced 478 million gross metric tons of CO_2 equivalent (CO_2e) in 2008 (CARB 2010). CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. Expressing emissions in CO_2e takes the contributions to the greenhouse effect from all GHG emissions and converts them to the equivalent effect that would occur if only CO_2 were being emitted. GHG global warming potential depends on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Calculation References of the General Reporting

Protocol of the California Climate Action Registry (CCAR 2009), one ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

Fossil fuel combustion in the transportation sector was the single largest source of California's GHG emissions in 2008, accounting for 37 percent of the state's total (CARB 2010). The next largest sources were the electric power sector (including both in-state and out-of-state sources) and the industrial sector accounting for 25 percent and 20 percent, respectively (CARB 2010).

15.3 REGULATORY BACKGROUND

15.3.1 Federal Clean Air Act

The federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (EPA) to define national ambient air quality standards to protect public health and welfare in the U.S. The CAA does not specifically regulate GHG emissions; however, on April 2, 2007, the U.S. Supreme Court ruling in *Massachusetts v. U.S. Environmental Protection Agency* determined that GHGs are pollutants that can be regulated under the CAA. Currently, no federal regulations establish ambient air quality standards for GHGs.

On December 7, 2009, the EPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under the CAA (Endangerment Finding). The Endangerment Findings are based on §202(a) of the CAA, which states that the EPA Administrator should regulate and develop standards for "emission[s] of air pollution from any class or classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses §202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether the combined GHG emissions from new motor vehicles and motor vehicle engines contribute to atmospheric GHG concentrations and, therefore, to the threat of climate change.

The EPA Administrator found that atmospheric GHG concentrations endanger the public health and welfare within the meaning of §202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wildfires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The EPA Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines contribute to air pollution, which endangers public health and welfare. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but, rather, allow the EPA to finalize the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

15.3.2 California Air Resources Board

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and thus makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

There are currently no state regulations in California that establish ambient air quality standards for GHGs. However, California has passed laws directing CARB to develop actions to reduce GHG emissions, and several state legislative actions related to climate change and GHG emissions have occurred in the past decade.

15.3.3 Assembly Bill 1493

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

In order to meet the requirements of AB 1493, in 2004, CARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. In response to updated GHG emissions standards for passenger cars, light duty trucks, and medium duty passenger vehicles by the EPA and the Department of Transportation's National Highway Safety Administration (NHTSA), CARB has recently adopted amendments to California's GHG emissions standards for new passenger vehicles from 2009 through 2016. All mobile sources, including trips generated by the proposed project, would be required to comply with these regulations as they are phased in.

15.3.3 Executive Order S-03-05

Executive Order S-03-05 was signed by former Governor Arnold Schwarzenegger in 2005 and proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Mountain snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. In order to combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions were to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

Executive Order S-03-05 directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. In order to comply with Executive Order S-03-05, the Secretary of CalEPA created the California Climate Action Team (CCAT). CCAT released its first report in March 2006 that

proposed to achieve the targets by building on voluntary actions of California businesses, local government, and community actions, as well as through state incentive and regulatory programs.

15.3.4 Assembly Bill 32

In September 2006, former Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32; California Health and Safety Code Division 25.5, §§38500-38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that was phased in starting in 2012. The cap is intended to apply to larger industrial sources, and the SCVSD facilities will not be included in this program.

15.3.5 Executive Order S-1-07

Executive Order S-1-07 was signed by then-Governor Schwarzenegger in 2007 proclaiming that the transportation sector is the main source of GHG emissions in California and generates more than 40 percent of statewide emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in California by at least 10 percent by 2020. This order also directs CARB to determine whether this low carbon fuel standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

15.3.6 Senate Bill 97

SB 97, signed August 2007 (Chapter 185, Statutes of 2007; PRC §21083.05 and §21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. The bill directs the California Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA. Amendments to the CEQA Guidelines for GHG emissions became effective on March 18, 2010.

15.3.7 CEQA Guidelines Amendments

Amendments to the CEQA Guidelines (Amendments) to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA were prepared as required by SB 97. The Amendments include a new section (§15064.4) that specifically addresses the potential significance of GHG emissions. §15064.4 calls for a "good-faith effort" to "describe, calculate, or estimate" GHG emissions. §15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the proposed project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The Amendments also state that a project may be found to have a less than significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (§15064[h][3]). The CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

No quantitative significance threshold is included in the Amendments. The CEQA Guidelines afford the customary deference provided to lead agencies in their analysis and methodologies. OPR emphasizes the necessity of having a consistent threshold available to analyze projects, and the analyses should be performed based on the best available information. For example, if a lead agency determines that GHGs may be generated by a proposed project, the agency is responsible for assessing GHG emissions by type and source.

The Amendments also include a new subdivision, §15064.7(c), which clarifies that in developing thresholds of significance a lead agency may appropriately review thresholds developed by other public agencies or recommended by other experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.

In addition, the Amendments include a new section (§ 15183.5) that provides for tiering and streamlining the analysis of GHG emissions. Project-specific environmental documents may rely on an environmental impact report (EIR) containing a programmatic analysis of GHG emissions in the region over a specified time period.

15.3.8 CARB Climate Change Scoping Plan

On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap of CARB's plans to achieve the GHG reductions in California required by AB 32 through subsequently enacted regulations (CARB 2008). CARB's Scoping Plan, re-approved in August 2011, contains the main strategies California will implement to reduce CO_2e emissions to 1990 levels. A 16-percent reduction below the updated 2020 estimated business as usual (BAU) level of 507 million metric tons of CO_2 equivalents ($MMTCO_2e$) would be necessary to return to the 1990 levels by 2020.

CARB's Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (i.e., transportation, electrical power, commercial, residential, industrial, etc.). CARB used a three-year average of emissions from 2002 to 2004 to forecast emissions out to 2020 for each sector. At the time CARB's Scoping Plan process was initiated, 2004 was the most recent year for which actual data was available. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32.

CARB's Scoping Plan expands the list of Discrete Early Action Measures to a list of 39 Recommended Actions contained in Appendices C and E of CARB's Scoping Plan. These measures are presented in Table 15-1.

Table 15-1. Recommended Actions From CARB Climate Change Scoping Plan

ID #	Sector	Strategy Name
T-1	Transportation	Pavley I and II – Light-Duty Vehicle GHG Standards
T-2	Transportation	LCFS (Discrete Early Action)
T-3	Transportation	Regional Transportation-Related GHG Targets
T-4	Transportation	Vehicle Efficiency Measures
T-5	Transportation	Ship Electrification at Ports (Discrete Early Action)
T-6	Transportation	Goods-Movement Efficiency Measures

Table 15-1 (cont.)

ID #	Sector	Strategy Name
T-7	Transportation	Heavy Duty Vehicle GHG Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)
T-8	Transportation	Medium and Heavy-Duty Vehicle Hybridization
T-9	Transportation	High Speed Rail
E-1	Electricity and Natural Gas	Increased Utility Energy efficiency programs More stringent Building and Appliance Standards
E-2	Electricity and Natural Gas	Increase Combined Heat and Power Use by 30,000 GWh
E-3	Electricity and Natural Gas	Renewables Portfolio Standard
E-4	Electricity and Natural Gas	Million Solar Roofs
CR-1	Electricity and Natural Gas	Energy Efficiency
CR-2	Electricity and Natural Gas	Solar Water Heating
GB-1	Green Buildings	Green Buildings
W-1	Water	Water Use Efficiency
W-2	Water	Water Recycling
W-3	Water	Water System Energy Efficiency
W-4	Water	Reuse Urban Runoff
W-5	Water	Increase Renewable Energy Production
W-6	Water	Public Goods Charge (Water)
I-1	Industry	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources
I-2	Industry	Oil and Gas Extraction GHG Emission Reduction
I-3	Industry	GHG Leak Reduction From Oil and Gas Transmission
I-4	Industry	Refinery Flare Recovery Process Improvements
I-5	Industry	Removal of CH_4 Exemption From Existing Refinery Regulations
RW-1	Recycling and Waste Management	Landfill CH_4 Control (Discrete Early Action)
RW-2	Recycling and Waste Management	Additional Reductions in Landfill CH_4 Capture Improvements
RW-3	Recycling and Waste Management	High Recycling/Zero Waste
F-1	Forestry	Sustainable Forest Target
H-1	High GWP Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)
H-2	High GWP Gases	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)
H-3	High GWP Gases	Reduction in Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)
H-4	High GWP Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)
H-5	High GWP Gases	High GWP Reductions From Mobile Sources
H-6	High GWP Gases	High GWP Reductions From Stationary Sources
H-7	High GWP Gases	Mitigation Fee on High GWP Gases
A-1	Agriculture	CH_4 Capture at Large Dairies

Source: CARB 2008.

15.3.9 SCAQMD

As an interim method of determining significance under CEQA until statewide significance thresholds are established, the SCAQMD developed a tiered flowchart in 2008 to determine GHG significance thresholds for industrial projects. In December 2008, the SCAQMD adopted a 10,000 MT CO_2e per year significance threshold for industrial facilities, but only with respect to projects in which the SCAQMD is the lead agency. The SCAQMD has not adopted a threshold for residential or commercial projects at the time of this writing.

The SCAQMD flowchart uses a tiered approach in which a proposed project is deemed to have a less than significant impact related to GHG emissions when any of the following conditions are met:

- GHG emissions are within GHG budgets in an approved regional plan.
- Incremental increases in GHG emissions due to the proposed project are below the defined Significance Screening Levels or mitigated to less than the Significance Screening Levels.
- Performance standards are met by incorporating project design features and/or implementing emission reduction measures.
- Carbon offsets are made to achieve target significance screening level.

15.3.10 VCAPCD

The VCAPCD has not yet adopted any GHG thresholds. However, at its September 13, 2011 board meeting, the Ventura County Air Pollution Control Board requested that VCAPCD staff report back on possible GHG significance thresholds for evaluating GHG impacts of land use projects in Ventura County under CEQA. At the November 8, 2011 board meeting, VCAPCD staff submitted a report to the board titled Greenhouse Gas Thresholds of Significance Options for Land Use Development Projects in Ventura County. The report presented a number of options for setting GHG significance thresholds and analyzed some of the adopted thresholds as well as others that were currently under consideration by other air districts in California. The report concluded that establishing local CEQA significance thresholds for global-scale environmental concerns like global warming and climate change is a major challenge, and that each of the numerous approaches and options that have been put forth to assess GHG emissions from land use development projects for CEQA purposes has their own set of advantages and disadvantages. While the report did not establish a specific approach that would be used by the VCAPCD to analyze GHG impacts under CEQA, it indicated that because Ventura County is adjacent to the SCAQMD's jurisdiction and is a part of the SCAG region, it would be most desirable for the VCAPCD to set local GHG emission thresholds of significance for land use development projects at levels consistent with those set by the SCAQMD (VCAPCD, 2011). Therefore, based on the report recommendations, the VCAPCD would continue to evaluate and develop suitable interim GHG threshold options for Ventura County with preference for GHG threshold consistency with the SCAQMD and the SCAG region.

15.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

15.4.1 Thresholds of Significance

The criteria used to determine the significance of impacts related to GHG emissions are based on Appendix G of the CEQA Guidelines. The proposed project would result in a significant impact if it would result in any of the following:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

15.4.2 Methodology

This section describes the methodologies and assumptions used to identify and analyze the proposed project's GHG emissions. The analysis of GHG emissions associated with the proposed project is considered on a cumulative basis.

The SCAQMD has not formally adopted a significance threshold for GHG emissions generated by a proposed project for which the SCAQMD is not the lead agency, nor has it adopted a uniform methodology for analyzing impacts related to GHG emissions on global climate change. In the absence of any industry-wide accepted standards, the SCAQMD's significance threshold of 10,000 metric tons per year (MT/year) CO_2e for projects in which it is the lead agency is the most relevant air district-adopted GHG significance threshold and is used as a benchmark for the proposed project. It should be noted that the SCAQMD's significance threshold of 10,000 MT/year CO_2e for industrial projects is intended for long-term operational GHG emissions. The SCAQMD has developed guidance for the determination of the significance of GHG construction emissions that recommends that total emissions from construction be amortized over 30 years and added to operational emissions and then compared to the threshold (SCAQMD 2008). Given that the VCAPCD also has not adopted any GHG significance thresholds and based on their preference to eventually develop thresholds that would be consistent with the SCAQMD, the 10,000 MT/year CO_2e threshold will also be used to evaluate the GHG impacts of the proposed project's components that would operate within the borders of Ventura County. The GHG impacts of the proposed project would be evaluated based on the recommended methodologies from the SCAQMD in this EIR.

Construction-related GHG emissions were estimated using a similar methodology to that described for criteria air pollutants in Section 10. The SCAQMD recommends the use of CalEEMod for estimating construction and operational emissions associated with land use projects. CalEEMod estimates the emissions of CO_2, CH_4, and N_2O associated with construction-related GHG sources such as off-road construction equipment, material delivery trucks, soil haul trucks, and construction worker vehicles. The GHG analysis incorporates similar assumptions as the air quality analysis for consistency.

It should be noted that aside from the GHG emissions that would be generated from the heavy-duty construction equipment at the proposed project site, additional GHG emissions would also be "embodied" in the materials selected for construction, and the level of embodied GHG

emission can vary substantially according to which materials are selected. These embodied emissions are sometimes referred to as "lifecycle emissions." The California Natural Resources Agency (CNRA) has stated that lifecycle analyses are not required under CEQA, and, in December 2009, CNRA issued new energy conservation guidelines for EIRs that make no reference to lifecycle emissions. The CNRA explained that (1) there exists no standard regulatory definition for lifecycle emissions, and (2) even if a standard definition for lifecycle emissions existed, the term might be interpreted to refer to emissions "beyond those that could be considered 'indirect effects'" as defined by the CEQA Guidelines and, therefore, beyond what an EIR is required to estimate.

Operational emissions of GHGs, including those generated by direct and indirect sources, are estimated using recommended methodologies from the SCAQMD. Direct sources include emissions such as vehicle trips, natural gas consumption, and landscape maintenance. Indirect sources include offsite emissions from the proposed project's operations, such as electricity consumption. Under the proposed project, there would not be any direct sources of emissions during operation because the facilities would be powered by electricity obtained from the regional grid distributed by Southern California Edison (SCE).

The proposed project would require one new employee at the Saugus Water Reclamation Plant (SWRP) to operate the potential UV disinfection facilities and 10 new employees at the Valencia Water Reclamation Plant (VWRP), which would result in a minimal increase in operational vehicular trips. Chemical delivery trips would also represent a minimal increase in operational vehicular trips because there would only be a minor increase in chemical usage. Furthermore, the vehicular trips made by facility employees to conduct routine maintenance and monitoring of the brine disposal system pipelines, wells, and pump stations are expected to be minimal and would not generate substantial emissions. The indirect emissions for the proposed project were estimated in this analysis by determining the amount of electrical power required to operate the facilities and equipment and then applying SCE emissions factors for the GHG components (i.e., CO_2, CH_4, and N_2O) obtained from the CalEEMod model.

Because CEQA is primarily concerned with incremental impacts introduced by a project to the environment, only the "new" GHG emissions associated with the proposed project require evaluation (rather than a full carbon footprint analysis that involves an evaluation of the agency's total existing GHG emissions).

In addition to evaluating the proposed project's GHG impact quantitatively, significance is also assessed qualitatively by determining whether the proposed project is consistent with or obstructs the Recommended Actions identified by CARB's Scoping Plan.

15.4.2.1 GHG Emissions

Impact 15-1: The proposed project could generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

GHG emissions would be generated during both the proposed project's construction and operation. For construction, this analysis accounts only for GHG exhaust emissions generated by heavy-duty equipment, haul trucks, and vehicle trips at the construction areas.

As previously discussed, operational GHG emissions generated by the proposed project would be indirectly generated because the wastewater treatment facilities and associated pumps and pipelines would be powered by electricity obtained from SCE's regional power distribution grid.

The proposed project would require a few new employees at the water reclamation plants (possibly one at the SWRP and 10 at the VWRP), resulting in a minimal increase in operational vehicular trips. Trips for weekly chemical deliveries would also represent a minimal increase in operational vehicular trips because the increase in chemical usage is small. Employee vehicular trips to conduct routine maintenance and monitor the brine pipeline and pump stations would also be minimal and would generate minimal GHG emissions.

Alternative 1 – MF/RO With Brine Disposal via Pipeline

The microfiltration/reverse osmosis (MF/RO) facilities at the VWRP, the potential ultraviolet (UV) disinfection facilities at the VWRP and/or SWRP, the RO product water conveyance system facilities, and the brine disposal system facilities are described in Section 6.7.1. Table 15-2 presents the total GHG emissions that would be generated by the proposed project. The detailed calculations are included in Appendix 15-A. The construction and operational GHG emissions from the proposed project would result in a total of 3,442 MT/year of CO_2e. The estimated GHG emissions from construction of the proposed project would be approximately 5,780 metric tons of CO_2e (193 metric tons amortized over 30 years). During the proposed project's operation, 3,249 MT/year of CO_2e would result from energy (electricity) sources. Because only a small number of new daily employee trips and weekly chemical trips would be made under the proposed project, the GHG emissions from these vehicle trips would be minimal. As shown in Table 15-2, the total GHG emissions generated would not exceed the 10,000 MT/year CO_2e benchmark. Impact would be less than significant.

Table 15-2. Estimated Project Construction and Operations-Related Greenhouse Gas Emissions – Alternative 1

Emission Source	Project CO_2e (MT/yr)	Percent of Total Emissions
Construction		
Total	5,780	
Amortized Over 30 Years	193	6%
Operations		
Energy Consumption	3,249	94%
TOTAL	**3,442**	

Note: See Appendix 15-A for GHG calculations.
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year;
Source: ESA 2013.

Impact Summary

The construction and operation of Alternative 1 would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The construction and operational impact would be less than significant.

Mitigation Measures: None Required.

Significant Level After Mitigation: Less Than Significant Impact.

Alternative 2 – MF/RO With Brine Disposal via DWI

The MF/RO facilities at the VWRP, the potential UV disinfection facilities at the VWRP and/or SWRP, and the RO product water conveyance system facilities would be the same as described

for Alternative 1. The brine disposal system facilities are described in Section 6.7.1. Table 15-3 presents the total GHG emissions that would be generated by the proposed project. The detailed calculations are included in Appendix 15-A. The construction and operational GHG emissions from the proposed project would result in a total of 4,498 MT/year of CO_2e. The estimated GHG emissions from construction of the proposed project would be approximately 4,982 metric tons of CO_2e (166 metric tons amortized over 30 years). During the proposed project's operation, 4,332 MT/year of CO_2e would result from energy (electricity) sources. Because only a small number of new daily employee trips and weekly chemical trips would be made under the proposed project, the GHG emissions from these vehicle trips would be minimal. As shown in Table 15-2, the total GHG emissions generated would not exceed the 10,000 MT/year CO_2e benchmark. Impact would be less than significant.

Table 15-3. Estimated Project Construction and Operations-Related Greenhouse Gas Emissions – Alternative 2

Emission Source	Project CO_2e (MT/yr)	Percent of Total Emissions
Construction		
Total	4,982	
Amortized Over 30 Years	166	4%
Operations		
Energy Consumption	4,332	96%
TOTAL	**4,498**	

Note: See Appendix 15-A for GHG calculations.
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year
Source: ESA 2013.

Impact Summary

The construction and operation of Alternative 2 would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The construction and operational impact would be less than significant.

Mitigation Measures: None Required.

Significance Level After Mitigation: Less Than Significant Impact.

Alternative 3 – MF/RO With Brine Disposal via Trucking

The MF/RO facilities at the VWRP, the UV disinfection facilities at the VWRP and SWRP, and the RO product water conveyance system facilities would be the same as described for Alternative 1. The brine disposal system facilities are described in Section 6.7.1. Table 15-4 presents the total GHG emissions that would be generated by the proposed project under Alternative 3. Detailed calculations are included in Appendix 15-A. Because only a small number of new daily employee trips and weekly chemical trips would be made under the proposed project, the GHG emissions from these vehicle trips would be minimal. However, under Alternative 3 the proposed project's brine disposal system would consist of transporting the brine away from VWRP via trucking to the City Terrace area in Los Angeles County. It is estimated that up to 90 truck trips could occur daily to dispose of the brine from the VWRP. Given the number of truck trips per day and the approximate 80-mile roundtrip distance, trucking of brine under Alternative 3 could generate substantial GHG emissions. The GHG emissions

generated by brine disposal truck trips have also been calculated and accounted for the proposed project under Alternative 3.

The construction and operational GHG emissions from the proposed project would result in a total of 5,256 MT/year of CO_2e. The estimated total GHG emissions from construction of the proposed project would be approximately 1,390 metric tons of CO_2e (46 metric tons amortized over 30 years). During the proposed project's operation, 2,400 MT/year of CO_2e would result from energy (electricity) sources and 2,810 MT/year of CO_2e would result from the transportation of brine for disposal via trucking for a total of 5,210 MT/year of CO_2e.

As shown in Table 15-4, the total GHG emissions generated would not exceed the 10,000 MT/year CO_2e benchmark. Impact would be less than significant.

Table 15-4. Estimated Project Construction and Operations-Related Greenhouse Gas Emissions – Alternative 3

Emission Source	Project CO_2e (MT/yr)	Percent of Total Emissions
Construction		
Total	1,390	
Amortized Over 30 Years	46	1%
Operations		
Energy Consumption	2,400	
Brine Disposal (via Trucking)	2,810	
Total	5,210	99%
TOTAL	**5,256**	

Note: See Appendix 15-A for GHG calculations.
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year;
Source: ESA 2013.

Impact Summary

The construction and operation of Alternative 3 would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The construction and operational impact would be less than significant.

Mitigation Measures: None Required.

Significance Level After Mitigation: Less Than Significant Impact.

Alternative 4 – Phased AWRM

Phase I

The UV disinfection facilities at the VWRP and SWRP would be the same as described for Alternative 1. The salt management facilities and the supplemental water system facilities are described in Section 6.7.1. Table 15-5 presents the total GHG emissions that would be generated. Detailed calculations are included in Appendix 15-A. The construction and operational GHG emissions from the proposed project would result in a total of 5,151 MT/year of CO_2e. The estimated GHG emissions from construction of the proposed project would be approximately 3,520 metric tons of CO_2e (117 metric tons amortized over 30 years). During the proposed project's operation, 5,034 MT/year of CO_2e would result from energy (electricity) sources.

Because only a small number of new daily employee trips and weekly chemical trips would be made under the proposed project, the GHG emissions from these vehicle trips would be minimal. As shown in Table 15-5, the total GHG emissions generated would not exceed the 10,000 MT/year CO_2e benchmark. Impact would be less than significant.

Table 15-5. Estimated Project Construction and Operations-Related Greenhouse Gas Emissions – Alternative 4, Phase I

Emission Source	Project CO_2e (MT/yr)	Percent of Total Emissions
Construction		
Phase I	3,520	
Amortized Over 30 years	117	2%
Operations		
Phase I Energy Consumption	5,034	98%
TOTAL	**5,151**	

Note: See Appendix 15-A for GHG calculations.
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year
Source: ESA 2013.

Impact Summary

The construction and operation of Phase I of Alternative 4 would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The construction and operational impact would be less than significant.

Mitigation Measures: None Required.

Significance Level After Mitigation: Less Than Significant Impact.

Phase II

The MF/RO facilities at the VWRP would be similar to those described for Alternative 1 but, under this alternative, would be smaller in size. The RO product water conveyance system facilities and the brine disposal system facilities are described in Section 6.7.1. Table 15-6 presents the total GHG emissions that would be generated during the various Phase I and Phase II scenarios under Alternative 4. Under Phase II of Alternative 4, the proposed project's brine disposal system component would be via either a pipeline to the JOS, DWI, or trucking. The GHG emissions associated with each of these various brine disposal systems under Phase II have been accounted for and are shown in Table 15-5. Detailed calculations are included in Appendix 15-A.

The total construction and operational GHG emissions resulting from the proposed project under this alternative for the brine disposal scenarios for a pipeline to JOS, DWI, or trucking would be 6,312 MT/year of CO_2e, 8,789 MT/year of CO_2e, and 6,430 MT/year of CO_2e, respectively. Because only a small number of new daily employee trips and weekly chemical trips would be made under the proposed project, the GHG emissions from these vehicle trips would be minimal. In addition, operation of the supplemental water system would require infrequent vehicle trips for inspection and maintenance that would result in minimal GHG emissions.

As shown in Table 15-6, the total GHG emissions generated would not exceed the 10,000 MT/year CO_2e benchmark. Impact would be less than significant.

Table 15-6. Estimated Project Construction and Operations-Related Greenhouse Gas Emissions – Alternative 4, Phases I and II

Emission Source	Project CO_2e (MT/yr)	Percent of Total Emissions
Phases I and II (Brine Disposal via Pipeline)		
Construction		
Phase II	5,427	
Amortized over 30 years	180	5%
Operations		
Phase II Energy Consumption	981	95%
TOTAL	**1,161**	
Phase I Total Energy Consumption	5,151	
TOTAL	**6,312**	
Phases I and II (Brine Disposal via DWI)		
Construction		
Phase II	4,629	
Amortized over 30 years	155	4%
Operations		
Phase II Energy Consumption	3,483	96%
TOTAL	**3,638**	
Phase I Total Energy Consumption	5,151	
TOTAL	**8,789**	
Phases I and II (Brine Disposal via Trucking)		
Construction		
Phase II	1,037	
Amortized over 30 years	35	1%
Operations		
Phase II Energy Consumption	1,244	99%
TOTAL	**1,279**	
Phase I Total Energy Consumption	5,151	
TOTAL	**6,430**	

Note: See Appendix 15-A for GHG calculations.
CO_2e = carbon dioxide equivalent
MT/yr = metric tons per year;
Source: ESA 2013.

Impact Summary

The construction and operation of Phase I of Alternative 4 would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The construction and operational impact would be less than significant.

The construction and operation of Phase II of Alternative 4 would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The construction and operational impact would be less than significant.

Mitigation Measures: None Required.

Significance Level After Mitigation: Less Than Significant Impact.

15.4.2.2 Applicable Plan, Policy, or Regulation

Impact 15-2: The proposed project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Alternatives 1, 2, 3, and 4 (Phases I and II)

The facilities for Alternatives 1, 2, 3, and 4 (Phases I and II) are described in Section 6.7.1. The proposed project under any one of these alternatives would not conflict with the CARB Scoping Plan recommended actions listed in Table 15-1 – in particular, water-associated measures W-1 through W-4.

W-1: Water Use Efficiency

The proposed project would lower the chloride levels in the treated water being discharged into the SCR. The proposed project would not create a new or substantial increase in water demand. The proposed project would not conflict with this measure.

W-2: Water Recycling

The proposed project may provide advanced treatment to a portion of the tertiary-treated water from the VWRP to lower the waters' chloride level prior to its discharge to the SCR. By improving the water quality discharged to the SCR, the proposed project would improve the quality of the SCR water and support the beneficial uses of this water. In addition, the proposed project would likely promote reuse of recycled water thereby lowering demand for potable water. Therefore, the proposed project would not conflict with this measure.

W-3: Water System Energy Efficiency

As discussed in Section 13 (Energy Resources) of this Draft EIR, the SCVSD would install energy-efficient equipment (e.g., pumps and motors) to the maximum extent practicable to minimize the proposed project's energy consumption. The proposed project would not require construction of new energy infrastructure. Operational activities would comply with applicable energy efficiency policies and standards. Therefore, the proposed project would be consistent with this measure.

W-4: Reuse Urban Runoff

There would be no urban runoff from the proposed project. Furthermore, the proposed project may provide advanced treatment to a portion of the tertiary-treated water from the VWRP that would eventually be discharged into the SCR to support aquatic species and habitat, recharge the underlying groundwater basin, and provide a water supply for agricultural irrigation. Therefore, the proposed project would be consistent with this measure.

Impact Summary

The construction and operation of Alternatives 1, 2, 3, and Phases I and II of Alternative 4 would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The construction and operational impact would be less than significant.

Mitigation Measures: None Required.

Significance Level After Mitigation: Less Than Significant Impact.