Appendix K:
Air Quality

K-1: Expanded Air Quality Analysis

Expanded Air Quality Analysis
Prepared for the
Draft EIR
County of San Luis Obispo
Los Osos Wastewater Project

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PREFACE

This Expanded Air Quality Analysis corresponds to Section 5.9, Air Quality, of the Los Osos Wastewater Project Draft EIR. For readability and reference, the numbering system for headings and page numbers in the following environmental analysis uses the same section number as that used in the Draft EIR.

This Expanded Air Quality Analysis of the Los Osos Wastewater Project Draft EIR is a summary of a compendium of knowledge regarding air quality issues statewide, as well as those issues applicable to San Luis Obispo County and specifically the community of Los Osos. Since the body of knowledge is considerable and contained in numerous appendices, it would be difficult to present it entirely in this document and in a manner that is easily understood by the reader. In order to aid the reader in locating background information, this section is formatted to facilitate the retrieval of appended information by presenting the reader with references that address the issue at hand.

5.9 - AIR QUALITY

This section discusses the potential construction and operational air quality impacts associated with implementation of the Los Osos Wastewater Facility project. The following air quality analysis was prepared to evaluate whether the expected criteria air pollutant emissions generated from the proposed project would cause significant impacts to air resources in the project area. The analysis also provides an analysis of climate change impacts. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the CEQA Air Quality Handbook prepared by the San Luis Obispo Air Pollution Control District (SLOAPCD) for quantification of emissions and evaluation of potential impacts to air resources.

5.9.1 - Introduction

The following is a list of information reviewed in preparation of this section.

- Air Quality and Climate Change Calculations. Michael Brandman Associates. October 2008. (MBA 2008). This information is located in Appendix K-2 of the Draft EIR.
- Personal communication. Andrew Mutziger, Air Quality Specialist. San Luis Obispo Air Pollution Control District. October 22, 2008. (Mutziger 2008). This information is located in Appendix K-3 of the Draft EIR.
- E-mail message. Karen Brooks, Supervising Air Quality Specialist. San Luis Obispo Air Pollution Control District. October 23, 2008. (Brooks 2008). This information is located in Appendix K-4 of the Draft EIR.
- Western U.S. Climate Historical Summaries. Western Regional Climate Center. Website http://www.wrcc.dri.edu/Climsum.html. Accessed October 11, 2008. (WRCC 2008). This document is available for review at the website identified above.
- 2001 Clean Air Plan. San Luis Obispo County Air Pollution Control District. December 2001. (SLOAPCD 2001). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Assessment of the Impacts of Transported Pollutants on Ozone Concentrations in California. California Air Resources Board. March 2001. (CARB 2001). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- 2006 Annual Air Quality Report. San Luis Obispo County Air Pollution Control District. November 2007. (SLOAPCD 2007). This document is not contained in the EIR appendices,

but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.

- Review of the California Ambient Air Quality Standards for Ozone - Staff Report. California Air Resources Board. March 11, 2005. (CARB 2005). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report. California Energy Commission. December 2006. (CEC 2006). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- California Greenhouse Gas Inventory (millions of metric tonnes of CO2 equivalent) - By IPCC Category. California Air Resources Board. August 22, 2007. (CARB 2007). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- 2007 Almanac Emission Projection Data. http://www.arb.ca.gov/app/emsinv/emssumcat.php. California Air Resources Board. Accessed October 11, 2008. (CARB 2008a). This document is available for review at the website identified above.
- Aerometric Data Analysis and Management System Air Quality Data/Statistics/Top 4 Summary. http://www.arb.ca.gov/adam/welcome.html. California Air Resources Board. Accessed October 11, 2008. (CARB 2008b). This document is available for review at the website identified above.
- Ambient Air Quality Standards (AAQS) http://www.arb.ca.gov/research/aaqs/aaqs.htm. California Air Resources Board. Accessed September 29, 2008. (CARB 2008c). This document is available for review at the website identified above.
- Air Quality and Land Use Handbook: A Community Health Perspective. California Air Resources Board. April 2005. (CARB 2005b). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Climate Action Team Report to Governor Schwarzenegger and the California Legislature. State of California, Environmental Protection Agency, Climate Action Team. March 2006. (CAT 2006). This document is not contained in the EIR appendices, but is instead available

for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.

- Proposed Early Actions to Mitigate Climate Change in California. California Air Resources Board. April 20, 2007. (CARB 2007b). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Area Designations and Maps - 2006. California Air Resources Board. September 2006. (CARB 2006). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Particulate Matter Report: Implementation of SB 656 Requirements. San Luis Obispo County Air Pollution Control District. July 27, 2005. (SLOAPCD 2005). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- CEQA Air Quality Handbook: A Guide for Assessing the Air Quality Impacts for Projects Subject to CEQA Review. San Luis Obispo County Air Pollution Control District. April 2003. (SLOAPCD 2003). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review. Office of Planning and Research. June 19, 2008. (OPR 2008). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Software User's Guide: URBEMIS2007 for Windows Version 9.2 - Emissions Estimation for Land Use Development Projects. South Coast Air Quality Management District. November 2007. (SCAQMD 2007). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Technical Memorandum - Septage Receiving Station Option. Carollo Engineering. August 2008. (Carollo 2008a). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building.

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- Technical Memorandum - Projects Alternatives Greenhouse Gas Emissions Inventory. Carollo Engineering. June 23, 2008. (Carollo 2008b). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Local Government Operations Protocol For the quantification and reporting of greenhouse gas emissions inventories - Version 1.0. California Air Resources Board. September 2008. (CARB 2008d). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- California Climate Action Registry General Reporting Protocol Version 3.0. California Climate Action Registry. April 2008. (CCAR 2008). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.
- Cost Control in Forest Harvesting and Road Construction. Food and Agriculture Organization of the United Nations. Rome. 1992. (FAOUN 1992). This document is not contained in the EIR appendices, but is instead available for review at the San Luis Obispo County Department of Planning and Building. Pursuant to CEQA Guidelines Section 15150, this document is hereby incorporated by reference.

5.9.2 - Environmental Setting

The project is located within the South Central Coast Air Basin (SCCAB), which covers the counties of San Luis Obispo, Santa Barbara, and Ventura.

Topography, Climate, and Meteorology

San Luis Obispo County (County) constitutes a land area of approximately 3,316 square miles with varied topography and climate. From a geographical and meteorological standpoint, the County can be divided into three general regions: the Coastal Plateau, the Upper Salinas River Valley, and the East County Plain. Air quality in each of these regions is characteristically different, although the physical features that divide them provide only limited barriers to the transport of pollutants between regions. The proposed project is located in the Coastal Plateau region.

The Coastal Plateau is about 5 to 10 miles wide and varies in elevation from sea level to about 500 feet. It is bounded on the northeast by the Santa Lucia Mountain Range, which extends almost the entire length of the County. About 75 percent of the County population and a corresponding portion of the commercial and industrial facilities are located within the Coastal Plateau. With higher population density and closer spacing of urban areas, emissions of air pollutants per unit area are generally higher here than in other regions of the County.

The climate of the County can be generally characterized as Mediterranean, with warm, dry summers and cooler, relatively damp winters. Along the coast, mild temperatures are the rule throughout the year due to the moderating influence of the Pacific Ocean. This effect is diminished inland in proportion to distance from the ocean or by major intervening terrain features, such as the coastal mountain ranges.

Local and regional weather conditions, including wind speed and direction, atmospheric stability, air temperature, and the presence or absence of temperature inversions can all contribute to the dispersion or concentration of air pollutants. The speed and direction of local winds are controlled by the location and strength of the Pacific High pressure system, local and regional topography, and by circulation patterns resulting from temperature differences between the land and sea.

Topography

The Coastal Plateau varies in elevation from sea level to about 500 feet. It is bounded on the northeast by the Santa Lucia Mountain Range. Point Buchon juts into the Pacific Ocean just south of Morro Bay and the Irish Hills are the dominant feature on this knob of land, rising abruptly from the shore to form steep cliffs and generally complex terrain from the Los Osos/Montaña de Oro State Park area.

Winds

The Pacific High Pressure System is a persistent high pressure area which commonly resides over the eastern Pacific Ocean. Seasonal variations in the strength and position of this pressure cell cause seasonal changes in the weather patterns of the area. In spring and summer months (May through September), the Pacific High is located far offshore and enhances cool daytime onshore winds from the northwest. However, the summer onshore winds die down in the evening and the wind direction reverses—resulting in weak easterly land breezes. From November through April, the Pacific High tends to migrate southward, allowing northern storms to move across the County.

The headlands of the Montaña de Oro State Park area have a pronounced influence on local windflow patterns. Winds on the lee side of the point often flow perpendicular to the prevailing winds and funnel back and forth through Price Canyon and the Highway 101 corridor.

In addition, the decline in onshore surface winds in the fall allows an occasional weak offshore flow. The combination of daily onshore breezes and nightly offshore flow can result in a “sloshing” effect, which allows pollutants to accumulate over the ocean and be carried onshore with the return of sea breezes.

Temperature and Precipitation

The nearest National Weather Service Cooperative Observer Program (COOP) weather station to the project is the station at the Morro Bay Fire Department, located approximately 5 miles north-northwest of the project. At the Morro Station (WRCC 2008), average recorded rainfall between 1959 and 2008 measured 16.69 inches, with 90 percent of precipitation occurring between November and April. The first recorded snowfall at this station occurred in 2008, with 1.5 inches falling. Monthly average maximum temperatures at this station only vary by 7 degrees Fahrenheit (°F); 62 °F to 69 °F, and monthly average minimum temperatures vary only by 11 degrees; 42 °F to 53 °F.

Inversions

Generally, the temperature of air decreases with height, creating a gradient from warmer air near the ground to cooler air at elevation. This is caused by the sun's energy being converted to sensible heat at the ground, which, in turn, warms the air at the surface. The warm air rises in the atmosphere, where it expands and cools. In meteorology, this is called the adiabatic lapse rate. When some condition creates a warm layer of air over a cooler layer, it creates a temperature inversion. The point where normal adiabatic lapse rate is inverted is called the 'inversion cap'.

Air pollutants can become concentrated when the mixing height, or distance to the inversion cap, is at or below the elevation of the surrounding coastal hills. Under those conditions, the inversion limits vertical mixing and the hills trap the pollutants and prevent them from horizontally dispersing. The strength of the inversion is measured by the thickness of the layer and the difference in temperature between the base and the top of the inversion. Strong inversions are more difficult to break up by winds or solar heating than weak inversions.

There are multiple types of inversions. The three prevalent inversion types in the project area are radiative inversions, marine inversions, and regional subsidence inversions. Week, shallow radiative inversions generally form on clear nights with low winds, when the surface of the earth cools by radiating heat into the atmosphere. The thermal radiation cools the air near the ground, while transferring the heat to the air mass above. During late spring and early summer, cool ocean breezes can intrude under the warmer air over land, causing a marine inversion. The marine inversions are typically shallow and dissipate with surface heating. In the summertime, the Pacific High pressure cell can cause a regional air mass to sink. As the air mass sinks, or 'subsides', the air is heated by compression to be warmer than the air below. Generally, subsidence inversions are strong and difficult to dissipate, and may persist for several days. The height of subsidence inversions typically ranges from 1,000 to 2,500 feet above sea level, but may occur as low as 250 feet above sea level. (SLOAPCD 2001)

Transport

The California Air Resources Board (CARB) is required to identify and assess relative contributions of upwind air basins or subregions, which cause or contribute to violations of the State ozone standard in downwind air basins or subregions. When two regions are connected by either contributing to or receiving pollution from the other region, the two regions are said to be "coupled." In the third update of the ozone transport couples (CARB 2001), the CARB identified a new transport couple from the San Francisco Bay Area to the South Central Coast. In fact, the CARB classified the transport from the San Francisco Bay Area Air Basin to the San Luis Obispo County portion of the South Central Coast Air Basin as "significant" transport. "Significant" transport is defined as "a condition in which the emissions from the upwind area contributed measurably to a violation of the State ozone standard in the downwind area on any given day, but did not "overwhelm" the area." A violation is considered caused by "significant" transport if the emissions from sources within the downwind area combine with the transported parcel carrying ozone or ozone precursors from the upwind area. A violation classified as "significant" is considered shared, with responsibility lying with both the upwind and downwind areas.

The CARB will also continue to classify the transport from the San Joaquin Valley Air Basin to the South Central Coast as "significant" and "inconsequential" as was found in the 1993 transport assessment report. The CARB also recognizes that "significant" transport from the San Francisco Bay Area Air Basin and the San Joaquin Valley Air Basin, collectively, can "overwhelm" the South Central Coast Air Basin (San Luis Obispo County portion only).

Pollutants of Concern

Pollutants are generally classified as either criteria pollutants or non-criteria pollutants. Federal ambient air quality standards have been established for criteria pollutants, whereas no ambient standards have been established for non-criteria pollutants. For some criteria pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). A summary of national ambient air quality standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for criteria pollutants is shown in Table 5.9-5.

SLOAPCD lists several ambient air pollutants of local concern in the County in their Annual Report (SLOAPCD 2007) ozone, particulate matter, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and carbon monoxide (CO).

Ozone

Although ozone occurs naturally at low concentrations near the earth's surface, much higher and unhealthful levels are created when airborne mixtures of reactive organic gases (ROG) and oxides of nitrogen (NO_X) are driven by sunlight to react, forming ozone pollution. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Often, the effects of emitted ROG and NO_X are felt a distance downwind of the emission sources. Ozone is subsequently considered a regional pollutant. As a photochemical pollutant, ozone is formed only during daylight hours under appropriate conditions, but is destroyed throughout the day and night. Thus, ozone concentrations vary depending upon both the time of day and the location. Even in pristine areas, there is some ambient ozone that forms from natural emissions that are not controllable. This is termed background ozone. The average background ozone concentrations near sea level are in the range of 0.015 to 0.035 parts per million (ppm), with a maximum of about 0.04 ppm (CARB 2005).

The emissions of these ozone precursor pollutants come from many human activities, but primarily from industry and the wide use of motor vehicles. As a pollutant, ozone is a strong oxidant gas that attacks plant and animal tissues. It causes impaired breathing and reduced lung capacity, especially among children, athletes, and persons with compromised respiratory systems. It also causes significant crop and forest damage. Ozone is a pollutant of particular concern in California where geography, climate, and high population densities contribute to frequent violations of health-based air quality standards.

Particulate Matter

Ambient air quality standards have been established for two classes of particulate matter: PM_{10} (respirable particulate matter less than 10 microns in aerodynamic diameter), and $PM_{2.5}$ (fine particulate matter 2.5 microns or less in aerodynamic diameter). These particles come in many sizes and shapes and can be made up of hundreds of different chemicals. Some particles, known as primary particles, are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks, or fires. Others form in complicated reactions in the atmosphere of chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industrial activity, and automobiles.

Particle size distributions show that particles larger than $PM_{2.5}$ make up about half of PM_{10} in San Luis Obispo County (SLOAPCD 2005). This coarse fraction of PM_{10} includes wind-blown dust and particles, which have a soil origin. The coarse fraction also includes particles that originate from abrasion, such as those mixed into the air by the action of vehicle tires rolling on roadways. Having more mass, these tend to settle out of the air and deposit on surfaces more rapidly, with the largest particles depositing closer to their source. For the coarse fraction of PM_{10}, air pollutant behavior and impacts typically relate to the locations of nearby sources and receptors, and to the speed, direction, and turbulence of wind carrying the particulate pollution from source to receptor.

The smaller suspended particles in $PM_{2.5}$ typically have a combustion origin, or result from the oxidation, chemical reaction, recombination, adsorption, and/or coagulation of diverse aerosols and gaseous air pollutants. These smaller particles, which can be as tiny as larger molecules, remain suspended in the air far longer than coarse particles, for periods of days or weeks. Therefore, regional meteorology plays a main role in the movement of these finer particles, and in the atmospheric chemistry that affects their transformation. In fact, transport of particulate air pollutants from distant major urban areas does sometimes play a role in local levels observed in the County. When that occurs, the transported air mass can sometimes be visible as an approaching haze.

Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis, and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and acute bronchitis, and may increase susceptibility to respiratory infections. $PM_{2.5}$ tends to be a greater health risk since it cannot be removed from the lungs once it is deeply inhaled.

NO_2, SO_2, CO

Nitrogen dioxide (NO_2) is the brownish-colored component of smog. NO_2 irritates the eyes, nose and throat, and can damage lung tissues. Sulfur dioxide (SO_2) is a colorless gas with health effects similar to NO_2. Both pollutants are generated by fossil fuel combustion from mobile sources (such as vehicles, ships and aircraft), and at stationary sources (such as industry, homes and businesses). SO_2 may also be emitted by petroleum production and refining operations. The State and national standards for NO_2 have never been exceeded in this County. The CARB discontinued NO_2 monitoring at the San Luis Obispo Station in November 2006. The State standard for SO_2 was exceeded periodically on the Nipomo Mesa up until 1993. Equipment and processes at the facilities responsible for the emissions were upgraded as a result, and the State SO_2 standard has not been exceeded since that time. Exceedances of the federal SO_2 standard have never been measured here.

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 about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential woodburning, and natural sources such as forest fires. State CO standards have not been exceeded in San Luis Obispo County since 1975. The CARB discontinued CO monitoring at the San Luis Obispo station in November 2006.

Greenhouse Gases

Constituent gases of the Earth’s atmosphere called atmospheric greenhouse gases (GHG) play a critical role in the Earth’s radiation budget by trapping infrared radiation emitted from the Earth’s surface, which would otherwise have escaped into space. Prominent GHGs contributing to this process include carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and sulfur hexafluoride. This phenomenon, known as the “Greenhouse Effect,” is responsible for maintaining a habitable climate. Anthropogenic emissions of these GHGs in excess of natural ambient concentrations are responsible for the enhancement of the greenhouse effect and have led to a trend of unnatural warming of the Earth’s natural climate, known as global warming or climate change. Emissions of these gases that induce global warming are attributable to human activities associated with industrial/manufacturing, utilities, transportation, residential, and agricultural sectors (CEC 2006). Transportation is responsible for 41 percent of the State's GHG emissions, followed by electricity generation (CEC 2006).

GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Worldwide, California is the 12^{th} to 16^{th} largest emitter of CO_2 and is responsible for approximately 2 percent of the world's CO_2 emissions (CEC 2006). In 2004, California produced 497 million gross metric tons of carbon dioxide-equivalent (CARB 2007).

Carbon Dioxide

Carbon dioxide (CO_2) is an odorless, colorless natural greenhouse gas. Outdoor levels of CO_2 are not high enough to result in negative health effects. However, CO_2 can be a concern as a greenhouse gas. CO_2 is emitted from natural and anthropocentric (human) sources. Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. CO_2 can also be removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks.

Methane

Methane (CH_4) is an extremely effective absorber of radiation, though its atmospheric concentration is less than CO_2 and its lifetime in the atmosphere is brief (10 to 12 years), compared to other greenhouse gases. CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen (anaerobic) environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide

Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in racecars.

Chlorofluorocarbons

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are no longer being used; therefore, it is not likely that health effects would be experienced. CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining level or declining. The proposed project is not expected to generate or be exposed to CFCs because of the ban on chlorofluorocarbons. Therefore, it is not assessed in this report.

Hydrofluorocarbons

Hydrofluorocarbons (HFCs) are synthetic man-made chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, they are one of three groups with the highest global warming potential. Most HFCs do not have health effects associated with their direct emissions. HFCs are manmade for applications such as automobile air conditioners and refrigerants. The project may emit a small amount of HFC emissions from leakage and service of refrigeration and air conditioning equipment used in the administration and/or maintenance structures and from disposal at the end of the life of the equipment. However, the quantity is expected to be minimal because of the relative small size of the project and is not further evaluated.

Perfluorocarbons

Perfluorocarbons (PFCs) have stable molecular structures and do not break down though the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture. Since PFCs are typically used in industrial applications, it is not anticipated that the project would emit any of these greenhouse gases.

Sulfur Hexafluoride

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection. Since sulfur hexafluorides are typically used in industrial and specialized manufacturing applications, it is not anticipated that the project would emit any of these greenhouse gases.

Other Pollutants of Concern

Toxic Air Contaminants

A toxic air contaminant (TAC) is defined as an air pollutant which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air. However, their high toxicity or health risk may pose a threat to public health even at very low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts are not expected to occur. This contrasts with the criteria pollutants for which acceptable levels of exposure can be determined and for which the State and federal governments have set ambient air quality standards.

The CARB's TAC program traces its beginning to the criteria pollutant program in the 1960s. For many years, the criteria pollutant control program has been effective at reducing TACs since many ROG and PM constituents are also TACs. During the 1980s, the public's concern over toxic chemicals heightened. As a result, citizens demanded protection and control over the release of toxic chemicals into the air. In response to public concerns, the California legislature enacted the Toxic Air Contaminant Identification and Control Act (AB 1807, Tanner 1983) governing the release of TACs into the air. This law charges the CARB with the responsibility for identifying substances as TACs, setting priorities for control, adopting control strategies, and promoting alternative processes. The CARB has designated almost 200 compounds as TACs. Additionally, the CARB has implemented control strategies for a number of compounds that pose high health risk and show potential for effective control.

Diesel Particulate Matter

The CARB identified the PM emissions from diesel-fueled engines as a TAC in August 1998 under California's TAC program. In California, diesel engine exhaust has been identified as a carcinogen. Most researchers believe that diesel exhaust particles contribute the majority of the risk.

Diesel PM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 40 percent of the statewide total, with an additional 57 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources, contributing about 3 percent of emissions, include shipyards, warehouses, heavy equipment repair yards, and oil and gas production operations. Emissions from these sources are from diesel-fueled internal combustion engines.

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States.

Project construction sometimes requires the demolition of existing buildings where construction occurs. Buildings often include materials containing asbestos, but no demolition is associated with this project. However, asbestos is also found in a natural state, known as Naturally Occurring Asbestos (NOA). Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers to the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

Local Air Quality

Emissions Inventory

California is a diverse state with many sources of air pollution. To estimate the sources and quantities of pollution, the CARB, in cooperation with local air districts and industry, maintains an inventory of California emission sources. Sources are subdivided into four major emission categories: stationary sources, area-wide sources, mobile sources, and natural sources. Stationary source emissions are based on estimates made by facility operators and local air districts. Emissions from specific facilities can be identified by name and location. The CARB and local air district staffs estimate area-wide emissions. Emissions from area-wide sources may be either from small individual sources, such as residential fireplaces, or from widely distributed sources that cannot be tied to a single location, such as consumer products and dust from unpaved roads. The CARB staff estimates mobile source emissions with assistance from air districts and other government agencies. Mobile sources include on-road cars, trucks, and buses and other sources such as boats, off-road recreational vehicles, aircraft, and trains. The CARB staff and the air districts also estimate natural sources. These sources include geogenic (e.g., petroleum seeps) and biogenic (vegetation) sources, and wildfires.

Table 5.9-1 summarizes estimated 2006 emissions of key criteria air pollutants from major categories of air pollutant sources. For each pollutant, estimated emissions are presented for San Luis Obispo County. No further spatial refinement is available (CARB 2008a).

Table 5.9-1: San Luis Obispo County 2006 Estimated Annual Emissions

Emission Category	2006 Emissions in tons per day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Stationary Sources						
Fuel combustion	1.15	0.98	1.69	0.41	0.10	0.10
Waste disposal	0.04	0	0	0	0	0
Cleaning and surface coatings	1.52	0	0	0	0.01	0.01
Petroleum production and marketing	0.98	0.04	0.26	9.38	0.21	0.16
Industrial processes	0.38	0.07	0.03	0.02	0.40	0.18
Areawide Sources						
Solvent evaporation	3.62	0	0	0	0	0
Miscellaneous processes	4.77	37.68	0.68	0.03	26.87	7.64
Mobile Sources						
On-road motor vehicles	7.22	72.20	12.26	0.06	0.45	0.30
Other mobile sources	6.51	33.03	20.67	7.02	1.59	1.50

Table 5.9-1 (Cont.): San Luis Obispo County 2006 Estimated Annual Emissions

Emission Category	2006 Emissions in tons per day					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Natural Sources						
Biogenic Sources	31.08	0	0	0	0	0
Geogenic Sources	0.04	0	0	0	0	0
Wildfires	4.33	62.02	1.96	0.06	6.32	5.36
GRAND TOTAL	**60.64**	**206.02**	**37.55**	**17.52**	**35.95**	**15.25**

Notes:
All values in tons per day. 2006 is estimated from a base year inventory for 2004 based on growth and control factors available from CARB. The sum of values may not equal total shown, due to rounding.
Source: CARB 2008a.

ROG - natural sources accounted for 58 percent of the 2006 emission inventory. Within natural sources, biogenics was the major contributor of ROG. Together, on-road and other mobile sources contributed another 23 percent of the total ROG inventory.

CO - emissions in the County were primarily generated by mobile sources, which account for 52 percent of the 2006 emissions inventory. Wildfires contributed another 30 percent, while miscellaneous processes generated another 18 percent.

NO_X - mobile sources accounted for nearly 90 percent of the NO_X emissions in 2006. Ships and commercial boats contributed the most emissions from the 'other' mobile sources category, generating approximately 34 percent of the total 2006 NO_X inventory.

SO_X - approximately 54 percent of the SO_X emissions are contributed by petroleum refining. Another 40 percent come from the other mobile sources, of which the vast majority is from ships and commercial boats.

PM_{10} - approximately 75 percent of the PM_{10} is contributed by miscellaneous processes. Within this category, 33 percent is from unpaved road dust, 18 percent from paved road dust, 15 percent from construction/demolition, and 13 percent from managed burning and disposal. Wildfires contributed another 18 percent.

$PM_{2.5}$ - approximately 50 percent of the $PM_{2.5}$ emissions in 2006 came from miscellaneous processes and another 35 percent came from wildfires. The predominant contributor from miscellaneous processes id managed burning and disposal (42 percent) and residential fuel combustion (22 percent).

Air Quality Monitoring

Existing local air quality, historical trends, and projections of air quality are best evaluated by reviewing relevant air pollutant concentrations from near the project area. The nearest air monitoring station is the Morro Bay station, located at 899 Morro Bay Boulevard, approximately 5 miles north-northwest of the project. The Morro Bay station measures NO_2, ozone, and PM_{10}. The San Luis Obispo ambient air monitoring station is located at 3320 South Higuera Street, approximately 8 miles east-southeast of the project. The San Luis Obispo station measures ozone, PM_{10}, $PM_{2.5}$ and CO. Since CO is a localized pollutant and the San Luis Obispo station is several miles away from the project, the San Luis Obispo station CO monitoring results are not included in this section.

Table 5.9-2 summarizes 2005 through 2007 published monitoring data from the CARB's Aerometric Data Analysis and Management System (ADAM) from the Morro Bay and San Luis Obispo stations. As shown in Table 5.9-2, ambient air pollution concentrations in the Morro Bay area have not exceeded the State 1-hour ozone standard or the federal 8-hour ozone standard in the last three years. In addition, levels of PM_{10} exceeded the State standard one day in 2006 and $PM_{2.5}$ levels have not exceeded the federal standard in the last three years. However, it is important to note that there was insufficient information to estimate the number of days above the federal daily $PM_{2.5}$ standard in 2005. There was only 27 percent monitoring coverage for that year.

According to the SLOAPCD 2006 Annual Air Quality Report (SLOAPCD 2007), the exceedance of the State standard at Morro Bay was due to smoke impacts from the Day Fire in the Angeles National Forest.

Table 5.9-2: Air Quality Monitoring

Air Pollutant	2005	2006	2007
Ozone - Morro Bay			
Max 1 Hour (ppm) Days > CAAQS (0.09 ppm)	0.073 0	0.063 0	0.071 0
Max 8 Hour (ppm) Days > NAAQS (0.08 ppm[1]) Days > CAAQS (0.070 ppm)	0.070 0 0	0.057 0 0	0.062 0 0
Nitrogen Dioxide - Morro Bay			
Max 1 Hour (ppm) Days > CAAQS (0.25 ppm)	0.047 0	0.046 0	0.046 0
Particulate Matter (PM_{10}) - Morro Bay			
Max Daily California Measurement Days > CAAQS (50 μg/m^3) Days > NAAQS (150 μg/m^3)	45 0 0	**62** 1 0	42 0 0
Particulate Matter ($PM_{2.5}$) - San Luis Obispo			
Max Daily Measurement Days > NAAQS (35 μg/m^3)	11.4 *	24.2 0	19.2 0

Abbreviations:
> = exceed; ppm = parts per million; μg/m^3 = micrograms per cubic meter
CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard
Mean = Annual Arithmetic Mean
Source: CARB 2008b

Local Sources of Air Pollution

Local sources of air pollution include the Morro Bay Power Plant located approximately 5 miles northwest of the project that has been in operation since 1955. The Power Plant is currently under the ownership of Dynegy Morro Bay, LLC and was granted a Prevention of Significant Deterioration (PSD) permit by the United States Environmental Protection Agency (EPA) on September 25, 2008. The PSD permit was needed because of a proposed modernization project that would replace four existing 1950 to 60's era fossil fuel-fired electric utility steam generators with two combined cycle gas turbine block units; replace three existing 450-foot exhaust stacks with two 145-foot exhaust stacks; and remove existing fuel oil tanks. The modernization project would increase output from 1,002 to 1,200 megawatts (MW) of electrical power. The modernization project would result in the reduction of emissions of NO_X, CO, and VOC but would result in an increase of emissions of PM_{10} and SO_2. The project was subject to PSD review for PM_{10} because the increase in PM_{10} emissions would exceed the PSD significance threshold. The PSD permit requires the exclusive use of low-sulfur content natural gas, requires performance tests, limits emissions of PM_{10}, and limits hours of operation of the heat recovery steam generator duct burners.

In addition, State Highway 1, located approximately 3 miles north and northeast of the project site, contributes vehicle exhaust emissions to the region with approximately 46,500 to 48,500 annual average daily trips.

Approximately 7 miles south of the project is the Diablo Canyon Power Plant, an electricity-generating nuclear power plant that produces about 18,000 gigawatt hours (GWh) of electricity annually, supplying the electrical needs of more than 2.2 million people. However, since the Plant is on the other side of the Irish Hills, is it not deemed a significant local source of pollution.

Elimination of Existing Sources

All the Proposed Projects include the elimination of the current method of septage handling in the Los Osos Area. Within the Prohibition Zone, there are currently 4,281 septic tanks serving homes, businesses, mobile home parks, and schools (Carollo 2008a). These septic tanks are currently pumped every five years and the septage is hauled to the Santa Maria Wastewater Treatment Plant. The existing tanks are estimated to be an average of 1,500 gallons each and typical septage hauler trucks have and approximately capacity of 3,000 gallons. The pumping frequency of once every five years would require an average of 428 loads per year.

In order to account for the reduction of emissions that would result in the elimination of this practice, current level of emissions for septage hauling and septic tanks needs to be subtracted from the estimated project totals. Table 5.9-3 shows the estimated criteria emissions for the existing operation. In addition, the septage hauling operations also emits 201,045 metric tons of carbon dioxide equivalent ($MTCO_2e$). Carollo (2008b) estimates that the existing septic tanks emit another 840 $MTCO_2e$.

Table 5.9-3: Estimated Criteria Emissions for Existing Operations

Pollutant	Pounds per Day	Tons per Quarter
ROG	0.12	0.00
CO	1.15	0.04
NO_X	5.54	0.17
PM_{10}	0.15	0.00
Source: MBA 2008.		

Sensitive Receptors

The location of a development project is a major factor in determining whether it will result in localized air quality impacts. The potential for adverse air-quality impacts increases as the distance between the source of emission and members of the public decreases. Impacts on sensitive receptors are of particular concern. Sensitive receptors are defined as facilities that house or attract children, the elderly, people with respiratory illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.

During construction activities, such as installation of pipes and septic tanks, sensitive receptors, such as family residences, would be in proximity to the construction activity. Operation of the project treatment facilities are proposed on either the Giacomazzi Site or the Tonini Site. The nearest residences to the Giacomazzi Site are approximately 0.2 miles southwest and the nearest residences to the Tonini Site are approximately 0.6 miles southwest. Schools within 3 miles of either proposed treatment sites are summarized in Table 5.9-4.

Table 5.9-4: Sensitive Receptors within 3 Miles of Treatment Facilities

School	Address	Distance from Giacomazzi Site (miles)	Distance from Tonini Site (miles)
Sonshine Preschool	1900 Los Osos Valley Road	0.4	1.5
Los Osos Middle School	1555 El Morro	1.5	2.4
Sunnyside Head Start	880 Manzanita Drive	1.9	3.0
Baywood Elementary	1330 9th Street	2.1	3.1
Village Childrens Center	490 Los Osos Valley Road	2.4	3.5
Bay-Osos Montessori	1269 3rd Street	2.5	3.5
Monarch Grove Elementary	348 Los Osos Valley Road	2.6	3.7
Source: MBA 2008.			

Alternative Forms of Transportation

Public transportation within the community of Los Osos is provided by San Luis Obispo Regional Transit Authority, which also serves the communities of Atascadero, Cambria, Cayucos, Grover Beach, Morro Bay, Paso Robles, San Miguel, San Luis Obispo, Santa Margarita, Shell Beach, and Templeton. The agency provides regional fixed route (RTA) service and local dial-a-ride (DAR) services to the Los Osos area. In addition, the Americans with Disabilities Act (ADA) paratransit dial-a-ride services are also available by the Runabout service for disabled persons and seniors. A division of the SLORTA operates SLO Rideshare.

5.9.3 - Regulatory Setting

Air pollutants are regulated at the national, State, and air basin level; each agency has a different degree of control. The EPA regulates at the national level. The CARB regulates at the State level and the SLOAPCD (or District) regulates at the County level. In addition, land use decisions, policies, and guidance by the County of San Luis Obispo also regulate air quality through regulation of location, design, and operation of land uses that impact air quality.

Federal and State Policies and Regulations

Air quality protection at the national level is provided through the Federal Clean Air Act (CAA). The current version was signed into law on November 15, 1990. These amendments represent the fifth major effort by the U.S. Congress to improve air quality. The 1990 CAA amendments are generally less stringent than the California Clean Air Act (CCAA). However, unlike the California law, the CAA sets statutory deadlines for attaining federal standards. The 1990 CAA Amendments added several new sections to the law, including requirements for the control of toxic air contaminants; reductions in pollutants responsible for acid deposition; development of a national strategy for stratospheric ozone and global climate protection; and requirements for a national permitting system for major pollution sources

The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans (SIP), provides research and guidance in air pollution programs, and sets National Ambient Air Quality Standards (NAAQS), also known as federal standards. There are NAAQS for six common air pollutants, called criteria air pollutants, which were identified resulting from provisions of the Clean Air Act of 1970. The six criteria pollutants are:

- Ozone
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Nitrogen dioxide
- Carbon monoxide (CO)
- Lead
- Sulfur dioxide

The NAAQS were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants.

The SIP for the State of California is administered by the CARB, who has overall responsibility for statewide air quality maintenance and air pollution prevention. A SIP is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain NAAQS. The SIP incorporates the individual federal attainment plans for regional air districts. Regional air quality attainment plans (AQAPs) prepared by individual regional air districts are sent to the CARB to be approved and incorporated into the California SIP. SIPs include the technical foundation for understanding the air quality (e.g. emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms. The CARB also administers California ambient air quality standards (CAAQS) for the ten air pollutants designated in the CCAA. The ten State air pollutants are the six federal criteria pollutants listed above plus:

- Visibility reducing particulates
- Hydrogen sulfide
- Sulfates
- Vinyl chloride

The national and State ambient air quality standards are summarized in Table 5.9-5.

The CCAA was signed into law in September of 1988. It requires all areas of the State to achieve and maintain the CAAQS by the earliest practicable date. These standards are generally more stringent than the federal standards; thus, emission controls to comply with the State law are more stringent than necessary for attainment of the federal standards. Pursuant to the requirements of the law, the SLOAPCD adopted a Clean Air Plan (CAP) for their jurisdiction.

Table 5.9-5: Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard
Ozone (O_3)	1 hour	0.09 ppm	—
	8 hour	0.070 ppm	0.08 ppm
Particulate Matter (PM_{10})	24 hour	50 $\mu g/m^3$	150 $\mu g/m^3$
	Mean	20 $\mu g/m^3$	—
Particulate Matter ($PM_{2.5}$)	24 hour	—	35 $\mu g/m^3$
	Mean	12 $\mu g/m^3$	15 $\mu g/m^3$
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	—
	Mean	0.030 ppm	0.053 ppm

Table 5.9-5 (Cont.): Ambient Air Quality Standards

Air Pollutant	Averaging Time	California Standard	National Standard
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	—
	3 hour	—	0.5 ppm
	24 hour	0.04 ppm	0.14 ppm
	Mean	—	0.030 ppm
Lead	30-day	1.5 $\mu g/m^3$	—
	Quarter	—	1.5 $\mu g/m^3$
Sulfates	24 hour	25 $\mu g/m^3$	—
Hydrogen Sulfide	1 hour	0.03 ppm	—
Vinyl Chloride	24 hour	0.01 ppm	—
Visibility Reducing Particles	8 hour	Extinction coefficient of 0.23 per kilometer, visibility of ten miles or more due to particles when relative humidity is less than 70%.	—

ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
Mean = Annual Arithmetic Mean
30-day = 30-day average
Quarter = Calendar quarter
Source: CARB 2008c.

Recent Air Quality Standards Actions

In 2006, EPA tightened the 24-hour $PM_{2.5}$ standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$ and retained the existing annual standard of 15 $\mu g/m^3$. The EPA promulgated a new 8-hour standard for ozone on March 12, 2008, effective March 27, 2008. In addition, the EPA is proposing to revise the lead standard to within the range of 0.10 $\mu g/m^3$ to 0.30 $\mu g/m^3$, and is currently holding public hearings and accepting comments.

The State nitrogen dioxide standard was amended on February 22, 2007. These changes became effective March 20, 2008.

Naturally Occurring Asbestos Regulation

The CARB's approved Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations (CARB 2008d) requires application of best management practices to control fugitive dust in areas known to have NOA, and also requires notification to the local air district prior to commencement of ground-disturbing activities. In addition, the SLOAPCD requires submittal of a Naturally Occurring Asbestos Construction and Grading Project Form for all grading projects in serpentine rock larger than 1 acre to prior to construction and assesses review fees for all work that has the potential to disturb soil containing NOA. All project construction occurs in areas designated by the SLOAPCD as "Geologic Analysis Required." Work in asbestos serpentine areas may require an Asbestos Dust Mitigation Plan and may include air monitoring. NOA Review Fee amounts depend upon the project size. Exemptions from requirements are available based on geological evaluation.

CARB's Land Use Handbook

In order to provide information that will help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution, the CARB published a Land Use Handbook (CARB 2005b). The Land Use Handbook provides information and guidance on siting sensitive receptors in relation to sources of TACs. The sources of TACs identified in the Land Use Handbook are high traffic freeways and roads, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and large gas dispensing facilities. If the project involves siting a sensitive receptor or source of TAC discussed in the Land Use Handbook, siting mitigation may be added to avoid potential land use conflicts, thereby reducing the potential for health impacts to the sensitive receptors.

Climate Change Policies and Regulation

There has been significant legislative activity regarding global climate change and greenhouse gases in California. Although it was not originally intended to reduce GHGs, California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The latest amendments were made in October 2005 and currently require new homes to use half the energy they used only a decade ago. Energy efficient buildings require less electricity, and electricity production by fossil fuels results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased GHG emissions.

Assembly Bill (AB) 1493

California Assembly Bill 1493 (Pavley), enacted on July 22, 2002, required the CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by the CARB will apply to 2009 and later model year vehicles. The CARB estimates that the regulation will reduce climate change emissions from the light duty passenger vehicle fleet by an estimated 18 percent in 2020 and by 27 percent in 2030.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels;
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Climate Action Team

To meet these targets, the Governor directed the Secretary of the California Environmental Protection Agency (Cal EPA) to lead a Climate Action Team (CAT) made up of representatives from the Business, Transportation and Housing Agency; the Department of Food and Agriculture; the Resources Agency; the Air Resources Board; the Energy Commission; and the Public Utilities Commission. The CAT's Report to the Governor in 2006 contains recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met (CAT 2006).

The CAT report contains baseline emissions as estimated by the CARB and the California Energy Commission. The CAT Report also contains strategies that many other California agencies can employ. The CAT published a public review draft of Proposed Early Actions to Mitigate Climate Change in California in 2007. Most of the strategies were in the 2006 CAT Report or are similar to the 2007 CAT strategies.

Assembly Bill (AB) 32

Also in 2006, the California State Legislature adopted Assembly Bill AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions in California. AB 32 requires the CARB to adopt rules and regulations that would achieve GHG emissions equivalent to statewide levels in 1990, by 2020.

The CARB is the State agency charged with monitoring and regulating sources of emissions of GHGs that cause global warming. AB 32 requires that by January 1, 2008, CARB determine what the statewide GHG emissions level was in 1990, and it must approve a statewide greenhouse gas emissions limit so it may be applied to the 2020 benchmark.

The CARB Board approved the 1990 greenhouse gas emissions level of 427 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) on December 6, 2007. Therefore, in 2020, emissions in California are required to be at or below 427 $MMTCO_2e$. Under the current "business as usual" scenario, statewide emissions are increasing at a rate of approximately 1 percent per year as noted below. Also shown are the average reductions needed from all statewide sources (including all existing sources) to reduce greenhouse gas emissions back to 1990 levels.

- 1990: 427 $MMTCO_2e$
- 2004: 480 $MMTCO_2e$ (11 percent reduction needed to achieve 1990 AB 32 baseline)
- 2008: 495 $MMTCO_2e$ (14 percent reduction needed to achieve 1990 AB 32 baseline)
- 2020: 600 $MMTCO_2e$ Business As Usual (29 percent reduction needed to achieve 1990 level)

Early Action Measures

Under AB 32, the CARB published its Final Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California (CARB 2007b). Discrete early action measures are currently underway or are enforceable by January 1, 2010. Early action measures are regulatory or non-regulatory and are currently underway or to be initiated by the CARB in the 2007 to 2012 timeframe. The CARB has 44 early action measures that apply to the transportation, commercial, forestry, agriculture, cement, oil and gas, fire suppression, fuels, education, energy efficiency, electricity, and waste sectors. Of those early action measures, nine are considered discrete early action measures, as they are regulatory and enforceable by January 1, 2010. The CARB estimates that the 44 recommendations are expected to result in reductions of at least 42 $MMTCO_2e$ by 2020, representing approximately 25 percent of the 2020 target.

Local Policies and Regulations

San Luis Obispo County Air Pollution Control District

The regional air pollution control agency for the San Luis Obispo portion of the SCCAB is the SLOAPCD. The SLOAPCD establishes a program of rules and regulations to regulate emissions and emission sources. The SLOAPCD shares responsibility with the CARB for ensuring that all State and federal ambient air quality standards are achieved and maintained within the County. State law assigns to local districts the primary responsibility for control of air pollution from stationary sources, while reserving an oversight role for the CARB. This is typically accomplished through the adoption and implementation of rules and regulations. Generally, the districts must meet minimum State and EPA program requirements; in most instances, districts can implement more stringent regulations than EPA or the State require. The District is also responsible for the inspection of stationary sources, monitoring of ambient air quality, development and updating of attainment plans, and maintenance of the emission inventory. Districts in State nonattainment areas must also develop and implement reasonably available transportation control measures.

Attainment Status

There are three terms generically used to describe if an air basin is exceeding or meeting federal and State standards: Attainment, nonattainment, and unclassified or unclassifiable. Air basins are assessed for each applicable standard and receive a designation for each standard based on that assessment. If an ambient air quality standard is exceeded, the air basin is designated as "nonattainment" for that standard. An air basin is designated as "attainment" for standards that are met. If there is inadequate or inconclusive data to make a definitive attainment designation for an air quality standard, the air basin is considered "unclassified." With some federal standards, only two divisions are used. Either the area is not in attainment for the standard or is classified unclassifiable/attainment. It should be noted that for State standards, designations are only made on a pollutant-by-pollutant basis, therefore, an area must achieve attainment for each averaging time for it to achieve attainment for that pollutant. The current attainment designations for the project area are shown in Table 5.9-6 below.

The County has been designated as a nonattainment area for the State PM_{10} standard. The County achieved ozone attainment status in January 2004. SLOAPCD was one of three air districts in California in 2004 to be re-designated from nonattainment to attainment for the State 1-hour ozone standard. San Luis Obispo County was first designated nonattainment for the State 1-hour ozone standard in 1989 after adoption of the CCAA. The law required each nonattainment area to develop a plan to attain the standards expeditiously.

Table 5.9-6: SLOAPCD Attainment Status

Pollutant	State Status	Federal Status
Ozone	Nonattainment	Unclassifiable/Attainment
Carbon monoxide	Attainment	Unclassifiable/Attainment
Nitrogen dioxide	Attainment	Unclassifiable/Attainment
Sulfur dioxide	Attainment	Unclassifiable
Particulate matter (PM_{10})	Nonattainment	Unclassifiable
Particulate matter ($PM_{2.5}$)	Attainment	Unclassifiable/Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	No federal standard
Hydrogen Sulfide	Attainment	
Vinyl Chloride	N/A*	
Visibility Reducing Particles	Unclassified	

Notes:
* Due to the carcinogenicity of vinyl chloride, the vinyl chloride standard is not a threshold but is the minimum detectable (in 1978).
Source: CARB 2006.

Clean Air Plan

The SLOAPCD's Clean Air Plan (CAP) (SLOAPCD 2001) outlines the District's strategies to reduce ozone precursor emissions from a wide variety of stationary and mobile sources. The 2001 CAP was adopted by the Air Pollution Control Board at their hearing on March 26, 2002. The CAP is used by the District to address attainment of national and State fugitive dust (PM_{10}) and ozone standards for the entire County (SLOAPCD 2003). The CAP is a comprehensive planning document intended to provide guidance to the APCD and other local agencies, including the County of San Luis Obispo, on how to attain and maintain the State standard for ozone and PM_{10}. The CAP presents a detailed description of the sources and pollutants, which impact the jurisdiction, future air quality impacts to be expected under current growth trends, and an appropriate control strategy for reducing ozone precursor emissions, thereby improving air quality.

San Luis Obispo County Resource Management System

Air quality has been identified as a limiting resource in the Resource Management System (RMS) of the San Luis Obispo County General Plan. The RMS is an information tool used by the County to balance land development with the resources necessary to sustain such development. The focus of the RMS is on data collection, problem identification, and development of appropriate solutions. When a deficiency becomes evident, three courses are available to avoid jeopardizing public health or welfare: the resource capacity may be expanded; the rate of depletion may be slowed using conservation measures; or, development may be restricted or redirected to areas with remaining resource capacity. The RMS utilizes three alert levels to identify the severity of a resource deficiency. Level I occurs when sufficient lead time exists to either expand the capacity of the resource or decrease its rate of depletion. Level II identifies the crucial point at which some moderation of the rate of resource use must occur to prevent exceeding the resource capacity. Level III indicates that the demand for the resource equals or exceeds the supply. The formal designation of the County as a nonattainment area for the State ozone standard triggered an RMS Level II alert, based on criteria adopted by the San Luis Obispo County Board of Supervisors. Level II status requires the development of a resource capacity study. The Clean Air Plan serves as the resource capacity study for air quality by identifying the causes and extent of the existing problem and by recommending appropriate corrective actions.

Particulate Matter Report

In addition, the California Legislature enacted Senate Bill 656 (Sher) in 2003 to reduce public exposure to PM_{10} and $PM_{2.5}$. SB 656 required the CARB, in consultation with local air pollution control districts, to develop and adopt a list of PM reduction strategies. The SLOAPCD's Governing Board adopted the PM Report and associated control measures in 2005 (SLOAPCD 2005). This report describes the steps taken by the SLOAPCD to meet the requirements of SB 656 by developing a list of control strategies with the associated rulemaking timeline to reduce PM from local sources. Each proposed control strategy in the report is subject to the District's rule adoption process that includes public notice and review, explanatory workshops, public hearings for Board consideration and approval, and CARB approval.

Local Air Quality Regulations

The SLOAPCD establishes a program of rules and regulations to obtain and maintain the State and national air quality standards. The following rules may be applicable to the project:

> **Rule 204 - Requirements**. This rule contains standards for granting Authority to Construct (ATC) or Permit to Operate (PTO), provisions for denying an ATC to new, replacement, modified, or relocated emissions units, and offset requirements for ROG, NO_X, PM_{10}, SO_X, and CO,
>
> **Rule 206 - Conditional Approval.** This rule allows the SLOAPCD to issue an ATC or PTO, subject to conditions, which will insure the compliance of any machine, article, equipment, or other contrivance within the standards of Rule 204, including, but not limited to, emission limits on an annual basis or any other appropriate period of time.
>
> **Rule 402 - Nuisance.** This rule limits the discharge of such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Rule 404 - Sulfur Compounds Emissions Standards, Limitations, and Prohibitions. This rule limits the discharge of sulfur compounds from any single source of emission to 0.2 percent by volume of discharge or less.

Rule 420 - Cutback Asphalt Paving Materials. This rule applies to the manufacture, application and sale of cutback and emulsified asphalt materials for the paving, construction, and maintenance of streets, highways, parking lots, and driveways.

Rule 601 - New Source Performance Standards (NSPS). All new stationary sources of air pollution, and all modified or reconstructed stationary sources of air pollution must comply with the standards, criteria, and requirements set in this rule. The rule incorporates provisions of the Code of Federal Regulations as part of the Rules and Regulations of SLOAPCD. Specifically, 40 CFR Part 60 Subpart O (Standards of Performance for Sewage Treatment Plants) applies to the Project.

Coastal Zone Land Use Elements

The Coastal Zone Land Use Elements (CZLUE) identify land as belonging to one of 13 categories. It also contains official maps, a framework for planning, 'Area Plans' to determine type and scope of development, and coastal plan policies; which are additional policies for use for development within the Coastal Zone. Because the Proposed Projects are all within the coastal zone, these coastal plan policies are applicable. These elements serve as a statement of County land use policies and intentions regarding future growth. They also serve as a guide for daily decisions regarding land use. The elements within the General Plan address components such as Land Use, Conservation, and Open Space. Some elements are required to be included in the plan, whereas State law also allows the adoption of additional elements. These are selected based on their appropriateness to local conditions.

The elements include the Local Coastal Program (LCP), which applies to those areas within the Coastal Zone. For the purposes of preparing the LCP, the County is divided into four segments. Los Osos is located within the region covered by the Estero Area Plan.

Estero Area Plan

As part of the CZLUE, an "Area Plan" allocates land use throughout a planning area by locating land use categories. These land use categories determine the variety of land uses that may be established on a parcel of land, and also define their allowable density and intensity. The Area Plan contains sections on population and economy, public facilities and services, circulation, and land use. The Area Plan is for general guidance only and is not to be used to approve or disapprove of development or land use proposals.

The Estero Area Plan (contained within the General Plan) is the prime planning document for the Estero Area, which includes coastal regions from Cayucos to Los Osos, but excludes the City of Morro Bay. The Plan applies to the community of Los Osos and nearby areas. It establishes zoning for properties, planning area standards, and policies that relate to historical sites. It also establishes circulation plans and policies for parks, recreation, libraries, and other services.

5.9.4 - Thresholds of Significance

Appendix G Environmental Checklist

According to the CEQA Guidelines' Appendix G Environmental Checklist, to determine whether impacts to air quality are significant environmental effects, the following questions are analyzed and evaluated.

> Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.
>
> Would the project:
>
> a.) Conflict with or obstruct implementation of the applicable air quality plan?
>
> b.) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
>
> c.) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?
>
> d.) Expose sensitive receptors to substantial pollutant concentrations?
>
> e.) Create objectionable odors affecting a substantial number of people?

Other Thresholds

General Plan

Would the project conflict with any air quality related, applicable San Luis Obispo County General Plan goals and policies adopted for the purposes of avoiding or mitigating an environmental effect?

CEQA Air Quality Handbook

The CEQA Air Quality Handbook (SLOAPCD 2003) established four separate categories of evaluation for determining the significance of project impacts. Full disclosure of the potential air pollutant and/or toxic air emissions from a project is needed for these evaluations, as required by CEQA:

1. Comparison of calculated project emissions to District emission thresholds;
2. Consistency with the most recent Clean Air Plan (CAP) for San Luis Obispo County;
3. Comparison of predicted ambient pollutant concentrations resulting from the project to state and federal health standards, when applicable; and

4. The evaluation of special conditions, which apply to certain projects.

Comparison to District Thresholds

The CEQA Air Quality Handbook defines thresholds for long-term operational emissions and short-term construction related emissions. Depending on the level of exceedance of a defined threshold, the District has established varying levels of mitigation.

The threshold criteria established by the SLOAPCD to determine the significance and appropriate mitigation level follows a tiered approach based on the overall amount of emissions generated by the project. These levels are discussed below:

- For projects with estimated emissions less than 10 pounds per day (lbs/day) of ROG, NO_X, SO_2, or PM_{10} or less than 550 lbs/day for CO, there are no significant air quality impacts associated with the project.
- For projects that are estimated to emit 10 to 24 lbs/day of ROG, NO_X, SO_2, or if PM_{10} has the potential to cause significant air quality impacts, but application of on-site mitigation measures, following the guidelines provided by the District, these are considered feasible mitigation to achieve levels less than significant.
- For projects with estimated emissions greater than or equal to 25 lbs/day or more of ROG, NO_X, SO_2, or PM_{10} or greater than or equal to 550 lbs/day of CO, these are considered potentially significant and all feasible mitigation must be applied. CO emission levels equal to or exceeding 550 lbs/day should be modeled to determine their significance. Additional mitigation measures, including off-site mitigation, may be required depending on the level and scope of air quality impacts identified in the EIR.

Short-term Construction Emissions

Use of heavy equipment and earth-moving operations during project construction can generate fugitive dust and combustion emissions that may have substantial temporary impacts to local air quality. Fugitive dust emissions would result from land clearing, demolition, ground excavation, cut and fill operations, and equipment traffic over temporary roads at the construction site. Combustion emissions such as NO_X, and diesel particulate matter, are most significant when using large diesel fueled scrapers, loaders, dozers, haul trucks, compressors, generators, and other types of equipment. Any construction activities with estimated emissions greater than 185 lbs/day of ROG or NO_X require Best Available Control Technology for construction equipment (CBACT). In addition, any construction project that is estimated to emit between 2.5 and 6.0 tons per quarter would also require CBACT. A project with more than 6.0 tons of ROG or NO_X per quarter requires further mitigation, including emission offsets

Consistency with the Clean Air Plan

At a project level, a consistency analysis with the CAP may be necessary depending on the project being considered. Examples of types of projects that would require a consistency analysis include subdivisions, large residential developments, and large commercial/industrial developments. It is unclear whether the Proposed Project would require a consistency analysis pursuant to District Guidelines but an analysis is required under CEQA Guidelines Appendix G.

Comparison to Standards

Industrial and large commercial projects are sometimes required to perform air quality dispersion modeling if the air district determines that project emissions may have the potential to cause an exceedance of these standards. In addition a specific modeling analysis is necessary to determine possible violation of CO standards when a project generates large enough vehicular activity that impacts intersections to the point that idling vehicles could cause a CO Hot Spot. The proposed project would not have the size or vehicle generation rate to require dispersion modeling.

Special Conditions

The District CEQA Guidelines also identifies special conditions that may need analysis of significance. The proposed project would not emit a significant amount of toxic or hazardous air pollutants; would not result in release of a significant quantity of diesel emissions during its operation; and does not involve any remodeling or demolition activities.

However, the proposed project is in a portion of the County that requires a geologic analysis for NOA, therefore requiring a determination of significance. One of the locations of the treatment plant is close to a preschool, therefore requiring a significance determination regarding sensitive receptors. In addition, the proposed project has the potential to cause an odor and would require a significance determination. These determinations are made in the significance thresholds listed in CEQA Guidelines Appendix G.

Greenhouse Gas/Climate Change

CEQA requires lead agencies to evaluate potential environmental effects based to the fullest extent possible on scientific and factual data. Significance conclusions must be based on substantial evidence, which includes facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts. In fact, Senate Bill 97 in 2007 set up a requirement for the Office of Planning and Research (OPR) prepare, develop, and transmit guidelines to help establish thresholds for greenhouse gases. This has not yet been accomplished. In a recent Technical Advisory (OPR 2008), the OPR provides their perspective on the emerging role of addressing climate change in CEQA documents but fails to include a suggested threshold of significance. In lieu of OPR guidance, CEQA Guidelines Section 15064.7 indicates, “each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.”

Therefore, for the analyses used in this EIR to determine whether climate change impacts are significant environmental effects, the following threshold is used:

- Does the Project comply with the provisions of an adopted Greenhouse Gas Reduction Plan or Strategy? If no such Plan or Strategy is applicable, would the Project significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32?

5.9.5 - Analysis

This section analyzes Proposed Projects 1 through 4. The analysis includes a discussion of project-specific and cumulative impacts, provides mitigation measures where required, and concludes with a determination of level of significance after mitigation.

Impact Analysis Methodology

Impacts have been analyzed using a reasonable worst-case analysis approach for air quality resources. The specific methodologies of each worst-case approach are described within Chapter V under each impact section, subsection 5 (Project-specific Impacts and Mitigation Measures), as applicable. Emission estimates for the proposed project have been determined through the following:

- Consultation with the SLOAPCD;
- Use of the SLOAPCD CEQA Air Quality Handbook (SLOAPCD 2003);
- Use of the SLOAPCD Clean Air Plan (SLOAPCD 2001);
- Use of established emission factors that quantify the amount of emissions of a pollutant per unit time or energy volume; and,
- Mass emission estimates that quantify the amount of emissions of a pollutant in pounds per cubic yard of earthwork.

Subsequent to the determination of emission estimates for any individual project resulting from the proposed rezoning and development, emissions were analyzed in accordance with the thresholds of significance put in place by the SLOAPCD. This analysis provides the basis for the determination of the specific level of impact significance in association to SLOAPCD tiered thresholds.

Air Quality Plan

5.9-A:	**The project would not conflict with or obstruct implementation of the applicable air quality plan.**

Project-Specific Impact Analysis

Proposed Projects 1 through 4

Secondary impacts associated with emissions associated with the continued development of vacant lands within the community in accordance with the adopted Estero Area Plan are assessed by determining consistency of the project with the adopted Clean Air Plan. Consistency is determined by comparing projected population and vehicle trip generation with projections contained in the CAP, and by assessing whether or not all of the applicable land use strategies contained in the CAP are being incorporated into the project as appropriate. The SLOAPCD's CAP states that a consistency analysis is generally required for a Program Level Environmental Impact Report and may be necessary for a Project Level EIR, depending on the project being considered. Examples given of projects and programs requiring a consistency analysis include general plan updates and amendments, specific plans, area plans, large residential developments, and large commercial or industrial developments. The following analysis compares applicable CAP consistency criteria with the project description.

- **Are the population projections contained in the proposed Estero Area Plan equal to or less than those used in the CAP?**

  The adopted Estero Area Plan would accommodate a buildout population of about 31,729 within the total Estero Area Plan planning area, an increase of 12,995 over the current planning area population of about 18,734. The CAP projects a population of 35,013 for the Estero Area by the year 2020. Thus, the projected population contained in the Area Plan is consistent with, and slightly lower than, the CAP projection.

  The Proposed Projects 1 through 4 are being designed to accommodate full buildout of the land uses within the Los Osos Urban area portion of the Estero Planning Area with a population of 20,590 residents. This buildout population is less than that accommodated by the Estero Area Plan for the community of Los Osos. Therefore, construction of Proposed Projects 1 through 4 would be consistent with the Clean Air Plan because it would accommodate a buildout population that is less than the projections for the planning area contained in the CAP.

  Moreover, it would take about 27 years to reach buildout based on the maximum 2.3 percent annual growth rate allowed by the Countywide Growth Ordinance, which is beyond the planning time frame (20 years) envisioned by the Estero Area Plan. Therefore, the proposed Area Plan is consistent with the CAP and secondary impacts related to population growth are considered less than significant.

- **Is the rate of increase in vehicle trips and miles traveled equal to or less than the rate of population growth projected by the proposed Estero Area Plan?**

  Since Proposed Projects 1 through 4 would accommodate a buildout population that is less than that contained in the CAP, the rate of growth of vehicle trips is not expected to exceed population growth.

- **Have the applicable land use planning strategies and transportation control measures contained in the Clean Air Plan been incorporated into the project to the extent feasible?**

  A third measure of consistency is whether Proposed Projects 1 through 4 are consistent with the various policies and strategies described in the CAP for attainment of the ozone and PM_{10} standards. Overall, the CAP promotes the use of both circulation and land use strategies to help meet the State ozone standard. The following discussion focuses on applicable land use strategies contained in the CAP.

Compact Communities. Strategy L-1 of the CAP promotes the development of communities in which housing, job centers, and support services are located close together to enable the efficient use of alternate forms of transportation such as walking, bicycling, and transit. The strategy also promotes the development of urban land uses within the existing urban reserve lines of cities to discourage "sprawl".

Proposed Projects 1 through 4 are designed to serve properties within the Regional Water Quality Control Board (RWQCB) Prohibition Area, which is contained within the Los Osos Urban Area Urban Reserve Line. Moreover, no changes to the urban reserve line are proposed. Overall, the Estero Area Plan incorporates the intent of this policy.

Providing For Mixed Land Uses. A corollary to strategy L-1, the mixed-use strategy promotes the development of land uses in proximity that are complementary in terms of trip origins and destinations. For example, projects that incorporate residences with commercial or office land uses on the same site promote walking and make vehicle trips shorter.

Development of a treatment site with a wastewater treatment facility under Proposed Projects 1 through 4 would limit opportunities to develop mixed uses on the same site.

Balancing Jobs and Housing. This strategy encourages the development of housing in sufficient quantities and price to meet the needs of the local work force, enabling workers to live near their jobs and reduce the home-to-work commute distance. For areas that are "housing rich", this strategy would promote the development of job-generating land uses to encourage residents to work within a city or unincorporated community. Communities with jobs/housing ratios of between 1.0 and 1.6 jobs per housing unit are typically considered "balanced."

According to the County Planning Department, the Estero Plan planning area can be considered “housing rich” for purposes of discussing the jobs/housing balance. The draft Area Plan proposes to increase the amount of land devoted to non-residential land uses.

Cumulative Impact Analysis

Proposed Projects 1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel

Storage Facility at Diablo) have no physical overlap with the proposed project; however, they could contribute to the same air basin impacts. Since Proposed Projects 1 through 4 would not conflict with or obstruct implementation of the CAP, the proposed facilities that are part of Proposed Projects 1 through 4 would not contribute to cumulative impacts related to conflicting with or obstructing implementation of the CAP.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

No mitigation measures are required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

No impact.

Cumulative

Proposed Projects 1 through 4

No impact.

Air Quality Standards / Violations

5.9-B:	**The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

Project-Specific Impact Analysis

Proposed Projects 1 through 4

The SLOAPCD CEQA Handbook (SLOAPCD 2003) states that industrial and large commercial projects are sometimes required to perform air quality dispersion modeling if the District determines that project emissions may have the potential to cause an exceedance of these standards. Due to the relative short-term time frame (i.e., 2 years) for the construction of the collection system and the facilities at the treatment plant site and disposal sites as well as the low level of operational emissions as shown in Impact 5.9-C, Proposed Projects 1 through 4 would not exceed the District's concentration standards. Therefore, Proposed Projects 1 through 4 would result in less than significant impacts related to the District concentration standards.

Cumulative Impact Analysis

Proposed Projects 1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los

Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project; however, they could contribute to the same air basin impacts. Since the Proposed Projects 1 through 4 would not exceed the District's concentration standards, the projects would not contribute to potential cumulative impacts related to the exceedance of the District's concentration standards.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

No mitigation measures are required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

No impact.

Criteria Pollutant

5.9-C:	**The project may result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).**

Project-Specific Impact Analysis

The following analysis of potential construction impacts are based on conservative assumptions such as the use of different pieces of on-road and off-road equipment during various parts of the construction activities. However, contractors would be able to implement construction more efficiently using the same equipment for multiple construction activities. Therefore, the following emissions evaluation is considered very conservative.

Proposed Project 1

Collection System

Proposed Project 1 utilizes a Septic Tank Effluent (STE) Collection System that is comprised of both septic tank effluent pumps (STEP) and septic tank effluent gravity (STEG) collection lines. This is referred to as a STEP/STEG system. With this system, old septic tanks would be taken out of use and new STEP/STEG tanks, together with effluent pumps and controls, would be installed at each connection. A total of 4,679 new STEP/STEG tanks, together with associated pumps and controls, would be installed. The collection system also includes sewer lines laterally connecting the septic tanks to the street collection system, force main, pressure sewer collectors, isolation and air release valves, and flushing ports. Also included is a conveyance system to transmit raw wastewater from the Mid-Town site to the treatment plant.

Short-term Construction Impacts

The collection system of Proposed Project 1 would include the incorporation of approximately 129,000 linear feet of 4-inch sewer laterals from septic tanks to the street collection system; 31,600 linear feet of 6-, 8-, and 10-inch PVC force mains; 203,600 linear feet of pressure sewer collector, of which approximately half would be open trench and half would be horizontal drilling; 1,000 isolation and air release valves; 200 flushing ports, 4,679 new STEP/STEG tanks with accompanying effluent pumps and controls, and 18,700 linear feet of force main to convey the raw wastewater from Mid-Town to the treatment plant. In addition, the disturbance associated with construction activity would frequently involve areas where there would be a need for the removal and replacement of existing pavement, thus additional impacts are associated with the asphalt activity associated with repaving.

Types and usage estimates of off-road construction equipment was developed based on typical equipment and operating levels. Assumed equipment included track-mounted excavators, front-end loaders, rubber-tired backhoes, drilling equipment, motor graders, pavers, and rollers. Emission factors derived from OFFROAD2007 were used to estimate emissions. Collection system construction off-road activities resulted in an estimated 80,394 gallons of diesel consumed at a rate of 315.5 gallons per day.

For on-road exhaust emissions from construction activities, emissions factors were developed from EMFAC2007 V2.3 for San Luis Obispo County in 2007. Assumptions made include all model years from 1997 to 2007 for each vehicle class. Average emission factors for speeds ranging from 5 to 60 miles per hour were used. In addition, only vehicle travel within the boundaries of San Luis Obispo County was used. The following vehicle classes were used to establish appropriate emission factors:

- Employee commute - combination of light-duty auto and light-duty truck
- Excavation trips and construction waste trips - medium heavy-duty trucks
- Material trips to contractor's yard - heavy heavy-duty trucks
- Material trips to job site - light heavy-duty trucks

Use of heavy equipment and earth-moving operations during project construction would generate fugitive dust that could have substantial temporary impacts on local air quality. Fugitive dust emissions would result from land clearing, ground excavation, cut and fill operations, and equipment traffic over temporary dirt roads at construction sites. Fugitive dust emissions were estimated using the low level of detail fugitive dust estimation approach as defined in URBEMIS (SCAQMD 2007).

Table 5.9-7 shows short-term construction emissions associated with Proposed Project 1 in both pounds per day and tons per quarter in order to compare to various District thresholds. Emissions are provided for on-road sources that include material delivery, construction waste, excavation material delivery and disposal, and construction employee commute activity. Emissions are also estimated for exhaust from off-road construction equipment and fugitive dust that occurs through the relocating of soil.

As shown in Table 5.9-7, short-term construction emissions associated with the collection system would contribute to the potential to exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold for Proposed Project 1. Therefore, construction of the collection system in Proposed Project 1 would contribute to potential significant NO_X and PM_{10} emissions impacts.

Table 5.9-7: Proposed Project 1 Construction Emissions

System	Source	Pounds Per Day				Tons per quarter			
		ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Collection	On-road	1.7	22.5	45.6	1.4	0.04	0.67	1.27	0.04
	Off-road	26.9	101.8	213.1	18.0	4.34	16.88	34.37	2.95
	Fugitive	—	—	—	120.8	—	—	—	5.51
Conveyance	On-road	0.3	4.5	6.9	0.2	0.01	0.12	0.15	0.00
	Off-road	15.7	57.7	125.1	10.0	0.05	0.17	0.38	0.03
	Fugitive	—	—	—	29.7	—	—	—	1.35
Treatment	On-road	1.0	10.6	10.7	0.4	0.01	0.26	0.05	0.00
	Off-road	15.8	77.3	201.0	8.8	0.63	3.13	7.65	0.36
	Fugitive	—	—	—	72.2	—	—	—	3.29
Disposal	On-road	0.6	6.7	25.6	0.7	0.02	0.21	0.78	0.02
	Off-road	9.6	69.6	163.5	4.7	0.28	2.02	4.76	0.14
	Fugitive	—	—	—	102.7	—	—	—	4.68
TOTAL		**71.6**	**350.7**	**791.5**	**369.6**	**5.38**	**23.46**	**49.41**	**18.37**
District Threshold		185	N/A	185	N/A	6.0	N/A	6.0	2.5
Exceeds Threshold		No	N/A	**Yes**	N/A	No	N/A	**Yes**	**Yes**

N/A = no threshold
Source: MBA 2008.

Long-term Operational Impacts

Long-term operational emissions for the collection system for Proposed Project 1 would come from employee commute, maintenance activity, and regular transfer of septage from STEP/STEG tanks to the treatment plant by tanker truck. Maintenance includes inspecting STEP/STEG tanks and cleaning the effluent filters every two years and pumping the accumulated septage every five years. In addition, the pressure system would require maintenance and periodic replacement of the air-vacuum valve carbon filters and STEP/STEG tank effluent pumps and controls. Table 5.9-8 shows long-term operational emissions associated with Proposed Project 1. Additionally, the reductions associated with the cessation of current operations of septage handling are also presented and the net change in emissions associated with the implementation of Proposed Project 1.

As shown in Table 5.9-8, the net resulting long-term emissions related to the collection system of Proposed Project 1 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 1 would result in less than significant emissions of criteria pollutants.

Table 5.9-8: Proposed Project 1 Operational Emissions

System	Pounds Per Day			
	ROG	CO	NO_X	PM_{10}
Collection	0.04	1.52	0.66	0.02
Conveyance	0.01	0.39	0.05	0.00
Treatment	1.02	2.68	10.78	0.37
Disposal	0.00	0.00	0.00	0.00
TOTAL	**1.08**	**4.59**	**11.49**	**0.40**
Current Operations	0.12	1.15	5.54	0.15
NET DIFFERENCE	**0.96**	**3.44**	**5.95**	**0.25**
District Threshold	10	550	10	10
Exceeds Threshold	No	No	No	No
Source: MBA 2008.				

Treatment Plant Site

Proposed Project 1 utilizes a Partially-Mixed Facultative Pond (PMFP) Wastewater Treatment System to provide secondary treatment. The treatment plant would include headworks to screen out inorganics and measure flow; Partially Mixed Facultative Ponds; a septage receiving station; a Nitrogen Removal System with carbon addition, and a seasonal storage pond for treated effluent water.

Short-term Construction Impacts

The construction of the facilities at the treatment plant would include the construction of the headworks, ponds, and administration and maintenance structures on approximately 32 acres. Off-road construction equipment would include tracked and wheeled earth moving equipment, graders, compaction rollers, a backhoe, a trackhoe, and a crane. It would also include a water truck for dust suppression and asphalt paving equipment for the parking and vehicular maintenance.

As shown in Table 5.9-7, short-term construction emissions associated with the proposed facilities at the treatment plant site would contribute to the potential to exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold for Proposed

Project 1. Therefore, Proposed Project 1 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the facilities at the treatment plant site.

Long-term Operational Impacts

Long-term operational emissions for the treatment plant for Proposed Project 1 would come from employee commute, maintenance activity, and regular chemical deliveries. As shown in Table 5.9-8, the net resulting long-term emissions related to the treatment plant of Proposed Project 1 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 1 would result in less than significant emissions of criteria pollutants at the treatment plant site.

Disposal Sites

Effluent disposal would have two components; a leachfield and a sprayfield. An approximately 8-acre leachfield would be located at the Broderson site and designed to discharge up to 448 acre-feet per year of treated wastewater effluent. Construction of the leachfield includes excavation to an average depth of 6.5 feet during construction, backfilled with a 4-foot layer of gravel for drainage, and then covered by geotextile fabric. Final cover would consist of a minimum of 2.5 feet of native soil backfill. Also included would be percolation piping consisting of 4-inch perforated PVC pipe. Sprayfields are also proposed at the Tonini site and would allow for the spraying of effluent on land to dispose of the water through evapotranspiration and percolation. Treated effluent from the treatment facility would be pumped to the Tonini property through a pressurized pipeline.

Short-term Construction Impacts

Proposed Project 1 would require approximately 17,000 linear feet of 12-inch diameter pipeline to transmit treated effluent to the Broderson Leachfield, and approximately 9,800 linear feet of 12-inch diameter pipeline to transmit effluent to the Tonini Sprayfields. Construction of a pump station at the treatment plant to pump treated effluent to the Broderson Leachfield and a possible second pump station at Broderson would be required to achieve equal distribution throughout the disposal field.

As shown in Table 5.9-7, short-term construction emissions associated with the disposal sites would contribute to the potential to exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold for Proposed Project 1. Therefore, Proposed Project 1 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the facilities at the disposal sites.

.Long-term Operational Impacts

Long-term operational emissions for the disposal sites for Proposed Project 1 would primarily result from maintenance activity. As shown in Table 5.9-8, the emissions from maintenance activities are minimal due to the periodic nature of maintenance activities and are projected to be approximately 0 pounds per day. These maintenance activities would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 1 would result in less than significant emissions of criteria pollutants associated with the facilities at the disposal sites.

Combined Project Effects

Short-term Construction Impacts

As shown on Table 5.9-7, short-term construction emissions associated with the collection system and the facilities at the treatment plant site and disposal sites for Proposed Project 1 would exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold. Therefore, Proposed Project 1 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the facilities at the treatment plant site.

Long-term Operational Impacts

Table 5.9-8 shows that the net resulting long-term emissions related to the operation of Proposed Project 1 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 1 would result in less than significant emissions of criteria pollutants associated with the collection system and the facilities at the treatment plant site and disposal sites.

Proposed Project 2

Collection System

Proposed Project 2 utilizes a Solids Handling (SH) Collection System that consists of a combination of conventional gravity sewers (GS) and low pressure grinder pumps (LPGP) or "pocket pumps." With this system, old septic tanks would be taken out of use and either removed or abandoned.

Short-term Construction Impacts

The collection system of Proposed Project 2 would include the incorporation of approximately 230,000 linear feet of gravity sewers and force mains, 907 manholes, 5 duplex pump stations, 2 triplex pump stations, 12 pocket pump stations, and 4,679 (approximately 140,000 linear feet) of 4-inch diameter sewer laterals to join residences to the collection system. The sewer mains are proposed to be of PVC and would range from 8 inches to 18 inches in diameter. The sewer lines would be buried at an average depth of 8 feet, with some as deep as 20 feet. In addition, the disturbance associated with construction activity would frequently involve areas where there would be a need for the removal and replacement of existing pavement, thus additional impacts are associated with the asphalt activity associated with repaving.

Construction activities and equipment would be similar to Proposed Project 1. Additionally, assumptions used in the estimating of emissions were equal. Construction emissions are presented in Table 5.9-9 in both pounds per day and tons per quarter in order to compare estimated emissions to District thresholds.

As shown in Table 5.9-9, short-term collection system construction emissions would contribute to the potential to exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold for Proposed Project 2. Therefore, Proposed Project 2 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the collection system.

Table 5.9-9: Proposed Projects 2 and 3 Construction Emissions

System	Source	Pounds Per Day				Tons per quarter			
		ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Collection	On-road	0.9	13.5	31.1	0.9	0.02	0.41	0.92	0.03
	Off-road	14.7	53.9	121.7	9.5	1.16	4.20	8.75	0.78
	Fugitive	—	—	—	126.4	—	—	—	5.77
Conveyance	On-road	0.6	5.3	10.1	0.3	0.01	0.13	0.16	0.00
	Off-road	15.7	63.2	135.6	11.1	0.05	0.20	0.43	0.04
	Fugitive	—	—	—	29.8	—	—	—	1.36
Treatment	On-road	0.2	8.7	2.6	0.1	0.01	0.26	0.04	0.00
	Off-road	35.8	168.0	439.8	20.4	0.78	3.72	9.13	0.46
	Fugitive	—	—	—	61.1	—	—	—	2.79
Disposal	On-road	0.6	7.3	26.2	0.7	0.02	0.22	0.79	0.02
	Off-road	9.6	69.6	163.5	4.7	0.28	2.02	4.76	0.14
	Fugitive	—	—	—	102.7	—	—	—	4.68
TOTAL		**78.1**	**389.5**	**930.6**	**367.7**	**2.33**	**11.16**	**24.98**	**16.07**
District Threshold		185	N/A	185	N/A	6.0	N/A	6.0	2.5
Exceeds Threshold		No	N/A	**Yes**	N/A	No	N/A	**Yes**	**Yes**

N/A = no threshold
Source: MBA 2008.

Long-term Operational Impacts

Long-term operational emissions for the collection system for Proposed Project 2 would come from employee commute and maintenance activity. Proposed Project 2 would not include the transfer of septage since Proposed Project 2 does not include septic tanks. Maintenance activity would be more than for Proposed Project 1 because the additional pumps would require inspecting septic tanks and cleaning the effluent filters every two years and pumping the accumulated septage every five years. In addition, the pressure system would require maintenance and periodic replacement of the air-vacuum valve carbon filters and septic tank effluent pumps and controls. Table 5.9-10 shows long-term operational emissions associated with Proposed Project 2.

As shown in Table 5.9-10, the net resulting long-term emissions related to the collection system of Proposed Project 2 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 2 would result in less than significant emissions of criteria pollutants.

Table 5.9-10: Proposed Projects 2 and 3 Operational Emissions

System	Pounds Per Day			
	ROG	CO	NO_X	PM_{10}
Collection	0.03	1.24	0.28	0.01
Conveyance	0.01	0.48	0.07	0.00
Treatment	0.90	2.48	10.04	0.34
Disposal	0.00	0.00	0.00	0.00
TOTAL	**0.95**	**4.20**	**10.38**	**0.36**
Current Operations	0.12	1.15	5.54	0.15
NET DIFFERENCE	**0.83**	**3.05**	**4.84**	**0.21**
District Threshold	10	550	10	10
Exceeds Threshold	No	No	No	No
Source: MBA 2008.				

Treatment Plant Site

Proposed Project 2 would utilize either an Oxidation Ditch or Biolac Wastewater Treatment System to provide secondary treatment. The treatment plant would include headworks to screen out inorganics, and de-grit and measure flow; an Oxidation Ditch or Biolac system; a secondary clarifier; and a Nitrogen Removal System integral to an Oxidation Ditch or Biolac system without carbon addition.

Short-term Construction Impacts

The construction of the treatment plant would include the construction of the headworks, secondary treatment, secondary clarification, and administration and maintenance structures on approximately 20 acres. The storage facility would be located at the Tonini sprayfield disposal site. Off-road construction equipment would include tracked and wheeled earth moving equipment, graders, compaction rollers, a backhoe, a trackhoe, and a crane. It would also include a water truck for dust suppression and asphalt paving equipment for the parking and vehicular maintenance.

As shown in Table 5.9-9, short-term construction emissions associated with the facilities at the treatment plant site would contribute to the potential to exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold for Proposed Project 2. Therefore, Proposed Project 2 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the treatment plant facilities.

Long-term Operational Impacts

Long-term operational emissions for the treatment plant for Proposed Project 2 would come from employee commute, maintenance activity, and regular chemical deliveries. As shown in Table 5.9-8, the net resulting long-term emissions related to the treatment plant of Proposed Project 2 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 2 would result in less than significant emissions of criteria pollutants.

Disposal Sites

Similar to Proposed Project 1, Proposed Project 2 would include two effluent disposal components: a leachfield at Broderson and sprayfield at Tonini. In addition, Proposed Project 2 includes an approximately 8-acre seasonal storage pond that would be located on the Tonini site.

Short-term Construction Impacts

As shown in Table 5.9-7, short-term construction emissions associated with the disposal sites would contribute to the potential to exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold for Proposed Project 2. Therefore, Proposed Project 2 would contribute to potential significant NO_X and PM_{10} emissions impacts during construction of facilities at the disposal sites.

Long-term Operational Impacts

Long-term operational emissions for the disposal sites for Proposed Project 2 would primarily result from maintenance activities. As shown in Table 5.9-8, the emissions from maintenance activities are minimal due to the periodic nature of maintenance activities and are projected to be approximately 0 pounds per day. These maintenance activities would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 2 would result in less than significant emissions of criteria pollutants associated with the facilities at the disposal sites.

Combined Project Effects

Short-term Construction Impacts

As shown on Table 5.9-9, short-term construction emissions associated with the collection system and the facilities at the treatment plant site and disposal sites for Proposed Project 2 would exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold. Therefore, Proposed Project 2 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the facilities at the treatment plant site.

Long-term Operational Impacts

Table 5.9-10 shows that the net resulting long-term emissions related to the operation of Proposed Project 2 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 2 would result in less than significant emissions of criteria pollutants associated with the collection system and the facilities at the treatment plant site and disposal sites.

Proposed Project 3

Collection System

The potential construction and operation impacts associated with the proposed gravity collection system would generally be the same as described above for Proposed Project 2.

Treatment Plant Site

Proposed Project 3 would utilize either an Oxidation Ditch or Biolac Wastewater Treatment System to provide secondary treatment. The Treatment Plant would include headworks to screen out inorganics, and de-grit and measure flow; an Oxidation Ditch or Biolac system; a secondary clarifier;

and a Nitrogen Removal System integral to an Oxidation Ditch or Biolac system without carbon addition. In addition, Proposed Project 3 would also include a seasonal storage pond.

Short-term Construction Impacts

The construction of the treatment plant would include the construction of the headworks, secondary treatment, secondary clarification, administration and maintenance structures, and storage facility on approximately 28 acres. Off-road construction equipment would include tracked and wheeled earth moving equipment, graders, compaction rollers, a backhoe, a trackhoe, and a crane. It would also include a water truck for dust suppression and asphalt paving equipment for the parking and vehicular maintenance.

As shown in Table 5.9-9, short-term construction emissions associated with the facilities at the treatment plant site would contribute to the potential to exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold for Proposed Project 3. Therefore, Proposed Project 3 would contribute to potential significant NO_X and PM_{10} emissions impacts during construction of the treatment plant facilities.

Long-term Operational Impacts

Long-term operational emissions at the treatment plant under Proposed Project 3 would come from employee commute, maintenance activity, and regular chemical deliveries. As shown in Table 5.9-8, the net resulting long-term emissions related to the treatment plant in Proposed Project 3 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 3 would result in less than significant emissions of criteria pollutants.

Disposal Sites

The potential construction and operation impacts associated with the proposed disposal sites would be the same as described above for Proposed Project 1.

Combined Project Effects

Short-term Construction Impacts

As shown on Table 5.9-9, short-term construction emissions associated with the collection system and the facilities at the treatment plant site and disposal sites for Proposed Project 3 would exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold. Therefore, Proposed Project 3 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the facilities associated with Proposed Project 3.

Long-term Operational Impacts

Table 5.9-10 shows that the net resulting long-term emissions related to the operation of Proposed Project 3 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 3 would result in less than significant emissions of criteria pollutants associated with the collection system and the facilities at the treatment plant site and disposal sites.

Proposed Project 4

Collection System

Short-term Construction Impacts

The potential construction and operation impacts associated with the proposed gravity collection system would be similar as described above for Proposed Project 2. However, Proposed Project 4 would include a longer force main from the Mid-Town Pump Station: 28,500 linear feet. Construction emissions for Proposed Project 4 are presented in Table 5.9-11 Short-term construction emissions associated with the collection system for Proposed Project 4 would contribute to the exceedance of the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold. Therefore, Proposed Project 4 would contribute to potential significant NO_X and PM_{10} emissions impacts during construction of the facilities associated with Proposed Project 4.

Long-term Operational Impacts

As shown in Table 5.9-10, the net resulting long-term emissions related to the collection system of Proposed Project 4 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 4 would result in less than significant emissions of criteria pollutants

Table 5.9-11: Proposed Project 4 Construction Emissions

System	Source	Pounds Per Day				Tons per quarter			
		ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Collection	On-road	0.9	13.7	31.2	0.9	0.03	0.42	0.94	0.03
	Off-road	14.7	53.9	121.7	9.5	1.16	4.20	8.75	0.78
	Fugitive	—	—	—	126.4	—	—	—	5.77
Conveyance	On-road	0.5	5.1	9.4	0.3	0.01	0.13	0.18	0.01
	Off-road	15.7	57.7	125.1	10.0	0.07	0.24	0.43	0.04
	Fugitive	—	—	—	34.3	—	—	—	1.56
Treatment	On-road	1.6	12.2	17.3	0.6	0.01	0.27	0.06	0.00
	Off-road	15.4	73.3	191.8	8.6	0.61	2.91	7.14	0.35
	Fugitive	—	—	—	72.9	—	—	—	3.33
Disposal	On-road	0.6	6.7	25.6	0.7	0.02	0.21	0.78	0.02
	Off-road	9.6	69.6	163.5	4.7	0.28	2.02	4.76	0.14
	Fugitive	—	—	—	102.7	—	—	—	4.68
TOTAL		**59.0**	**292.2**	**685.6**	**371.6**	**2.19**	**10.40**	**23.04**	**16.71**
District Threshold		185	N/A	185	N/A	6.0	N/A	6.0	2.5
Exceeds Threshold		No	N/A	**Yes**	N/A	No	N/A	**Yes**	**Yes**
Source: MBA 2008.									

Table 5.9-12: Proposed Project 4 Operational Emissions

System	Pounds Per Day			
	ROG	CO	NO_X	PM_{10}
Collection	0.03	1.24	0.28	0.01
Conveyance	0.01	0.39	0.05	0.00
Treatment	1.33	3.51	14.13	0.49
Disposal	0.00	0.00	0.00	0.00
TOTAL	**1.38**	**5.14**	**14.46**	**0.51**
Current Operations	0.12	1.15	5.54	0.15
NET DIFFERENCE	**1.26**	**3.99**	**8.92**	**0.36**
District Threshold	10	550	10	10
Exceeds Threshold	No	No	No	No
Source: MBA 2008.				

Treatment Plant Site

The potential construction and operation impacts associated with the facilities at the proposed treatment plant site would be the same as described above for Proposed Project 1.

Disposal Sites

The potential construction and operation impacts associated with the proposed disposal sites would be the same as described above for Proposed Project 1.

Combined Project Effects

Short-term Construction Impacts

As shown on Table 5.9-11, short-term construction emissions associated with the collection system and the facilities at the treatment plant site and disposal sites for Proposed Project 4 would exceed the District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold. Therefore, Proposed Project 4 would result in potential significant NO_X and PM_{10} emissions impacts during construction of the collection system and the facilities at the treatment plant site and disposal sites facilities.

Long-term Operational Impacts

Table 5.9-12 shows that the net resulting long-term emissions related to the operation of Proposed Project 4 would not exceed any of the District's quantitative thresholds. Therefore, Proposed Project 4 would result in less than significant emissions of criteria pollutants associated with the collection system and the facilities at the treatment plant site and disposal sites.

Cumulative Impact Analysis

Proposed Projects 1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los

Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project; however, they could contribute to the same air basin impacts. Since Proposed Projects 1 through 4 could result in exceeding District's pounds per day and tons per quarter NO_X thresholds and the District's PM_{10} tons per quarter threshold during construction activities, the implementation of any of the projects could contribute to significant cumulative NO_X and PM_{10} impacts.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

5.9-C1 Prior to issuance of grading permits, the applicant shall submit a Construction Activities Management Plan for the review and approval of the SLOAPCD. This plan shall include but not be limited to the following Best Available Control Technologies for construction equipment:

a. Minimize the number of large pieces of construction equipment operating during any given period.
b. Schedule construction related truck/equipment trips during non-peak hours to reduce peak-hour emissions.
c. Properly maintain and tune all construction equipment according to manufacturer's specifications.
d. Fuel all off-road and portable diesel powered equipment including but not limited to: bulldozers, graders, cranes, loaders, scrapers, backhoes, generators, compressors, auxiliary power units, with CARB motor vehicle diesel fuel.
e. Use 1996 or newer heavy duty off road vehicles to the extent feasible.
f. Use Caterpillar pre-chamber diesel engines (or equivalent) together with proper maintenance and operation to reduce emissions of NOX.
g. Electrify equipment where possible.
h. Use Compressed Natural Gas (CNG), liquefied natural gas (LNG), biodiesel, or propane for on-site mobile equipment instead of diesel- powered equipment.

5.9-C2 Prior to initiating grading activities, the proponent's contractor or engineer shall:

a. Include the following specifications on all project plans: One catalyzed diesel particulate filter (CDPF) shall be used on the piece of equipment estimated to generate the greatest emissions. If a CDPF is unsuitable for the potential equipment to be controlled, five diesel oxidation catalysts (DOC) shall be used.

b. Identify equipment to be operated during construction as early as possible in order to place the order for the appropriate filter and avoid any project delays. This is necessary so that contractors bidding on the project can include the purchase, proper installation, and maintenance costs in their bids.
c. Contact the SLOAPCD Compliance Division to initiate implementation of this mitigation measure at least two months prior to start of construction.

5.9-C3 Prior to initiating grading activities, if it is determined that portable engines and portable equipment would be utilized, the contractor shall contact the SLOAPCD and obtain a permit to operate portable engines or portable equipment, and shall be registered in the statewide portable equipment registration program. The SLOAPCD Compliance Division shall be contacted in order to determine the requirements of this mitigation measure.

5.9-C4 Project contract documents would include the following dust control measures:

a. Reduce the amount of the disturbed area where possible,
b. Use water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency will be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.
c. All dirt stockpile areas will be sprayed daily as needed,
d. Permanent dust control measures identified in the revegetation and landscape plans will be implemented as soon as possible following completion of any soil disturbing activities.
e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading will be sown with a fast germinating native grass seed and watered until vegetation is established.
f. All disturbed soil areas not subject to revegetation will be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD.
g. All roadways, driveways, sidewalks, etc. to be paved will be completed as soon as possible. In addition, building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
h. Vehicle speed for all construction vehicles will not exceed 15 mph on any unpaved surface at the construction site.
i. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or will maintain at least two feet of freeboard (minimum vertical distance

between top of load and top of trailer) in accordance with CVC Section 23114.

j. Install wheel washers where vehicles enter and exit unpaved roads onto streets, or wash off trucks and equipment leaving the site.

k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible.

l. If visible emissions of fugitive dust persist beyond a distance of 200 feet from the boundary of the construction site, all feasible measures shall be implemented to eliminate potential nuisance conditions at off-site receptors (e.g., increase frequency of watering or dust suppression, install temporary wind breaks where appropriate, suspend excavation and grading activity when winds exceed 25 mph)

m. The contractor will designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties will include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons will be provided to the SLOAPCD prior to the start of construction.

5.9-C5 If the above mitigation measures do not bring the construction emissions below the thresholds, off-site mitigation funds can be used to secure emission reductions from projects located in close proximity to this construction site. In this instance, emissions in excess of construction phase thresholds are multiplied by the cost effectiveness value defined in the State's current Carl Moyer Incentive Program Guidelines to determine the off-site mitigation amount associated with the construction period. Examples of off-site emission reduction measures are contained in Section 5.9 of the 2003 CEQA Air Quality Handbook. The actual mix of mitigation measures that would be required to meet the reduction in NO_X to less than a total of 185 lbs per day or 6.0 tons per quarter over the term of construction and would be finalized and mutually agreed to by the Applicant and appropriate staff of the SLOAPCD prior to commencement of construction of the project.

Cumulative

Proposed Projects 1 through 4

Implementation of Mitigation Measures 5.9-C1 through 5.9-C5 are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

Proposed Projects 1 through 4

Less than significant.

Sensitive Receptors

5.9-D:	**The project may expose sensitive receptors to substantial pollutant concentrations.**

Project-Specific Impact Analysis

Proposed Project 1

Collection System

The collection system for Proposed Project 1 would include a Septic Tank Effluent Collection System that is comprised of both septic tank effluent pumps (STEP) and septic tank effluent gravity (STEG) collection lines. Construction activities would occur on properties throughout the community that include sensitive land uses such as residential as well as along roadways that are adjacent to sensitive land uses. The construction activities have the potential to expose sensitive receptors to substantial pollutant concentrations during the construction phase. Therefore, this short-term exposure during construction activities is considered potentially significant.

Construction of the collection system for Proposed Project 1 would occur in an area that the SLOAPCD has identified as having the potential for containing NOA. Since the proposed collection system would disturb an area that is greater than one acre, an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program would be typically required to be prepared and the District would be required to review it prior to approval. Compliance with this typical requirement would reduce the potential for exposing sensitive receptors to substantial NOA concentrations to a level of less than significant.

During operation, the collection system would be primarily underground and would not have the potential to expose sensitive receptors to substantial pollutant concentrations. Therefore, the sensitive receptors that are located near the collection system would experience less than significant impacts related to the long-term exposure to substantial pollutant concentrations.

Treatment Plant Site

The nearest sensitive receptors to the proposed facilities at the treatment plant site for Proposed Project 1 include residences that are approximately 0.2 mile west of the site and the Sonshine Preschool located approximately 0.4 miles southwest of the site. Construction activities associated with the proposed facilities at this site would have the potential to expose the nearby sensitive receptors to substantial pollutant concentrations. Therefore, this short-term exposure during construction activities is considered potentially significant.

Similar to the collection system area, the treatment plant site occurs in an area that the SLOAPCD has identified as having the potential for containing NOA. Since the proposed facilities at the treatment plant site would disturb an area that is greater than one acre, an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program would be typically required to be prepared and the District would be required to review it prior to approval. Compliance with this typical requirement would reduce the potential for exposing sensitive receptors to substantial NOA concentrations to a level of less than significant.

Since the operation of the treatment plant would not result in the generation of substantial pollutants as shown in Table 5.9-8, no substantial pollutant concentrations would occur. Therefore, the sensitive receptors that are located nearby would experience less than significant impacts related to the long-term exposure to substantial pollutant concentrations.

Disposal Sites

Effluent would be disposed at two locations: on approximately 8-acres at the Broderson site and on approximately 175-acres at the Tonini site.

The nearest sensitive receptors to the proposed leachfield facilities at the Broderson site include residences that are approximately 0.2 mile west of the site and 0.3 mile south of the site. Construction activities associated with the proposed facilities at this site would have the potential to expose the nearby sensitive receptors to substantial pollutant concentrations. Therefore, this short-term exposure during construction activities is considered potentially significant.

The approximately 175-acre Tonini disposal site is not located in the vicinity of various sensitive receptors. Due to the site's remoteness from sensitive receptors, construction activities associated with the proposed facilities at this site would not have a potential to expose nearby sensitive receptors to substantial pollutant concentrations. Therefore, construction activities associated with the proposed facilities at Tonini would result in a less than significant impact related to the short-term exposure of sensitive receptors to substantial pollutant concentrations.

Similar to the collection system area and the treatment plant site, the disposal sites occur in areas that the SLOAPCD has identified as having the potential for containing NOA. Since the proposed facilities at the disposal sites would disturb areas that are greater than one acre, an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program would be typically required to be prepared and the District would be required to review it prior to approval. Compliance with this typical requirement would reduce the potential for exposing sensitive receptors to substantial NOA concentrations to a level of less than significant.

Since the operation of the disposal sites would not result in the generation of substantial pollutants as shown in Table 5.9-8, no substantial pollutant concentrations would occur. Therefore, the sensitive receptors that are located nearby would experience less than significant impacts related to the long-term exposure to substantial pollutant concentrations.

Combined Project Effects

Proposed Project 1 includes facilities that would be located in close proximity to sensitive receptors. Construction activities associated with the proposed facilities would have the potential to expose the nearby sensitive receptors to substantial pollutant concentrations. Therefore, this short-term exposure during construction activities is considered potentially significant.

All of the proposed facilities in Proposed Project 1 are located in areas that the SLOAPCD has identified as having the potential for containing NOA. Since the proposed facilities would disturb areas that are greater than one acre, an Asbestos Dust Mitigation Plan and an Asbestos Health and Safety Program would be typically required to be prepared and the District would be required to review it prior to approval. Compliance with this typical requirement would reduce the potential for exposing sensitive receptors to substantial NOA concentrations to a level of less than significant.

Since the operation of the proposed facilities in Proposed Project 1 would not result in the generation of substantial pollutants as shown in Table 5.9-8, no substantial pollutant concentrations would occur. Therefore, the sensitive receptors that are located nearby the proposed facilities would experience less than significant impacts related to the long-term exposure to substantial pollutant concentrations.

Proposed Project 2

Collection System

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed collection system facilities for Proposed Project 2 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above.

Treatment Plant Site

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed treatment plant facilities for Proposed Project 2 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above.

Disposal Sites

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed facilities at the disposal sites for Proposed Project 2 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above.

Combined Project Effects

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed facilities for Proposed Project 2 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above

Proposed Project 3

Collection System

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed collection system facilities for Proposed Project 3 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above.

Treatment Plant Site

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed treatment plant facilities for Proposed Project 3 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above.

Disposal Sites

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed facilities at the disposal sites for Proposed Project 3 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above.

Combined Project Effects

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed facilities for Proposed Project 3 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above

Proposed Project 4

Collection System

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed collection system facilities for Proposed Project 4 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above.

Treatment Plant Site

The proposed facilities at the treatment plant site for Proposed Project 4 are not located in the vicinity of various sensitive receptors. Due to the site's remoteness from sensitive receptors, construction activities associated with the proposed treatment plant facilities would not have a potential to expose nearby sensitive receptors to substantial pollutant concentrations. Therefore, construction activities associated with the proposed facilities at the treatment plant site would result in a less than significant impact related to the short-term exposure of sensitive receptors to substantial pollutant concentrations.

The potential impacts associated with the short-term exposure to soils containing NOA from construction activities at the treatment plant site are similar to the potential impact described above for Proposed Project 1.

Since the operation of the treatment plant would not result in the generation of substantial pollutants as shown in Table 5.9-8, no substantial pollutant concentrations would occur. Therefore, long-term operational activities would result in less than significant impacts related to the exposure of sensitive receptors to substantial pollutant concentrations.

Disposal Sites

The potential impacts associated with the short-term and long-term exposure of substantial pollutant concentrations to sensitive receptors that are nearby the proposed facilities at the disposal sites for Proposed Project 4 would be the same as the potential pollutant concentration impacts for Proposed Project 1 described above

Combined Project Effects

Except for the construction of proposed facilities at the treatment plant site, Proposed Project 4 would have the same short-term and long-term impacts associated with the exposure of sensitive receptors to substantial pollutant concentrations as Proposed Project 1. The proposed facilities at the treatment plant site would result in less short-term exposure impacts to sensitive receptors from substantial pollutant concentrations compared to Proposed Project 1 because the proposed treatment plant facilities are not located in the vicinity of various sensitive receptors.

Cumulative Impact Analysis

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project. Although the implementation of Proposed Projects 1 through 4 may expose sensitive receptors to substantial pollutant concentrations during construction activities, this potential exposure would not contribute to any cumulative exposure of sensitive receptors to substantial pollutant concentrations because there are no cumulative projects that would expose the same sensitive receptors as Proposed Projects 1 through 4 and therefore the cumulative impact would be less than significant.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

Mitigation Measures 5.9-C1, 5.9-C2 and 5.9-C4 are required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

Less than significant.

Odors

5.9-E:	**The project would not create objectionable odors affecting a substantial number of people.**

Project-Specific Impact Analysis

Individuals have greatly varying sensitivity to odors, and continual exposure to an odor tends to decrease sensitivity. Therefore, quantifying odor impacts is difficult. Although odor measurement methods have been established to determine detectable threshold odor concentrations on a dilution basis, the application of this test and its use for the assessment of odor impacts is purely subjective. Therefore, modeling of odor concentrations associated with the Los Osos Wastewater Project was not conducted. Instead, the potential for impact has been assessed based on the meteorological conditions and proposed treatment process, and by comparing the experience of conventional treatment facilities elsewhere in San Luis Obispo County.

Proposed Project 1

Collection System

Proposed Project 1 is a system where the wastewater flows into a STEP/STEG tank and the solids settle out. The raw wastewater is pumped into a pressurized collection system that conveys the wastewater to the treatment site. Proposed Project 1 has pressure cleanouts at regular locations and air-vacuum valves at high points in the pressurized collection system to expel air that collects at these highpoints. These air-vacuum valves are a source of odor. Carbon media filters to control odors would be required at high points throughout the system where air within the piping is released to prevent air bubbles from forming. The STEP/STEG tanks vent through the house roof vents and in general do not cause an odor problem. Pumping of the septage could be a temporary source of odor but would be short-lived and only occur once every five years. Thus, odor impacts generated from operational activities associated with the collection system in Proposed Project 1 would be less than significant.

The construction of the collection/conveyance system for Proposed Project 1 would have off-road diesel equipment in close proximity to residences with the removal and installation of the septic tanks as well as the installation of the underground conveyance. Diesel exhaust and ROGs could be emitted during construction, which is objectionable to some; however, emissions would disperse rapidly from the project site, and therefore, would not be at a level to induce a negative response. Thus, odor impacts generated from construction activities associated with the collection system in Proposed Project 1 would be less than significant.

Treatment Plant Site

A partially mixed facultative ponds wastewater treatment plant would be constructed at the Cemetery/Giacomazzi/Branin site in Proposed Project 1. This site is bordered to the west by single-family residences. Prevailing winds are generally on-shore during the day from the west. The Los Osos Valley periodically experiences stagnant air masses.

Facultative ponds tend to stratify into layers during the normal operating cycle. The lowermost layer is typically anaerobic, and the digestion of solids that is carried out in ponds is completed in the anaerobic layer. It has been observed that facultative ponds “turn over” at changes in season, particularly when wind velocities over the pond increase which may cause a release of significant amounts of odor. However, any significant amount of odors would be dispersed with the increase in wind velocity. Odor control of the open facultative ponds is provided by aerating the surface layer of wastewater, thus minimizing odors.

There is a potential for odor when the solids from the onsite septic systems are trucked to the treatment plant. The Vactor-type trucks used for transport are designed to have a submerged suction minimizing the potential for a turbulent release from the tank contents. The truck hauling would not result in odors, and at the treatment plant, the septage is discharged directly into the headworks.

The headworks at a wastewater treatment facility receive incoming raw wastewater. Headworks are intended to provide preliminary treatment, removing inorganic materials that can cause problems in the downstream processes. The inorganic materials removed from the biosolids are typically mixed with organic matter when the rakes deposit the material in the hopper at the top of the screen mechanism. The collected raw wastewater solids are a major source of odors but modern screening systems include integrated washing and compacting systems to clean organic matter from the screenings and to reduce the volume of the residual inorganics. The washed and compacted screenings are less of an odor source than the raw material collected on the screen. Both the headworks and solids processing facilities would be enclosed and have air scrubbers to control odors. The enclosure of these facilities and the placement of air scrubbers would reduce potential odor impacts outside the building to less than significant.

Since facultative ponds do not typically remove nitrogen to the desired levels, supplemental nitrification/denitrification process equipment is required, increasing the energy demand of a treatment facility centered on facultative ponds. A common process for providing nitrification downstream of a pond system is a trickling filter. Odor control is frequently required with this type of equipment, and the proposed method of odor control is a system based on inorganic media. The media is a host for the biological/chemical reaction that takes place between the nitrate and the carbon source. The use of inorganic media would reduce potential odor impacts from the supplemental nitrification/denitrification process equipment to less than significant.

Over 95 percent of the solids that enter the ponds stay in the ponds. The accumulation of solids, which include the biological growth yielded by the metabolism of soluble and suspended biological oxygen demand (BOD), reduces the active volume of the ponds over time. A well-operated pond system has a typical maintenance frequency of 15 to 20 years. The maintenance activities would involve the removal of the solids from the ponds by dredging. The dredging activities would extend over approximately a one-week time period. Given the short duration and the infrequency of the dredging of solids from the ponds, less than significant odor impacts would occur.

The nearest wastewater treatment plant to the project site is in the City of Morro Bay. The Morro Bay/Cayucos Wastewater Treatment Plant is designated as a Class III Biofiltration Plant by the Regional Water Quality Control Board. The treatment plant in Morro Bay is open to the air. As part of the SLOAPCD's responsibilities, staff investigates nuisance complaints, pursuant to Rule 402. Review of the last five years of nuisance complaints for the Morro Bay/Cayucos WWTP (Brooks 2008) indicate that the District has received only one complaint that has potentially been ascribed to that facility. On October 9, 2007, a complaint of possible hydrogen sulfide (H_2S) odors was reported in the area of Morro Bay WWTP. The staff's inspection identified the probable source as the collection system. It should be noted that this plant is located upwind and adjacent to residential land uses with one complaint in five years.

The construction of the treatment plant for Proposed Project 1 would have off-road diesel equipment close to residences just west of the treatment site. Diesel exhaust and ROGs could be emitted during construction, which is objectionable to some; however, emissions would disperse rapidly from the project site, and therefore, would not be at a level to induce a negative response. Thus, odor impacts generated from construction activities associated with the facilities at the treatment plant site in Proposed Project 1 would be less than significant.

Disposal Sites

Sprayfield disposal is the practice of spraying effluent on land to dispose of the water through evapotranspiration and percolation. Because the effluent disposed at the sprayfields would likely not meet Title 22 tertiary treatment standards, the sprayfield area would be fenced off to prevent public contact with the water, and it is located at the Tonini site that is physically distant from sensitive receptors. The sprayfield operation would not create the potential for odor complaints. Therefore, operation of the sprayfields would result in no odor impacts.

A leachfield is the process where an area is excavated and backfilled with a layer of gravel for drainage and covered by geotextile fabric. Percolation piping would be laid approximately 1 foot below the geotextile fabric layer, and the effluent would be percolated into the soil. The proposed Broderson site would have fencing to limit public access since the treated effluent would meet secondary but not Title 22 tertiary standards for recycled water, so the leachfield operation would not create the potential for odor complaints. Therefore, the proposed leachfield operation at Broderson would result in no odor impacts.

Off-road diesel equipment used in the construction of the sprayfield disposal site for Proposed Project 1 would not be located near residences or other sensitive receptors; therefore, no odor impacts during construction activities at the Tonini sprayfield disposal site would occur.

Off-road diesel equipment used in the construction of the leachfield disposal site for Proposed Project 1 would be located in close proximity to residences. The diesel exhaust and ROGs could be emitted during construction, which is objectionable to some; however, emissions would disperse rapidly from the site, and therefore, would not be at a level to induce a negative response. Thus, odor impacts generated from construction activities associated with the leachfield facilities at Tonini in Proposed Project 1 would be less than significant.

Combined Project Effects

The operations of the proposed collection, treatment plant, and disposal facilities in Proposed Project 1 are designed to minimize odors throughout the system. In addition, construction activities would include the use of diesel equipment, but the diesel exhaust and ROGs would disperse rapidly and would not be at a level to induce a negative response. Implementation of the proposed facilities in Proposed Project 1 would result in less than significant odor impacts during construction and operation activities.

Proposed Project 2

Collection System

Proposed Project 2 consists of a gravity collection system. In a gravity collection system, a pipeline system would convey both the wastewater and sewerage solids collected to a central location at the Mid-Town site. This gravity collection system includes both gravity sewers and force mains. The force mains convey the wastewater from the various main and "pocket pump" stations to nearby gravity sewers or the treatment plant site. Pocket pumps are small pump stations serving a small cluster of lots. The principal elements of construction for this specific collection system design that conveys all the wastewater to the Mid-Town site include 230,000 linear feet of gravity sewer and force mains; 907 manholes; 19 pump and pocket pump stations; and approximately 140,000 linear feet of sewer laterals from property line to street collection system.

From the Mid-Town site, a subsurface main pump station would pump the collected wastewater into the raw water conveyance system that carries the wastewater to the wastewater treatment facility in approximately 18,700 linear feet of force main. Individual septic tanks would not be used, and the existing septic tanks would be abandoned.

The potential for odors exist in the collection system for Proposed Project 2, but not nearly to the same extent as Proposed Project 1, which is anaerobic. In fact, flowing wastewater in a gravity line will pull air along with it. In general, the only potential for odor is at the pump stations or if there are long lines with low flow, which is not the situation with Proposed Project 2. Therefore, odor impacts generated from operational activities associated with the collection system in Proposed Project 1 would be less than significant.

The construction of the collection/conveyance system for Proposed Project 2 would have off-road diesel equipment in close proximity to residences during the installation of the underground conveyance. Diesel exhaust and ROGs could be emitted during construction, which is objectionable to some; however, emissions would disperse rapidly from the project site, and therefore would not be at a level to induce a negative response. Thus, odor impacts generated from construction activities associated with the collection system in Proposed Project 1 would be less than significant.

Treatment Plant Site

Proposed Project 2 would have either an Oxidation Ditch or a Biolac wastewater treatment system. Although oxidation ditches and Biolac are different treatment processes, the two systems share similar area requirements and treatment process trains, involving similar upstream and downstream support process components. They are considered interchangeable in Proposed Project 2.

The wastewater treatment system for Proposed Project 2 includes headworks to screen out inorganics; an Oxidation Ditch/Biolac (OxDitch/Biolac) facility to treat the wastewater to secondary treatment levels; Secondary Clarification to settle out the suspended solids in the treated wastewater; biosolids management to process and dispose of sludge removed from the treated wastewater on an ongoing basis; and an odor control system to control odors by using an inorganic media system to trap and scrub foul air from within the buildings enclosing the headworks and the solids dewatering equipment. Solids are settled out in the secondary clarifier tanks on an ongoing basis and then pumped to the permanent solids handling facilities. The removed solids are processed in an aerobic digestion process, dewatered by a screw press system to about 15 percent solids, and then hauled to a Class B landfill for disposal. Since odor controls are important components for the solids processing facility, the solids processing equipment would be enclosed within a building and an inorganic media air scrubber would trap and scrub the interior foul air before releasing it to the outside air.

Headworks for the OxDitch/Biolac systems are particularly important since they involve mechanical systems and aeration membranes. Fine screen systems are typically specified. Fine screen systems are sized to accommodate the anticipated hydraulics in the headworks while limiting the open area to prevent approximately 95 percent of the inorganic material from passing. Odor concerns and proposed solutions for headworks in Proposed Project 2 are similar to Proposed Project 1. However, with the OxDitch/Biolac system, de-gritting systems are typically required. De-gritting systems typically involve enclosed tanks to prevent release of odors and for the safety of operations staff. The washed grit collected in the hopper is still a source of odors, but it is only a localized source that would be noticeable to onsite staff but is unlikely to produce sufficient odor to affect offsite receptors. Odor from the washed grit is not expected to be detectable at a distance of 200 feet from the hopper.

Based on the odor controls that are part of the facilities in Proposed Project 2 as discussed above, the potential odor impacts generated from operational activities at the treatment plant site in Proposed Project 2 would be less than significant.

The construction of the treatment plant for Proposed Project 2 would have off-road diesel equipment close to residences just west of the treatment site. Diesel exhaust and ROGs could be emitted during construction, which is objectionable to some; however, emissions would disperse rapidly from the project site and therefore should not be at a level to induce a negative response. Thus, odor impacts generated from construction activities associated with the treatment plant facilities in Proposed Project 2 would be less than significant.

Disposal Sites

The potential construction and operational odor impacts associated with the proposed disposal sites would be the same as described above for Proposed Project 1.

Combined Project Effects

The operations of the proposed collection, treatment plant, and disposal facilities in Proposed Project 2 are designed to minimize odors throughout the system. In addition, construction activities would include the use of diesel equipment, but the diesel exhaust and ROGs would disperse rapidly and would not be at a level to induce a negative response. Implementation of the proposed facilities in Proposed Project 2 would result in less than significant odor impacts during construction and operation activities.

Proposed Project 3

Collection System

The potential construction and operational odor impacts associated with the proposed gravity collection system would be the same as described above for Proposed Project 2.

Treatment Plant Site

The potential construction and operational odor impacts associated with the proposed facilities at the treatment plant site would be the same as described for Proposed Project 2.

Disposal Sites

The potential construction and operational odor impacts associated with the proposed disposal sites would be the same as described above for Proposed Project 1.

Combined Project Effects

The potential construction and operational odor impacts associated with the proposed collection, treatment, and disposal facilities would be the same as described above for Proposed Project 2.

Proposed Project 4

Collection System

The potential construction and operational odor impacts associated with the proposed collection system would be the same as described above for Proposed Project 2.

Treatment Plant Site

The proposed facilities at the treatment plant site for Proposed Project 4 would generate the same odors during construction and operational activities as described above for Proposed Project 1.

However, the treatment plant facilities in Proposed Project 4 are not located in the vicinity of various sensitive receptors. Due to the site's remoteness from sensitive receptors, construction activities associated with the proposed treatment plant facilities would not have a potential to expose nearby sensitive receptors to objectionable odors. Therefore, odor impacts from construction and operational activities would result in a less than significant odor impact.

Disposal Sites

The potential construction and operational odor impacts associated with the proposed disposal sites would be the same as described above for Proposed Project 1.

Combined Project Effects

Due to the remote location of the proposed treatment plant facilities, the combined odor impacts associated with Proposed Project 4 would be less than for Proposed Projects 1, 2, and 3. The potential odor impacts associated with the collection, treatment plant, and disposal facilities in Proposed Project 4 would be less than significant.

Cumulative Impact Analysis

Proposed Projects 1 through 4

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project. Although the implementation of Proposed Projects 1 through 4 may create odors, there are no nearby cumulative projects that would contribute odors to the sensitive receptors in the vicinity of the proposed facilities. Therefore, Proposed Projects 1 through 4 would not contribute to cumulative odor impacts.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

No mitigation measures are required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

Proposed Projects 1 through 4

No impact.

Greenhouse Gas Emissions

5.9-F:	**The project would not result in an increase in greenhouse gas emissions that would significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32.**

Project-Specific Impact Analysis

There is no adopted Greenhouse Gas Reduction (GHG) Plan or Strategy for the County or the SLOAPCD that would apply to the proposed project. As a result, an analysis must be conducted to determine whether the project would significantly hinder or delay California's ability to meet the reduction targets contained in AB 32.

For this analysis, the construction and operations phases of the collection/conveyance systems and the treatment and disposal facilities are considered. This includes:

- Construction of the collection/conveyance systems and the treatment and disposal facilities (includes operation of off-road construction equipment and on-road vehicles),
- Operation of the collection/conveyance system and treatment facilities,
- Production and hauling of materials consumed and excavated for the construction of the collection system and treatment facilities,
- Production and hauling of chemicals consumed for the treatment of wastewater and biosolids annual operations,
- Hauling of septage from septic tanks to the treatment facility,
- Release of methane from collection systems and treatment facilities, and
- Hauling of biosolids to the final disposal site.

Not all GHGs identified in AB 32 are associated with wastewater treatment plants. This analysis focuses on CO_2, CH_4, and N_2O GHG emissions as these gases are relevant to and comprise the majority of GHG emissions generated from the conveyance and treatment of wastewater. In general, GHG emissions generated from wastewater treatment plants are a function of the flow treated, the influent water quality, and the treatment processes used.

GHGs are typically reported in carbon dioxide equivalents (CO_2e). CO_2e is the method of standardizing emissions that have significantly different Global Warming Potentials (GWP). A CO_2e is the mass emissions of an individual GHG multiplied by its GWP. The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas. One CO_2e is essentially the emission of the gas multiplied by the GWP.

The reference gas for the GWP is carbon dioxide. As shown in Table 5.9-13, use of the carbon dioxide equivalent is a good way to assess emissions because it gives a weight to the GWP of the gas, with carbon dioxide having a GWP of 1. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. Methane's GWP of 21 indicates that methane has a 21 times greater global warming effect than carbon dioxide on a molecule per molecule basis.

The atmospheric lifetime and GWP of selected GHGs are summarized in Table 5.9-13. As shown in the table, GWP ranges from 1 (carbon dioxide) to 23,900 (sulfur hexafluoride).

Table 5.9-13: Global Warming Potentials

Greenhouse Gas	Global Warming Potential (100 year time horizon)
Carbon dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous oxide (N_2O)	310
HFC-23	11,700
HFC-134a	1300
HFC-152a	140
PFC: Tetrafluoromethane (CF_4)	6,500
PFC: Hexafluoroethane (C_2F_6)	9,200
Sulfur hexafluoride (SF_6)	23,900
Source: CARB 2008d.	

Proposed Project 1

Collection System

Proposed Project 1 would take out of use 4,281 old septic tanks and install 4,679 new septic tanks. Most of the solids would settle out in the septic tanks so gravity or pressurized lateral pipelines would be installed to convey the effluent to the street collection system; which would flow by gravity or under pressure to the raw wastewater conveyance system and, finally, to the wastewater treatment plant located at the Cemetery/Giacomazzi/Branin site. Subsequent to treatment, the treated effluent would be conveyed from the Cemetery/Giacomazzi/Branin site to the disposal sites (i.e., Broderson leachfields and Tonini sprayfields).

Short-term Construction Impacts

GHG emissions generated from the construction phase of collection system of Proposed Project 1 were estimated for the on-road motor vehicles, off-road construction equipment, and GHG emissions associated with the creation of construction materials. Descriptions of on-road construction categories evaluated for GHG emissions are the same as described in Impact 5.9-C. The EMFAC 2007 model includes emission factors for CO_2 and NH_3. However, the model for off-road construction equipment, OFFROAD, does not include GHG emission factors; therefore an alternative method was used. The California Climate Action Registry (CCAR), in their General Reporting Protocol (CCAR 2008), recommends using fuel consumption data to determine CO_2 emissions. Other non-CO_2 emissions represent a minor portion compared to the CO_2 emissions. Since fuel consumption records were not available, fuel use was estimated using a formula provided by Food and Agriculture Organization of the United Nations (FAOUN 1992).

GHG emissions generated from the processing and production of construction materials, which are based on estimated demands at buildout, were determined by Carollo Engineering (Carollo 2008b). The construction material processes considered were the excavation and backfill processes for the septic tanks and the collection and conveyance systems. The construction materials for which material production (energy consumed for production processes) is evaluated are concrete, fiberglass, polyethylene lining, PVC piping, and low-density polyethylene tubing. Table 5.9-14 shows short-term construction GHG emissions.

Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the collection system that is associated with Proposed Project 1 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the collection system of Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the collection system of Proposed Project 1 would result in a less than significant GHG impact.

Table 5.9-14: Construction GHG Emissions

System/Source	Metric Tons CO_2e per year			
	Project 1	Project 2	Project 3	Project 4
Collection				
On road vehicular	2,482,290	1,868,504	1,868,504	1,868,504
Off road equipment	408	382	382	382
Construction materials off-site	804	1,243	1,243	960
Collection Total	**2,483,503**	**1,870,129**	**1,870,129**	**1,869,846**

Table 5.9-14 (Cont.): Construction GHG Emissions

System/Source	Metric Tons CO_2e per year			
	Project 1	Project 2	Project 3	Project 4
Conveyance				
On road vehicular	361,361	363,495	363,495	393,944
Off road equipment	63	63	63	83
Conveyance Total	**361,424**	**363,558**	**363,558**	**394,027**
Treatment				
On road vehicular	490,602	492,661	492,661	490,478
Off road equipment	519	446	446	519
Construction materials off-site	2,115	3,043	3,043	3,095
Treatment Total	**493,236**	**496,150**	**496,150**	**494,092**
Disposal				
On road vehicular	981,492	981,809	981,809	981,928
Off road equipment	838	838	838	838
Disposal Total	**982,330**	**982,647**	**982,647**	**982,766**
GRAND TOTAL	**4,320,493**	**3,712,167**	**3,712,167**	**3,740,731**
Source: MBA 2008.				

Long-term Operational Impacts

Long-term operational GHG emissions for the collection system for Proposed Project 1 would come from on-road motor vehicle, energy usage, and the regular transfer of septage from septic tanks to the treatment plant by tanker truck.

On-road motor vehicle activity during continuous operation of the facility includes employee commute, maintenance trips, and septage hauling for Proposed Project 1. Estimates of GHG emissions from purchased and consumed electricity for the operation of the collection system were provided by Carollo Engineering (Carollo 2008b). GHG estimates from the operation of the collection system pump stations are based on the total annual energy demand. The annual energy demands were estimated for the collection pipelines and the pump stations for Proposed Project 1. Emission factors were from the CCAR’s General Reporting Protocol (CCAR 2008).

Also included in the long-term operations of the collection system for Proposed Project 1 is the methane emissions from septic tank venting. Methane emissions are generated from the anaerobic biodegradation of domestic wastewater within septic tanks and are vented to the atmosphere, contributing to the total carbon footprint calculated for Proposed Project 1. Estimates of the annual methane emissions vented from septic tanks are included for the prohibition zone only at build-out. The approach used for calculating septic tank methane emissions are established in the 2006 IPCC

Guidelines for National GHG Inventories which is followed by the EPA as related by Carollo Engineering (Carollo 2008b).

Table 5.9-15 shows long-term operational GHG emissions associated with the proposed collection system of Proposed Project 1. As shown in Table 5.9-15, the total long-term GHG emissions associated with Proposed Project 1 would result in a net reduction of GHG emissions compared to the existing wastewater collection system. The implementation of the collection system under Proposed Project 1 would contribute to the annual reduction in GHG emissions. Therefore, GHG emissions associated with the operation of the collection system of Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. The operation of the proposed collection system under Proposed Project 1 would contribute a net reduction in GHG emissions, thus, the operation of the proposed collection system would contribute to a beneficial impact on GHG emissions.

Table 5.9-15: Operational GHG Emissions

System/Source	Metric Tons CO_2e per year			
	Project 1	Project 2	Project 3	Project 4
Collection				
On road vehicular	98,564	69,668	69,668	69,668
Energy usage	169	199	199	199
Septic tanks	624	0	0	0
Collection Total	**99,357**	**69,867**	**69,867**	**69,867**
Conveyance				
On road vehicular	20,945	20,945	20,945	20,945
Conveyance Total	**20,945**	**20,945**	**20,945**	**20,945**
Treatment				
On road vehicular	53,148	80,605	80,605	52,500
Energy Usage	425	541	541	493
Chemical Production off-site	356	14	14	356
Treatment Total	**53,929**	**81,159**	**81,159**	**53,349**
Disposal				
On road vehicular	0	0	0	0
Disposal Total	**0**	**0**	**0**	**0**
GRAND TOTAL	**174,231**	**171,971**	**171,971**	**144,161**
Current Operations	201,045	201,045	201,045	201,045
NET DIFFERENCE	**-27,654**	**-29,914**	**-29,914**	**-57,724**
Percent Reduction	*15.9%*	*17.4%*	*17.4%*	*40.0%*
Source: MBA 2008.				

Treatment Plant Site

The implementation of Proposed Project 1 would include the construction and operation of a facultative pond system, water storage facility, and appurtenant facilities at the proposed treatment plant site.

Short-term Construction Impacts

GHG emissions generated from the construction phase of facilities at the treatment plant site under Proposed Project 1 were estimated for the on-road motor vehicles, off-road construction equipment, and GHG emissions associated with the creation of construction materials. Descriptions of on-road construction categories evaluated for GHG emissions are the same as described in Impact 5.9-C. The EMFAC 2007 model includes emission factors for CO_2 and NH_3. However, the model for off-road construction equipment, OFFROAD, does not include GHG emission factors; therefore an alternative method was used. The California Climate Action Registry (CCAR), in their General Reporting Protocol (CCAR 2008), recommends using fuel consumption data to determine CO_2 emissions. Other non-CO_2 emissions represent a minor portion compared to the CO_2 emissions. Since fuel consumption records were not available, fuel use was estimated using a formula provided by Food and Agriculture Organization of the United Nations (FAOUN 1992).

GHG emissions generated from the processing and production of construction materials, which are based on estimated demands at buildout, were determined by Carollo Engineering (Carollo 2008b). The construction materials for which material production (energy consumed for production processes) is evaluated are concrete, fiberglass, polyethylene lining, PVC piping, and low-density polyethylene tubing. Table 5.9-14 shows short-term construction GHG emissions associated with the treatment plant site.

Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the facilities at the treatment plant site that is associated with Proposed Project 1 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the facilities at the treatment plant site under Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the facilities at the treatment plant site under Proposed Project 1 would result in a less than significant GHG impact.

Long-term Operational Impacts

GHG emissions associated with the treatment plant for Proposed Project 1 include on-road motor vehicles and energy usage at the treatment plant. In addition, GHG emissions from the treatment plant includes emissions from the periodic delivery and the production (resulting from the energy consumed for production processes) of chemicals, which are required for odor control and treatment based on estimated demand at buildout. The chemicals include sodium hypochlorite, sodium hydroxide, thickening polymer, dewatering polymer, alum, filter polymer, and methanol.

Proposed Project 1 includes Partially Mixed Facultative Ponds, which produce an aerobic environment, and therefore will produce little or no CH_4 per 2006 IPCC Guidelines for National GHG Inventories (Carollo 2008b).

The CCAR General Reporting Protocol (CCAR 2008) considers energy required for the production of chemicals consumed in treatment processes to be outside the boundary of typical GHG inventories. However, in order to provide a more complete inventory of GHG emissions, the energy consumed for chemical production was computed. The energy per unit chemical consumed is calculated using conversion factors from the text "Energy in Wastewater Treatment" by William F. Owen (Carollo 2008b). Annual chemical consumption for Proposed Project 1 is based on estimates developed by Carollo.

Table 5.9-15 shows long-term operational GHG emissions associated with the treatment plant facilities that are part of Proposed Project 1. As shown in Table 5.9-15, the total long-term GHG emissions associated with treatment plant in Proposed Project 1 would contribute to a net reduction of GHG emissions compared to the existing wastewater system. Therefore, GHG emissions associated with the operation of the treatment plant facilities under Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. The operation of the proposed treatment plant facilities under Proposed Project 1 would contribute a net reduction in GHG emissions, thus, the operation of the proposed treatment plant facilities would contribute to a beneficial impact on GHG emissions.

Disposal Sites

The implementation of Proposed Project 1 would include the construction and operation of the leachfields at Broderson and sprayfields at Tonini.

Short-term Construction Impacts

GHG emissions generated from the construction phase of facilities at the disposal sites under Proposed Project 1 were estimated for the on-road motor vehicles and off-road construction equipment. Descriptions of on-road construction categories evaluated for GHG emissions are the same as described in Impact 5.9-C. The EMFAC 2007 model includes emission factors for CO_2 and NH_3. However, the model for off-road construction equipment, OFFROAD, does not include GHG emission factors; therefore an alternative method was used. The California Climate Action Registry (CCAR), in their General Reporting Protocol (CCAR 2008), recommends using fuel consumption data to determine CO_2 emissions. Other non-CO_2 emissions represent a minor portion compared to the CO_2 emissions. Since fuel consumption records were not available, fuel use was estimated using a formula provided by Food and Agriculture Organization of the United Nations (FAOUN 1992).

Table 5.9-14 shows short-term construction GHG emissions associated with the facilities at the proposed disposal sites. Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the facilities at the disposal sites that are associated with Proposed Project 1 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the facilities at the disposal sites under Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the facilities at the disposal sites under Proposed Project 1 would result in a less than significant GHG impact.

Long-term Construction Impacts

GHG emissions associated with the disposal sites for Proposed Project 1 include the same on-road motor vehicles usage as described in the collection system above. Table 5.9-15 shows long-term operational GHG emissions associated with the facilities at the disposal sites that are part of Proposed Project 1. As shown in Table 5.9-15, the total long-term GHG emissions associated with Proposed Project 1 would result in a net reduction of GHG emissions compared to the existing wastewater system. The implementation of the facilities at the disposal sites under Proposed Project 1 would contribute to the annual reduction in GHG emissions. Therefore, GHG emissions associated with the operation of the facilities at the disposal sites under Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. The operation of the proposed facilities at the disposal sites under Proposed Project 1 would contribute a net reduction in GHG emissions, thus, the operation of the proposed facilities at the disposal sites would contribute to a beneficial impact on GHG emissions.

Combined Project Effects

Short-term Construction Impacts

GHG emissions generated from the construction phase of facilities associated with the collection system, treatment plant site, and disposal sites under Proposed Project 1 were estimated for the on-road motor vehicles, off-road construction equipment, and GHG emissions associated with the creation of construction materials. As identified above, the on-road construction categories evaluated for GHG emissions are the same as described in Impact 5.9-C. The EMFAC 2007 model includes emission factors for CO_2 and NH_3. However, the model for off-road construction equipment, OFFROAD, does not include GHG emission factors; therefore an alternative method was used. The California Climate Action Registry (CCAR), in their General Reporting Protocol (CCAR 2008), recommends using fuel consumption data to determine CO_2 emissions. Other non-CO_2 emissions represent a minor portion compared to the CO_2 emissions. Since fuel consumption records were not available, fuel use was estimated using a formula provided by Food and Agriculture Organization of the United Nations (FAOUN 1992).

Table 5.9-14 shows the total short-term construction GHG emissions of 4,320,493 metric tons of CO_2e associated with the collection facilities and the facilities at the proposed treatment plant and disposal sites.

Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the facilities that are associated with Proposed Project 1 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the facilities under Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the facilities under Proposed Project 1 would result in a less than significant GHG impact. In addition, according to the SLOAPCD, construction emissions are considered less than significant. Although not required to reduce GHG emissions, Mitigation Measure 5.9-C1 that is required to reduce criteria emissions associated with the Proposed Project 1 would also reduce GHG emissions.

Long-term Construction Impacts

Long-term operational GHG emissions associated with the facilities of the collection system, treatment plant site, and disposal sites for Proposed Project 1 would come from on-road motor vehicle, energy usage, production (resulting from the energy consumed for production processes) of chemicals, and the regular transfer of septage from STEP/STEG tanks to the treatment plant by tanker truck.

On-road motor vehicle activity during continuous operation of the facility includes employee commute, maintenance trips, and septage hauling for Proposed Project 1. Estimates of GHG emissions from purchased and consumed electricity for the operation of the facilities of the collection system, treatment plant site, and disposal sites and production of chemicals were provided by Carollo Engineering (Carollo 2008b). Emission factors were from the CCAR's General Reporting Protocol (CCAR 2008) and from the text "Energy in Wastewater Treatment" by William F. Owen (Carollo 2008b).

Also included in the long-term operations of Proposed Project 1 is the methane emissions from septic tank venting. Methane emissions are generated from the anaerobic biodegradation of domestic wastewater within septic tanks and are vented to the atmosphere, contributing to the total carbon footprint calculated for Proposed Project 1. Estimates of the annual methane emissions vented from septic tanks are included for the prohibition zone only at build-out. The approach used for calculating septic tank methane emissions are established in the 2006 IPCC Guidelines for National GHG Inventories which is followed by the EPA.

Table 5.9-15 shows long-term operational GHG emissions associated with the facilities of the collection system, treatment plant site, and disposal sites for Proposed Project 1. As shown in Table

5.9-15, the total long-term GHG emissions associated with Proposed Project 1 would be 174,231 metric tons of CO_2e which represents an approximately 15.9 percent net reduction of GHG emissions compared to the existing wastewater system. Therefore, GHG emissions associated with the operation of the collection system of Proposed Project 1 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Furthermore, the operation of the proposed facilities under Proposed Project 1 would contribute to a beneficial impact on GHG emissions.

Proposed Project 2

Collection System

GHG emissions associated with the collection system for Proposed Project 2 include the same on-road motor vehicles and energy usage as described in the collection system section in Proposed Project 1. Proposed Project 2 does not include GHG emissions from STEP/STEG tanks.

Proposed Project 2 would take out of use 4,281 old septic tanks and install a gravity and pressurized sewer lateral pipelines to convey the effluent from each parcel to the wastewater treatment plant located at the Giacomazzi site. Subsequent to treatment, the treated effluent would be conveyed from Giacomazzi to the disposal sites (i.e., Broderson leachfields and Tonini sprayfields).

Short-term Construction Impacts

GHG emissions generated from the construction phase of collection system of Proposed Project 2 were estimated by the same methodology as Proposed Project 1.

Table 5.9-14 shows short-term construction GHG emissions. Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the collection system that is associated with Proposed Project 2 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the collection system of Proposed Project 2 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the collection system of Proposed Project 2 would result in a less than significant GHG impact.

Long-term Operational Impacts

Long-term operational GHG emissions for the collection system for Proposed Project 2 would come from on-road motor vehicle and energy usage.

Table 5.9-15 shows long-term operational GHG emissions associated with the proposed collection system of Proposed Project 2. As shown in Table 5.9-15, the total long-term GHG emissions associated with Proposed Project 2 would result in a net reduction of GHG emissions compared to the existing wastewater collection system. The implementation of the collection system under Proposed Project 1 would contribute to the annual reduction in GHG emissions. Therefore, GHG emissions associated with the operation of the collection system of Proposed Project 2 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. The operation of the proposed collection system under Proposed Project 2 would contribute a net reduction in GHG emissions, thus, the operation of the proposed collection system would contribute to a beneficial impact on GHG emissions.

Treatment Plant Site

Short-term Construction Impacts

GHG emissions generated from the construction phase of facilities at the treatment plant site under Proposed Project 2 were estimated for the on-road motor vehicles, off-road construction equipment, and GHG emissions associated with the creation of construction materials. GHG emissions were estimated by the same methodology as Proposed Project 1.

GHG emissions generated from the processing and production of construction materials, which are based on estimated demands at buildout, were determined by Carollo Engineering (Carollo 2008b). The construction materials for which material production (energy consumed for production processes) is evaluated are concrete, fiberglass, polyethylene lining, and PVC piping. Table 5.9-14 shows short-term construction GHG emissions associated with the treatment plant site.

Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the facilities at the treatment plant site that is associated with Proposed Project 2 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the facilities at the treatment plant site under Proposed Project 2 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the facilities at the treatment plant site under Proposed Project 2 would result in a less than significant GHG impact.

Long-term Operational Impacts

GHG emissions associated with the treatment plant for Proposed Project 2 were estimated using the same methodology for determining GHG emissions associated with the Proposed Project 2 treatment plant site as described above for Proposed Project 1. Proposed Project 2 would have much less GHG emissions from chemical production and on-road delivery of chemicals because methanol is not required for the OxDitch/Biolac treatment scenario.

Disposal Sites

The GHG emissions associated with the Proposed Project 2 disposal sites would be as described above for Proposed Project 1.

Combined Project Effects

Short-term Construction Impacts

GHG emissions generated from the construction phase of facilities associated with the collection system, treatment plant site, and disposal sites under Proposed Project 2 were estimated using the same methodology as in Proposed Project 1. Table 5.9-14 shows the total short-term construction GHG emissions of 3,712,167 metric tons of CO_2e associated with the collection facilities and the facilities at the proposed treatment plant and disposal sites.

Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the facilities that are associated with Proposed Project 2 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the facilities under Proposed Project 2 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the facilities under Proposed Project 2 would result in a less than significant GHG impact. In addition, according to the SLOAPCD, construction emissions are considered less than significant. Although not required to reduce GHG emissions, Mitigation Measure 5.9-C1 that is required to reduce criteria emissions associated with the Proposed Project 2 would also reduce GHG emissions.

Long-term Construction Impacts

Long-term operational GHG emissions associated with the facilities of the collection system, treatment plant site, and disposal sites for Proposed Project 2 would come from on-road motor vehicle, energy usage, and production (resulting from the energy consumed for production processes) of chemicals.

On-road motor vehicle activity during continuous operation of the facility includes employee commute and maintenance trips for Proposed Project 2. Estimates of GHG emissions from purchased and consumed electricity for the operation of the facilities of the collection system, treatment plant site, and disposal sites and production of chemicals were provided by Carollo Engineering (Carollo 2008b). Emission factors were from the CCAR's General Reporting Protocol (CCAR 2008) and from the text "Energy in Wastewater Treatment" by William F. Owen (Carollo 2008b).

Table 5.9-15 shows long-term operational GHG emissions associated with the facilities of the collection system, treatment plant site, and disposal sites for Proposed Project 2. As shown in Table 5.9-15, the total long-term GHG emissions associated with Proposed Project 2 would be 171,971 metric tons of CO_2e which represents an approximately 17.4 percent net reduction of GHG emissions compared to the existing wastewater system. Therefore, GHG emissions associated with the operation of the collection system of Proposed Project 2 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Furthermore, the operation of the proposed facilities under Proposed Project 2 would contribute to a beneficial impact on GHG emissions.

Proposed Project 3

Collection System

The GHG emissions associated with construction and operation of Proposed Project 3 collection system would be as described above for Proposed Project 2.

Treatment Plant Site

The GHG emissions associated with construction and operation of Proposed Project 3 treatment plant would be as described above for Proposed Project 2.

Disposal Sites

The GHG emissions associated with construction and operation of Proposed Project 3 disposal sites would be as described above for Proposed Project 1.

Combined Project Effects

Short-term Construction Impacts

The GHG emissions associated with the construction of Proposed Project 3 would be as described above for Proposed Project 2.

Long-term Construction Impacts

The GHG emissions associated with the operation of Proposed Project 3 would be as described above for Proposed Project 2.

Proposed Project 4

Collection System

Proposed Project 4 would take out of use 4,281 old septic tanks and install a gravity and pressurized sewer lateral pipelines to convey the effluent from each parcel to the wastewater treatment plant located at the Tonini site. Subsequent to treatment, the treated effluent would be conveyed from Tonini to the disposal sites (i.e., Broderson leachfields and Tonini sprayfields).

The GHG emissions associated with the construction and operation of the collection system for Proposed Project 4 would be approximately that same as described above for Proposed Project 2.

Treatment Plant Site

The implementation of Proposed Project 4 would include the construction and operation of a facultative pond, water storage facility, and appurtenant facilities at the proposed treatment plant site at Tonini.

The GHG emissions associated with the construction and operation of the treatment plant facilities for Proposed Project 4 would be approximately the same as described above for Proposed Project 1.

Disposal Sites

The GHG emissions associated with the construction and operation of the disposal site facilities for Proposed Project 4 would be approximately the same as described above for Proposed Project 1, 2, and 3.

Combined Project Effects

Short-term Construction Impacts

GHG emissions generated from the construction phase of facilities associated with the collection system, treatment plant site, and disposal sites under Proposed Project 4 were estimated using the same methodology as in Proposed Project 1. Table 5.9-14 shows the total short-term construction GHG emissions of 3,740,731 metric tons of CO_2e associated with the collection facilities and the facilities at the proposed treatment plant and disposal sites.

Emissions presented in Table 5.9-14 represent a temporary source of GHG emissions. These temporary emissions are estimated to occur over a two-year period beginning in the year 2010. Since the requirements of AB 32 are that the State's total 2020 GHG emissions would be equal to or below the levels documented for the year 1990, the construction emissions of the facilities that are associated with Proposed Project 4 would not contribute annual GHG emissions to the future year 2020 inventory. Therefore, GHG emissions associated with the construction of the facilities under Proposed Project 4 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Thus, the construction activities associated with the facilities under Proposed Project 4 would result in a less than significant GHG impact. In addition, according to the SLOAPCD, construction emissions are considered less than significant. Although not required to reduce GHG emissions, Mitigation Measure 5.9-C1 that is required to reduce criteria emissions associated with the Proposed Project 4 would also reduce GHG emissions.

Long-term Construction Impacts

Long-term operational GHG emissions associated with the facilities of the collection system, treatment plant site, and disposal sites for Proposed Project 4 would come from on-road motor vehicle, energy usage, and production (resulting from the energy consumed for production processes) of chemicals.

On-road motor vehicle activity during continuous operation of the facility includes employee commute and maintenance trips for Proposed Project 4. Estimates of GHG emissions from purchased and consumed electricity for the operation of the facilities of the collection system, treatment plant site, and disposal sites and production of chemicals were provided by Carollo Engineering (Carollo 2008b). Emission factors were from the CCAR's General Reporting Protocol (CCAR 2008) and from the text "Energy in Wastewater Treatment" by William F. Owen (Carollo 2008b).

Table 5.9-15 shows long-term operational GHG emissions associated with the facilities of the collection system, treatment plant site, and disposal sites for Proposed Project 4. As shown in Table 5.9-15, the total long-term GHG emissions associated with Proposed Project 4 would be 144,161 metric tons of CO_2e which represents an approximately 40 percent net reduction of GHG emissions compared to the existing wastewater system. Therefore, GHG emissions associated with the operation of Proposed Project 4 would not hinder or delay the State's ability to achieve the year 2020 goals of AB 32. Furthermore, the operation of the proposed facilities under Proposed Project 4 would contribute to a beneficial impact on GHG emissions.

Cumulative Impact Analysis

Related projects within the greater cumulative project area are detailed in Section 4.2 and Exhibit 4.2-1 in the Draft EIR. Three of the nine related projects (Los Osos CSD Waterline Replacement, Los Osos Valley Road Palisades Storm Drain, and AT&T Cable) physically overlap with the study area for the proposed project but are either completed or expected to be completed by the time construction of the proposed project is anticipated to begin (2010). Six of the nine related projects (State Park Marina Renovation, Morro Bay Wastewater Treatment Plant, Dredging of Morro Bay, CMC Wastewater Treatment Plant, Phase II Steam Generator Replacement at Diablo, and Spent Fuel Storage Facility at Diablo) have no physical overlap with the proposed project; however, they could contribute to GHG impacts. Since Proposed Projects 1 through 4 could reduce GHG emissions compared to the existing wastewater system, implementation of any of the proposed projects would not contribute to an adverse cumulative impact related to GHG emissions.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

No mitigation measures are required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

Less than significant.

Cumulative

Proposed Projects 1 through 4

Less than significant.

Conflict with Local Goals and Policies

5.9-G: The project would not conflict with local goals and policies in the General Plan.

Project-Specific Impact Analysis

The County of San Luis Obispo does not have any air quality goals or policies in the current adopted General Plan that are relevant to Proposed Projects 1 through 4. Therefore, Proposed Projects 1 through 4 would not impact any County General Plan air quality goals or policies.

Cumulative Impact Analysis

Since Proposed Projects 1 through 4 would not impact currently adopted General Plan air quality goals or policies, Proposed Projects 1 through 4 would not contribute to cumulative impacts on air quality goals or policies.

Mitigation Measures

Project-Specific

Proposed Projects 1 through 4

No mitigation measures are required.

Cumulative

Proposed Projects 1 through 4

No mitigation measures are required.

Level of Significance After Mitigation

Project-Specific

Proposed Projects 1 through 4

No impact.

Cumulative

Proposed Projects 1 through 4

No impact.

K-2: Air Quality and Climate Change Calculations

Proposed Project #1

Construction On-road

Construction	VMT/ quarter	Emissions (tons per quarter)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	385,283	0.04	0.79	1.42	0.04	0.04
Treatment	115,750	0.01	0.26	0.05	0.00	0.00
Disposal	94,764	0.02	0.21	0.78	0.02	0.02
TOTALS	***595,796***	***0.07***	***1.26***	***2.24***	***0.07***	***0.06***

Operation

Operation	VMT/ quarter	Emissions (tons per quarter)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	25,748	0.00	0.06	0.02	0.00	0.00
Treatment	5,608	0.00	0.01	0.01	0.00	0.00
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***31,356***	***0.00***	***0.07***	***0.03***	***0.00***	***0.00***
NET CHANGE	***14,660***	***0.00***	***0.04***	***-0.14***	***0.00***	***0.00***

Proposed Project #2

Construction On-road

Construction	VMT/ quarter	Emissions (tons per quarter)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	292,959	0.03	0.54	1.08	0.03	0.03
Treatment	95,360	0.01	0.23	0.04	0.00	0.00
Disposal	114,931	0.02	0.40	0.81	0.02	0.02
TOTALS	***503,250***	***0.06***	***1.17***	***1.94***	***0.06***	***0.05***

Operation

Operation	VMT/ quarter	Emissions (tons per quarter)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	21,329	0.00	0.05	0.01	0.00	0.00
Treatment	8,587	0.00	0.02	0.03	0.00	0.00
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***29,916***	***0.00***	***0.07***	***0.03***	***0.00***	***0.00***
NET CHANGE	***13,220***	***0.00***	***0.03***	***-0.14***	***0.00***	***0.00***

Proposed Project #3

Construction On-road

Construction	VMT/ quarter	Emissions (tons per quarter)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	234,424	0.03	0.41	0.93	0.03	0.02
Treatment	115,528	0.01	0.27	0.05	0.00	0.00
Disposal	55,408	0.01	0.12	0.15	0.00	0.00
TOTALS	***405,360***	***0.04***	***0.81***	***1.13***	***0.03***	***0.03***

Operation

Operation	VMT/ quarter	Emissions (tons per quarter)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	21,329	0.00	0.05	0.01	0.00	0.00
Treatment	8,587	0.00	0.02	0.03	0.00	0.00
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***29,916***	***0.00***	***0.07***	***0.03***	***0.00***	***0.00***
NET CHANGE	***13,220***	***0.00***	***0.03***	***-0.14***	***0.00***	***0.00***

Proposed Project #4

Construction On-road

Construction	VMT/ quarter	Emissions (tons per quarter) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	296,608	0.03	0.56	1.15	0.03	0.03
Treatment	115,733	0.01	0.27	0.06	0.00	0.00
Disposal	59,759	0.02	0.21	0.78	0.02	0.02
TOTALS	***472,100***	***0.06***	***1.03***	***1.99***	***0.06***	***0.05***

Operation

Operation	VMT/ quarter	Emissions (tons per quarter) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	21,329	0.00	0.05	0.01	0.00	0.00
Treatment	5,591	0.00	0.02	0.02	0.00	0.00
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***26,919***	***0.00***	***0.06***	***0.02***	***0.00***	***0.00***
NET CHANGE	***10,224***	***0.00***	***0.03***	***-0.15***	***0.00***	***0.00***

SUMMARY

Construction On-road

Construction	VMT/ quarter	Emissions (tons per quarter) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Proposed Project #1	595,796	0.07	1.26	2.24	0.07	0.06
Proposed Project #2	503,250	0.06	1.17	1.94	0.06	0.05
Proposed Project #3	405,360	0.04	0.81	1.13	0.03	0.03
Proposed Project #4	472,100	0.06	1.03	1.99	0.06	0.05

Operation

Operation	VMT/ quarter	Emissions (tons per quarter) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Proposed Project #1	31,356	0.00	0.04	-0.14	0.00	0.00
Proposed Project #2	29,916	0.00	0.03	-0.14	0.00	0.00
Proposed Project #3	29,916	0.00	0.07	0.03	0.00	0.00
Proposed Project #4	26,919	0.00	0.06	0.02	0.00	0.00

Operation	VMT/ quarter	Net Change (tons per quarter) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Proposed Project #1	14,660	0.00	0.04	-0.14	0.00	0.00
Proposed Project #2	13,220	0.00	0.03	-0.14	0.00	0.00
Proposed Project #3	13,220	0.00	0.03	-0.14	0.00	0.00
Proposed Project #4	10,224	0.00	0.03	-0.15	0.00	0.00

Proposed Project #1

Construction

Construction	VMT/d	Emissions (lb/d) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	6,371	2.0	27.0	52.5	1.6	1.4
Treatment	2,117	1.0	10.6	10.7	0.4	0.4
Disposal	1,551	0.6	6.7	25.6	0.7	0.6
TOTALS	***10,039***	***3.6***	***44.4***	***88.8***	***2.7***	***2.5***

Operation

Operation	VMT/d	Emissions (lb/d) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	415	0.05	1.91	0.71	0.03	0.03
Treatment	327	1.02	2.68	10.78	0.37	0.34
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***742***	***1.08***	***4.59***	***11.49***	***0.40***	***0.37***
NET CHANGE	***475***	***0.96***	***3.44***	***5.95***	***0.25***	***0.23***

Proposed Project #2

Construction

Construction	VMT/d	Emissions (lb/d) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	4,804	1.6	13.5	41.2	1.2	1.1
Treatment	1,847	0.2	8.7	2.3	0.1	0.1
Disposal	1,909	0.7	4.7	27.2	0.8	0.7
TOTALS	***8,560***	***2.5***	***27.0***	***70.6***	***2.1***	***1.9***

Operation

Operation	VMT/d	Emissions (lb/d) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	355	0.04	1.72	0.34	0.02	0.02
Treatment	348	0.90	2.48	10.04	0.34	0.32
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***703***	***0.95***	***4.20***	***10.38***	***0.36***	***0.33***
NET CHANGE	***436***	***0.83***	***3.05***	***4.84***	***0.21***	***0.19***

Proposed Project #3

Construction

Construction	VMT/d	Emissions (lb/d) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	3,775	0.9	13.5	31.1	0.9	0.8
Treatment	2,205	0.3	9.4	3.2	0.1	0.1
Disposal	921	0.2	4.1	5.3	0.2	0.1
TOTALS	***6,901***	***1.4***	***27.0***	***39.6***	***1.2***	***1.1***

Operation

Operation	VMT/d	Emissions (lb/d) ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	355	0.04	1.72	0.34	0.02	0.02
Treatment	348	0.90	2.48	10.04	0.34	0.32
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***703***	***0.95***	***4.20***	***10.38***	***0.36***	***0.33***
NET CHANGE	***436***	***0.83***	***3.05***	***4.84***	***0.21***	***0.19***

Proposed Project #4

Construction

Construction	VMT/d	Emissions (lb/d)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	4,843	1.5	19.1	41.4	1.2	1.1
Treatment	2,104	1.6	12.2	17.3	0.6	0.6
Disposal	990	0.6	6.7	25.6	0.7	0.6
TOTALS	***7,937***	***3.7***	***38.1***	***84.3***	***2.5***	***2.3***

Operation

Operation	VMT/d	Emissions (lb/d)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	355	0.04	1.63	0.33	0.02	0.02
Treatment	260	1.33	3.51	14.13	0.49	0.45
Disposal	0	0.00	0.00	0.00	0.00	0.00
TOTALS	***615***	***1.38***	***5.14***	***14.46***	***0.51***	***0.47***
NET CHANGE	***348***	***1.26***	***3.99***	***8.92***	***0.36***	***0.33***

SUMMARY

Construction

Construction	VMT/d	Emissions (lb/d)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Proposed Project #1	10,039	3.6	44.4	88.8	2.7	2.5
Proposed Project #2	8,560	2.5	27.0	70.6	2.1	1.9
Proposed Project #3	6,901	1.4	27.0	39.6	1.2	1.1
Proposed Project #4	7,937	3.7	38.1	84.3	2.5	2.3

Operation

Operation	VMT/d	Emissions (lb/d)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Proposed Project #1	742	1.08	4.59	11.49	0.40	0.37
Proposed Project #2	703	0.95	4.20	10.38	0.36	0.33
Proposed Project #3	703	0.95	4.20	10.38	0.36	0.33
Proposed Project #4	615	1.38	5.14	14.46	0.51	0.47

Operation	VMT/d	Net Change (lb/d)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Proposed Project #1	475	0.96	3.44	5.95	0.25	0.23
Proposed Project #2	436	0.83	3.05	4.84	0.21	0.19
Proposed Project #3	436	0.83	3.05	4.84	0.21	0.19
Proposed Project #4	348	1.26	3.99	8.92	0.36	0.33

Project 1 Construction On-road Emissions

Employee Trips

System/Activity	Pro Code	# of Employees	Duration (yrs)	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection System - STEP/STEG	C	72	2.0	250	40	72	2,880	720,000
Raw Wastewater Pipeline	C	17	1.0	250	40	17	680	170,000
Disposal - Effluent and Plant Solids	D	8	0.5	250	40	8	320	80,000
Treatment Site	T	35	2.0	250	40	35	1,400	350,000
Storage	T	8	0.5	250	40	8	320	80,000
Asphalt	T	3	2.0	250	40	3	120	30,000
	TOTAL	***143***				***143***	***5,720***	***1,430,000***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.30	12.98	1.75	0.11	0.10	0.01	0.41	0.05	0.00	0.00
0.07	3.06	0.41	0.03	0.02	0.00	0.10	0.01	0.00	0.00
0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
0.15	6.31	0.85	0.05	0.05	0.00	0.20	0.03	0.00	0.00
0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
0.01	0.54	0.07	0.00	0.00	0.00	0.02	0.00	0.00	0.00
0.60	***25.77***	***3.47***	***0.22***	***0.20***	***0.02***	***0.81***	***0.11***	***0.01***	***0.01***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
807,998	44.3	733,848
190,777	10.5	173,270
89,778	4.9	81,539
392,777	21.5	356,731
89,778	4.9	81,539
33,667	1.8	30,577
1,604,774	***88.0***	***1,457,503***

Excavation Trips

Project Facility	Pro Code	Total yd^3 excavated ***	Total yd^3 Imported	Total yd^3 Exported	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System	C	322,000	32,200	64,400	19,320	2.0	250	33	38.6	1,275	318,780
Raw Water Conveyance	C	10,400	1,040	2,080	624	1.0	250	33	2.5	82	20,592
Treated Effluent Conveyance	C	15,100	1,510	3,020	906	0.5	250	33	3.6	120	29,898
Leachfield ****	D	73,000	0	45,173	9,035	1.0	250	33	36.1	1,193	298,144
Sprayfield	D	25,000	0	0	0	0.5	250	33	0.0	0	0
Wastewater Treatment Plant***	T	83,000	0	0	0	2.0	250	33	0.0	0	0
Solids Processing and Disposal	T	1,330	0	0	0	0.5	250	33	0.0	0	0
Seasonal Storage	T	77,000	0	0	0	0.5	250	33	0.0	0	0
	TOTAL	***606,830***	***34,750***	***114,673***	***29,885***				***80.9***	***2,670***	***667,414***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.57	5.47	26.44	0.72	0.66	0.02	0.17	0.83	0.02	0.02
0.04	0.35	1.71	0.05	0.04	0.00	0.01	0.05	0.00	0.00
0.05	0.51	2.48	0.07	0.06	0.00	0.02	0.08	0.00	0.00
0.54	5.11	24.73	0.67	0.62	0.02	0.16	0.77	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.20	***11.45***	***55.35***	***1.51***	***1.39***	***0.04***	***0.36***	***1.73***	***0.05***	***0.04***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
1,057,698	6.6	959,654
68,323	0.4	61,990
99,200	0.6	90,005
989,229	6.2	897,531
0	0.0	0
0	0.0	0
0	0.0	0
0	0.0	0
2,214,451	***13.9***	***2,009,180***

Construction Waste Trips

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System - STEP/STEG	C	8,000	2.0	250	33	16.00	528.0	132,000
Raw Wastewater Pipeline	C	20	1.0	20	33	1.00	33.0	660
Disposal - Effluent and Plant Solids	D	20	0.5	20	33	1.00	33.0	660
Treatment Site	T	50	2.0	25	33	1.00	33.0	825
Storage	T	20	0.5	20	33	1.00	33.0	660
	TOTAL	***8,110***				***20.00***	***660.0***	***134,805***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.24	2.26	10.95	0.30	0.27	0.01	0.07	0.34	0.01	0.01
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.30	***2.83***	***13.68***	***0.37***	***0.34***	***0.01***	***0.07***	***0.35***	***0.01***	***0.01***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
437,970	2.7	397,372
2,190	0.0	1,987
2,190	0.0	1,987
2,737	0.0	2,484
2,190	0.0	1,987
447,277	***2.8***	***405,816***

Materials Trips to/from Contractor's Yard

Materials Supplied	Pro Code	RT per year	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Septic Tank - Fiberglass	C	145	2.0	145	172	1.00	172.0	24,940
Septic Tank - Aggregate Base	C	6	2.0	6	78	1.00	78.0	468
Piping - Collection	C	40	2.0	40	207	1.00	207.0	8,193
Piping - Conveyance	C	11	2.0	11	207	1.00	207.0	2,364
Lining - Polyethylene	T	1	2.0	1	331	1.00	331.0	331
Riprap	T	18	2.0	18	78	1.00	78.0	1,404
LDPE (2% Black C) Tubing	T	1	2.0	1	2,186	1.00	2,186.0	2,186
	TOTAL	***222***				***7.00***	***3,259.0***	***39,886***

Mileage in SLO County

RT/1-way Mileage**	Total VMT/d	Total VMT/yr
35	35.0	5,075
70	70.0	420
35	35.0	1,385
35	35.0	400
35	35.0	35
70	70.0	1,260
79	79.0	79
	359.0	***8,654***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.15	0.38	1.56	0.05	0.05	0.00	0.01	0.03	0.00	0.00
0.30	0.77	3.12	0.11	0.10	0.00	0.00	0.00	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.01	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.30	0.77	3.12	0.11	0.10	0.00	0.00	0.01	0.00	0.00
0.33	0.87	3.52	0.12	0.11	0.00	0.00	0.00	0.00	0.00
1.52	***3.94***	***15.98***	***0.56***	***0.51***	***0.00***	***0.01***	***0.05***	***0.00***	***0.00***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
119,351	4.9	108,367
2,240	0.1	2,034
39,208	1.6	35,600
11,314	0.5	10,272
1,584	0.1	1,438
6,719	0.3	6,101
10,461	0.4	9,498
190,877	***7.8***	***173,310***

Project 1 Construction On-road Emissions

Materials Trips to/from Job Site

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Collection System - STEP/STEG	C	12,000	2.0	250	5	24.00	120.0	30,000
Piping - Collection	C	495	2.0	247	5	1.00	5.0	1,237
Asphallt - Collection System	C	2,810	2.0	250	78	5.62	438.4	109,594
Piping - Conveyance	C	114	2.0	57	5	1.00	5.0	284
Raw Wastewater Pipeline	C	100	2.0	50	5	1.00	5.0	250
Asphallt - Conveyance System	C	337	2.0	169	78	1.00	78.0	13,144
Disposal - Effluent and Plant Solids	D	50	0.5	50	5	1.00	5.0	250
Treatment Concrete	T	12	2.0	6	22	1.00	22.0	132
Storage	T	4	2.0	2	5	1.00	5.0	10
	TOTAL	***15,922***				***36.62***	***683.4***	***154,901***

Mileage in SLO County

System/Activity	RT/1-way Mileage**	Total VMT/d	Total VMT/yr
Collection System - STEP/STEG	5	120.0	30,000
Piping - Collection	5	5.0	1,237
Asphallt - Collection System	70	393.4	98,353
Piping - Conveyance	5	5.0	284
Raw Wastewater Pipeline	5	5.0	250
Asphallt - Conveyance System	70	70.0	11,796
Disposal - Effluent and Plant Solids	5	5.0	250
Treatment Concrete	22	22.0	132
Storage	5	5.0	10
TOTAL		***630.4***	***142,313***

EMISSIONS - SLO

System/Activity	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - STEP/STEG	0.00	0.07	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Piping - Collection	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Collection System	0.01	0.23	0.20	0.01	0.01	0.00	0.01	0.01	0.00	0.00
Piping - Conveyance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Raw Wastewater Pipeline	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Conveyance System	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Disposal - Effluent and Plant Solids	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Treatment Concrete	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.02***	***0.37***	***0.33***	***0.01***	***0.01***	***0.00***	***0.01***	***0.01***	***0.00***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - STEP/STEG	57,610	0.8	52,279
Piping - Collection	2,375	0.0	2,155
Asphallt - Collection System	210,457	3.1	190,982
Piping - Conveyance	546	0.0	496
Raw Wastewater Pipeline	480	0.0	436
Asphallt - Conveyance System	25,242	0.4	22,906
Disposal - Effluent and Plant Solids	480	0.0	436
Treatment Concrete	253	0.0	230
Storage	19	0.0	17
TOTAL	***297,463***	***4.4***	***269,937***

SUMMARY - ON-ROAD TRIPS

System/Activity	Pro Code	Complete			SLO County Only		
		RT per Day	Total VMT/d	Total VMT/yr	RT per Day	Total VMT/d	Total VMT/yr
Collection/Conveyance	C	188.4	6,913	1,582,405	188.4	6,371	1,541,131
Treatment	T	53.0	4,528	465,548	53.0	2,117	463,001
Disposal	D	46.1	1,551	379,054	46.1	1,551	379,054
	TOTAL	***287.5***	***12,992***	***2,427,007***	***287.5***	***10,039***	***2,383,186***

SUMMARY EMISSIONS - SLO

System/Activity	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	2.05	27.05	52.51	1.57	1.44	0.04	0.79	1.42	0.04	0.04
Treatment	1.00	10.61	10.69	0.39	0.36	0.01	0.26	0.05	0.00	0.00
Disposal	0.58	6.70	25.61	0.71	0.65	0.02	0.21	0.78	0.02	0.02
TOTAL	***3.63***	***44.36***	***88.81***	***2.67***	***2.45***	***0.07***	***1.26***	***2.24***	***0.07***	***0.06***

Sum GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection/Conveyance	3,132,980	76.6	2,843,651
Treatment	540,185	29.1	490,602
Disposal	1,081,676	11.1	981,492
TOTAL	***4,754,842***	***116.8***	***4,315,746***

* *RT = Round Trip*
** *Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*
*** All pipeline and below ground excavations include the assumption that there would be a requirement of 10% added fill dift to enable sufficient bed quality and
**** Leachfield has 7 acres of 4 foot deep gravel, geotextile, and 4-inch perforated pipe to be brought in.
Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Project 2 Construction On-road Emissions

Employee Trips

System/Activity	Pro Code	# of Employees	Duration (yrs)	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	40	2.0	250	40	40	1,600	400,000
Raw Wastewater Pipeline	C	17	1.0	250	40	17	680	170,000
Disposal - Effluent and Plant Solids	D	8	0.5	250	40	8	320	80,000
Storage	D	8	0.5	250	40	8	320	80,000
Treatment Site	T	35	2.0	250	40	35	1,400	350,000
Asphalt	T	3	2.0	250	40	3	120	30,000
TOTAL		***111***				***111***	***4,440***	***1,110,000***

EMISSIONS - SLO

System/Activity	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - Gravity	0.17	7.21	0.97	0.06	0.06	0.01	0.23	0.03	0.00	0.00
Raw Wastewater Pipeline	0.07	3.06	0.41	0.03	0.02	0.00	0.10	0.01	0.00	0.00
Disposal - Effluent and Plant Solids	0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
Storage	0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
Treatment Site	0.15	6.31	0.85	0.05	0.05	0.00	0.20	0.03	0.00	0.00
Asphalt	0.01	0.54	0.07	0.00	0.00	0.00	0.02	0.00	0.00	0.00
TOTAL	***0.47***	***20.00***	***2.69***	***0.17***	***0.16***	***0.01***	***0.63***	***0.08***	***0.01***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - Gravity	448,888	24.6	407,693
Raw Wastewater Pipeline	190,777	10.5	173,270
Disposal - Effluent and Plant Solids	89,778	4.9	81,539
Storage	89,778	4.9	81,539
Treatment Site	392,777	21.5	356,731
Asphalt	33,667	1.8	30,577
TOTAL	***1,245,663***	***68.3***	***1,131,348***

Excavation Trips

Project Facility	Pro Code	Total yd^3 excavated ***	Total yd^3 Imported	Total yd^3 Exported	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System	C	339,000	33,900	67,800	20,340	2.0	250	33	40.7	1,342	335,610
Raw Water Conveyance	C	10,500	1,050	2,100	630	1.0	250	33	2.5	83	20,790
Treated Effluent Conveyance	C	15,100	1,510	3,020	906	0.5	250	33	3.6	120	29,898
Leachfield ****	D	73,000	0	45,173	9,035	1.0	250	33	36.1	1,193	298,144
Sprayfield	D	25,000	0	0	0	0.5	250	33	0.0	0	0
Seasonal Storage	D	77,000	0	0	0	0.5	250	33	0.0	0	0
Wastewater Treatment Plant***	T	28,600	0	0	0	2.0	250	33	0.0	0	0
Solids Processing and Disposal	T	1,900	0	0	0	0.5	250	33	0.0	0	0
TOTAL		***570,100***	***36,460***	***118,093***	***30,911***				***83.0***	***2,738***	***684,442***

EMISSIONS - SLO

Project Facility	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System	0.60	5.76	27.83	0.76	0.70	0.02	0.18	0.87	0.02	0.02
Raw Water Conveyance	0.04	0.36	1.72	0.05	0.04	0.00	0.01	0.05	0.00	0.00
Treated Effluent Conveyance	0.05	0.51	2.48	0.07	0.06	0.00	0.02	0.08	0.00	0.00
Leachfield ****	0.54	5.11	24.73	0.67	0.62	0.02	0.16	0.77	0.02	0.02
Sprayfield	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seasonal Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wastewater Treatment Plant***	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Processing and Disposal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	***1.23***	***11.74***	***56.76***	***1.55***	***1.42***	***0.04***	***0.37***	***1.77***	***0.05***	***0.04***

GHG - All

Project Facility	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System	1,113,540	7.0	1,010,319
Raw Water Conveyance	68,980	0.4	62,586
Treated Effluent Conveyance	99,200	0.6	90,005
Leachfield ****	989,229	6.2	897,531
Sprayfield	0	0.0	0
Seasonal Storage	0	0.0	0
Wastewater Treatment Plant***	0	0.0	0
Solids Processing and Disposal	0	0.0	0
TOTAL	***2,270,949***	***14.2***	***2,060,441***

Construction Waste Trips

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	500	2.0	250	33	1.00	33.0	8,250
Raw Wastewater Pipeline	C	20	1.0	20	33	1.00	33.0	660
Disposal - Effluent and Plant Solids	D	20	0.5	20	33	1.00	33.0	660
Storage	D	20	0.5	20	33	1.00	33.0	660
Treatment Site	T	50	2.0	25	33	1.00	33.0	825
TOTAL		***610***				***5.00***	***165.0***	***11,055***

EMISSIONS - SLO

System/Activity	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - Gravity	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.02	0.00	0.00
Raw Wastewater Pipeline	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Disposal - Effluent and Plant Solids	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Storage	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Treatment Site	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.07***	***0.71***	***3.42***	***0.09***	***0.09***	***0.00***	***0.01***	***0.03***	***0.00***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - Gravity	27,373	0.2	24,836
Raw Wastewater Pipeline	2,190	0.0	1,987
Disposal - Effluent and Plant Solids	2,190	0.0	1,987
Storage	2,190	0.0	1,987
Treatment Site	2,737	0.0	2,484
TOTAL	***36,680***	***0.2***	***33,280***

Materials Trips to/from Contractor's Yard

Materials Supplied	Pro Code	RT per year	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Piping - Collection	C	60	2.0	60	207	1.00	207.0	12,420
Piping - Conveyance	C	13	2.0	13	207	1.00	207.0	2,718
Lining - Polyethylene	T	1	2.0	1	331	1.00	331.0	331
TOTAL		***74***				***3.00***	***745.0***	***15,469***

Mileage in SLO County

Materials Supplied	RT/1-way Mileage**	Total VMT/d	Total VMT/yr
Piping - Collection	35	35.0	2,100
Piping - Conveyance	35	35.0	460
Lining - Polyethylene	35	35.0	35
TOTAL		***105.0***	***2,595***

EMISSIONS - SLO

Materials Supplied	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Piping - Collection	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Piping - Conveyance	0.44	1.15	4.67	0.16	0.15	0.00	0.00	0.01	0.00	0.00
Lining - Polyethylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.59***	***1.54***	***6.23***	***0.22***	***0.20***	***0.00***	***0.00***	***0.01***	***0.00***	***0.00***

GHG - All

Materials Supplied	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Piping - Collection	59,436	2.4	53,966
Piping - Conveyance	13,007	0.5	11,810
Lining - Polyethylene	1,584	0.1	1,438
TOTAL	***74,028***	***3.0***	***67,215***

Project 2 Construction On-road Emissions

Materials Trips to/from Job Site

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	**C**	500	2.0	250	5	1.00	5.0	1,250
Piping - Collection	C	750	2.0	250	5	1.50	7.5	1,875
Asphallt - Collection System	C	5,389	2.0	250	78	10.78	840.7	210,167
Piping - Conveyance	C	114	2.0	250	5	0.23	1.1	284
Raw Wastewater Pipeline	C	100	2.0	50	5	1.00	5.0	250
Asphallt - Conveyance System	C	337	2.0	169	78	1.00	78.0	13,144
Storage	D	4	2.0	2	5	1.00	5.0	10
Disposal - Effluent and Plant Solids	D	50	0.5	50	5	1.00	5.0	250
Treatment Concrete	T	24	2.0	12	22	1.00	22.0	264
Biolac Blowers	T	1	1.0	1	2,875	1.00	2,875.0	2,875
Biolac Aeration/Clarifier	T	2	1.0	2	2,468	1.00	2,468.0	4,936
Biolac Controls	T	1	1.0	1	2,190	1.00	2,190.0	2,190
TOTAL		***7,272***				***21.51***	***8,502.3***	***237,495***

Mileage in SLO County

System/Activity	RT/1-way Mileage**	Total VMT/d	Total VMT/yr
Collection System - Gravity	5	5.0	1,250
Piping - Collection	5	7.5	1,875
Asphallt - Collection System	70	754.4	188,611
Piping - Conveyance	5	1.1	284
Raw Wastewater Pipeline	5	5.0	250
Asphallt - Conveyance System	70	70.0	11,796
Storage	5	5.0	10
Disposal - Effluent and Plant Solids	5	5.0	250
Treatment Concrete	22	22.0	264
Biolac Blowers	79	79.0	79
Biolac Aeration/Clarifier	79	79.0	158
Biolac Controls	79	79.0	79
TOTAL		***1,112.1***	***204,907***

EMISSIONS - SLO

System/Activity	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - Gravity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Piping - Collection	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Collection System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Piping - Conveyance	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Raw Wastewater Pipeline	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Conveyance System	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Disposal - Effluent and Plant Solids	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Treatment Concrete	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biolac Blowers	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biolac Aeration/Clarifier	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biolac Controls	0.04	0.65	0.58	0.02	0.01	0.00	0.01	0.01	0.00	0.00
TOTAL	***0.06***	***0.96***	***0.85***	***0.02***	***0.02***	***0.00***	***0.02***	***0.01***	***0.00***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - Gravity	2,400	0.0	2,178
Piping - Collection	3,601	0.1	3,267
Asphallt - Collection System	403,591	5.9	366,244
Piping - Conveyance	546	0.0	496
Raw Wastewater Pipeline	480	0.0	436
Asphallt - Conveyance System	25,242	0.4	22,906
Storage	19	0.0	17
Disposal - Effluent and Plant Solids	480	0.0	436
Treatment Concrete	507	0.0	460
Biolac Blowers	5,521	0.1	5,010
Biolac Aeration/Clarifier	9,479	0.1	8,602
Biolac Controls	4,206	0.1	3,816
TOTAL	***456,072***	***6.7***	***413,868***

SUMMARY

System/Activity	Pro Code	Complete			SLO County Only		
		RT per Day	Total VMT/d	Total VMT/yr	RT per Day	Total VMT/d	Total VMT/yr
Collection/Conveyance	C	123.3	5,242	1,207,316	123.3	4,804	1,171,834
Treatment	T	44.0	9,439	391,421	44.0	1,847	381,440
Disposal	D	56.1	1,909	459,724	56.1	1,909	459,724
TOTAL		***223.5***	***16,590***	***2,058,461***	***223.5***	***8,560***	***2,012,998***

SUMMARY EMISSIONS - SLO

System/Activity	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	1.56	13.54	41.15	1.22	1.12	0.03	0.54	1.08	0.03	0.03
Treatment	0.22	8.73	2.31	0.10	0.09	0.01	0.23	0.04	0.00	0.00
Disposal	0.75	4.72	27.15	0.78	0.72	0.02	0.40	0.81	0.02	0.02
TOTAL	***2.53***	***26.99***	***70.61***	***2.09***	***1.93***	***0.06***	***1.17***	***1.94***	***0.06***	***0.05***

Sum GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection/Conveyance	2,459,252	52.6	2,231,998
Treatment	450,477	23.8	409,118
Disposal	1,173,663	32.7	1,340,228
TOTAL	***4,083,392***	***109.1***	***3,981,345***

* *RT = Round Trip*
** *Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*
*** All pipeline and below ground excavations include the assumption that there would be a requirement of 10% added fill dift to enable sufficient bed
**** Leachfield has 7 acres of 4 foot deep gravel, geotextile, and 4-inch perforated pipe to be brought in.
Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Project 3 Construction On-road Emissions

Employee Trips

System/Activity	Pro Code	# of Employees	Duration (yrs)	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	40	2.0	250	40	40	1,600	400,000
Raw Wastewater Pipeline	C	17	1.0	250	40	17	680	170,000
Disposal - Effluent and Plant Solids	D	8	0.5	250	40	8	320	80,000
Treatment Site	T	35	2.0	250	40	35	1,400	350,000
Storage	T	8	0.5	250	40	8	320	80,000
Asphalt	T	3	2.0	250	40	3	120	30,000
	TOTAL	*111*				*111*	*4,440*	*1,110,000*

EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - Gravity	0.17	7.21	0.97	0.06	0.06	0.01	0.23	0.03	0.00	0.00
Raw Wastewater Pipeline	0.07	3.06	0.41	0.03	0.02	0.00	0.10	0.01	0.00	0.00
Disposal - Effluent and Plant Solids	0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
Treatment Site	0.15	6.31	0.85	0.05	0.05	0.00	0.20	0.03	0.00	0.00
Storage	0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
Asphalt	0.01	0.54	0.07	0.00	0.00	0.00	0.02	0.00	0.00	0.00
TOTAL	*0.47*	*20.00*	*2.69*	*0.17*	*0.16*	*0.01*	*0.63*	*0.08*	*0.01*	*0.00*

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - Gravity	448,888	24.6	407,693
Raw Wastewater Pipeline	190,777	10.5	173,270
Disposal - Effluent and Plant Solids	89,778	4.9	81,539
Treatment Site	392,777	21.5	356,731
Storage	89,778	4.9	81,539
Asphalt	33,667	1.8	30,577
TOTAL	*1,245,663*	*68.3*	*1,131,348*

Excavation Trips

Project Facility	Pro Code	Total yd^3 excavated ***	Total yd^3 Imported	Total yd^3 Exported	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System	C	339,000	33,900	67,800	20,340	2.0	250	33	40.7	1,342	335,610
Raw Water Conveyance	C	10,500	1,050	2,100	630	1.0	250	33	2.5	83	20,790
Treated Effluent Conveyance	C	15,100	1,510	3,020	906	0.5	250	33	3.6	120	29,898
Leachfield ****	D	73,000	0	45,173	9,035	1.0	250	33	36.1	1,193	298,144
Sprayfield	D	25,000	0	0	0	0.5	250	33	0.0	0	0
Wastewater Treatment Plant***	T	28,600	0	0	0	2.0	250	33	0.0	0	0
Solids Processing and Disposal	T	1,900	0	0	0	0.5	250	33	0.0	0	0
Seasonal Storage	T	77,000	0	0	0	0.5	250	33	0.0	0	0
	TOTAL	*570,100*	*36,460*	*118,093*	*30,911*				*83.0*	*2,738*	*684,442*

EMISSIONS - SLO

Project Facility	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System	0.60	5.76	27.83	0.76	0.70	0.02	0.18	0.87	0.02	0.02
Raw Water Conveyance	0.04	0.36	1.72	0.05	0.04	0.00	0.01	0.05	0.00	0.00
Treated Effluent Conveyance	0.05	0.51	2.48	0.07	0.06	0.00	0.02	0.08	0.00	0.00
Leachfield ****	0.54	5.11	24.73	0.67	0.62	0.02	0.16	0.77	0.02	0.02
Sprayfield	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wastewater Treatment Plant***	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Solids Processing and Disposal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seasonal Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	*1.23*	*11.74*	*56.76*	*1.55*	*1.42*	*0.04*	*0.37*	*1.77*	*0.05*	*0.04*

GHG - All

Project Facility	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System	1,113,540	7.0	1,010,319
Raw Water Conveyance	68,980	0.4	62,586
Treated Effluent Conveyance	99,200	0.6	90,005
Leachfield ****	989,229	6.2	897,531
Sprayfield	0	0.0	0
Wastewater Treatment Plant***	0	0.0	0
Solids Processing and Disposal	0	0.0	0
Seasonal Storage	0	0.0	0
TOTAL	*2,270,949*	*14.2*	*2,060,441*

Construction Waste Trips

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	500	2.0	250	33	1.00	33.0	8,250
Raw Wastewater Pipeline	C	20	1.0	20	33	1.00	33.0	660
Disposal - Effluent and Plant Solids	D	20	0.5	20	33	1.00	33.0	660
Treatment Site	T	50	2.0	25	33	1.00	33.0	825
Storage	T	20	0.5	20	33	1.00	33.0	660
	TOTAL	*610*				*5.00*	*165.0*	*11,055*

EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - Gravity	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.02	0.00	0.00
Raw Wastewater Pipeline	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Disposal - Effluent and Plant Solids	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Treatment Site	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
Storage	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
TOTAL	*0.07*	*0.71*	*3.42*	*0.09*	*0.09*	*0.00*	*0.01*	*0.03*	*0.00*	*0.00*

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - Gravity	27,373	0.2	24,836
Raw Wastewater Pipeline	2,190	0.0	1,987
Disposal - Effluent and Plant Solids	2,190	0.0	1,987
Treatment Site	2,737	0.0	2,484
Storage	2,190	0.0	1,987
TOTAL	*36,680*	*0.2*	*33,280*

Materials Trips to/from Contractor's Yard

Materials Supplied	Pro Code	RT per year	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Piping - Collection	C	60	2.0	60	207	1.00	207.0	12,420
Piping - Conveyance	C	13	2.0	13	207	1.00	207.0	2,718
Lining - Polyethylene	T	1	2.0	1	331	1.00	331.0	331
	TOTAL	*74*				*3.00*	*745.0*	*15,469*

Mileage in SLO County

Materials Supplied	RT/1-way Mileage**	Total VMT/d	Total VMT/yr
Piping - Collection	35	35.0	2,100
Piping - Conveyance	35	35.0	460
Lining - Polyethylene	35	35.0	35
TOTAL		*105.0*	*2,595*

EMISSIONS - SLO

Materials Supplied	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Piping - Collection	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.01	0.00	0.00
Piping - Conveyance	0.44	1.15	4.67	0.16	0.15	0.00	0.00	0.01	0.00	0.00
Lining - Polyethylene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	*0.59*	*1.54*	*6.23*	*0.22*	*0.20*	*0.00*	*0.01*	*0.03*	*0.00*	*0.00*

GHG - All

Materials Supplied	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Piping - Collection	59,436	2.4	53,966
Piping - Conveyance	13,007	0.5	11,810
Lining - Polyethylene	1,584	0.1	1,438
TOTAL	*74,028*	*3.0*	*67,215*

Project 3 Construction On-road Emissions

Materials Trips to/from Job Site

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	500	2.0	250	5	1.00	5.0	1,250
Piping - Collection	C	750	2.0	375	5	1.00	5.0	1,875
Asphallt - Collection System	C	5,389	2.0	250	78	10.78	840.7	210,167
Piping - Conveyance	C	114	2.0	57	5	1.00	5.0	284
Raw Wastewater Pipeline	C	100	2.0	50	5	1.00	5.0	250
Asphallt - Conveyance System	C	337	2.0	169	78	1.00	78.0	13,144
Disposal - Effluent and Plant Solids	D	50	0.5	50	5	1.00	5.0	250
Treatment Concrete	T	24	2.0	12	22	1.00	22.0	264
Biolac Blowers	T	1	1.0	1	2,875	1.00	2,875.0	2,875
Biolac Aeration/Clarifier	T	2	1.0	2	2,468	1.00	2,468.0	4,936
Biolac Controls	T	1	1.0	1	2,190	1.00	2,190.0	2,190
Storage	T	4	2.0	2	5	1.00	5.0	10
	TOTAL	***7,272***				***21.78***	***8,503.7***	***237,495***

Mileage in SLO County

System/Activity	RT/1-way Mileage**	Total VMT/d	Total VMT/yr
Collection System - Gravity	5	5.0	1,250
Piping - Collection	5	5.0	1,875
Asphallt - Collection System	70	754.4	188,611
Piping - Conveyance	5	5.0	284
Raw Wastewater Pipeline	5	5.0	250
Asphallt - Conveyance System	70	70.0	11,796
Disposal - Effluent and Plant Solids	5	5.0	250
Treatment Concrete	22	22.0	264
Biolac Blowers	79	79.0	79
Biolac Aeration/Clarifier	79	79.0	158
Biolac Controls	79	79.0	79
Storage	5	5.0	10
TOTAL		***1,113.4***	***204,907***

EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - Gravity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Piping - Collection	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Collection System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Piping - Conveyance	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Raw Wastewater Pipeline	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Conveyance System	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Disposal - Effluent and Plant Solids	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Treatment Concrete	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biolac Blowers	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biolac Aeration/Clarifier	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biolac Controls	0.00	0.05	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Storage	0.04	0.65	0.58	0.02	0.01	0.00	0.01	0.01	0.00	0.00
TOTAL	***0.06***	***1.00***	***0.89***	***0.02***	***0.02***	***0.00***	***0.02***	***0.01***	***0.00***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - Gravity	2,400	0.0	2,178
Piping - Collection	3,601	0.1	3,267
Asphallt - Collection System	403,591	5.9	366,244
Piping - Conveyance	546	0.0	496
Raw Wastewater Pipeline	480	0.0	436
Asphallt - Conveyance System	25,242	0.4	22,906
Disposal - Effluent and Plant Solids	480	0.0	436
Treatment Concrete	507	0.0	460
Biolac Blowers	5,521	0.1	5,010
Biolac Aeration/Clarifier	9,479	0.1	8,602
Biolac Controls	4,206	0.1	3,816
Storage	19	0.0	17
TOTAL	***456,072***	***6.7***	***413,868***

SUMMARY

System/Activity	Pro Code	Complete RT per Day	Complete Total VMT/d	Complete Total VMT/yr	SLO County Only RT per Day	SLO County Only Total VMT/d	SLO County Only Total VMT/yr
Collection/Conveyance	C	95.5	4,033	969,572	95.5	3,775	937,696
Treatment	T	54.0	9,797	472,091	54.0	2,205	462,110
Disposal	D	25.1	921	221,632	25.1	921	221,632
	TOTAL	***174.6***	***14,751***	***1,663,295***	***174.6***	***6,901***	***1,621,438***

SUMMARY EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	0.94	13.54	31.09	0.89	0.82	0.03	0.41	0.93	0.03	0.02
Treatment	0.27	9.38	3.20	0.13	0.12	0.01	0.27	0.05	0.00	0.00
Disposal	0.18	4.09	5.31	0.16	0.15	0.01	0.12	0.15	0.00	0.00
TOTAL	***1.38***	***27.00***	***39.60***	***1.18***	***1.09***	***0.04***	***0.81***	***1.13***	***0.03***	***0.03***

Sum GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection/Conveyance	2,459,252	52.6	2,231,998
Treatment	542,464	28.7	492,661
Disposal	1,081,676	11	981,492
TOTAL	***4,083,392***	***92.5***	***3,706,152***

* *RT = Round Trip*
** *Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*
*** All pipeline and below ground excavations include the assumption that there would be a requirement of 10% added fill dift to enable sufficient bed
**** Leachfield has 7 acres of 4 foot deep gravel, geotextile, and 4-inch perforated pipe to be brought in.
Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Project 4 Construction On-road Emissions

Employee Trips

System/Activity	Pro Code	# of Employees	Duration (yrs)	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	40	2.0	250	40	40	1,600	400,000
Raw Wastewater Pipeline	C	17	1.0	250	40	17	680	170,000
Disposal - Effluent and Plant Solids	D	8	0.5	250	40	8	320	80,000
Treatment Site	T	35	2.0	250	40	35	1,400	350,000
Storage	T	8	0.5	250	40	8	320	80,000
Asphalt	T	3	2.0	250	40	3	120	30,000
	TOTAL	*111*				*111*	*4,440*	*1,110,000*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.17	7.21	0.97	0.06	0.06	0.01	0.23	0.03	0.00	0.00
0.07	3.06	0.41	0.03	0.02	0.00	0.10	0.01	0.00	0.00
0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
0.15	6.31	0.85	0.05	0.05	0.00	0.20	0.03	0.00	0.00
0.03	1.44	0.19	0.01	0.01	0.00	0.05	0.01	0.00	0.00
0.01	0.54	0.07	0.00	0.00	0.00	0.02	0.00	0.00	0.00
0.47	*20.00*	*2.69*	*0.17*	*0.16*	*0.01*	*0.63*	*0.08*	*0.01*	*0.00*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
448,888	24.6	407,693
190,777	10.5	173,270
89,778	4.9	81,539
392,777	21.5	356,731
89,778	4.9	81,539
33,667	1.8	30,577
1,245,663	*68.3*	*1,131,348*

Excavation Trips

Project Facility	Pro Code	Total yd^3 excavated ***	Total yd^3 Imported	Total yd^3 Exported	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System	C	339,927	33,993	67,985	20,396	2.0	250	33	40.8	1,346	336,528
Raw Water Conveyance	C	15,833	1,583	3,167	950	1.0	250	33	3.8	125	31,350
Treated Effluent Conveyance	C	18,500	1,850	3,700	1,110	0.5	250	33	4.4	147	36,630
Leachfield ****	D	73,000	0	45,173	9,035	1.0	250	33	36.1	1,193	298,144
Sprayfield	D	25,000	0	0	0	0.5	250	33	0.0	0	0
Wastewater Treatment Plant***	T	83,000	0	0	0	2.0	250	33	0.0	0	0
Solids Processing and Disposal	T	1,000	0	0	0	0.5	250	33	0.0	0	0
Seasonal Storage	T	77,000	0	0	0	0.5	250	33	0.0	0	0
	TOTAL	*633,261*	*37,426*	*120,025*	*31,490*				*85.2*	*2,811*	*702,652*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.60	5.77	27.91	0.76	0.70	0.02	0.18	0.87	0.02	0.02
0.06	0.54	2.60	0.07	0.07	0.00	0.02	0.08	0.00	0.00
0.07	0.63	3.04	0.08	0.08	0.00	0.02	0.09	0.00	0.00
0.54	5.11	24.73	0.67	0.62	0.02	0.16	0.77	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.26	*12.05*	*58.27*	*1.59*	*1.46*	*0.04*	*0.38*	*1.82*	*0.05*	*0.05*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
1,116,585	7.0	1,013,082
104,018	0.7	94,376
121,537	0.8	110,271
989,229	6.2	897,531
0	0.0	0
0	0.0	0
0	0.0	0
0	0.0	0
2,331,369	*14.6*	*2,115,260*

Construction Waste Trips

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	500	2.0	250	33	1.00	33.0	8,250
Raw Wastewater Pipeline	C	20	1.0	20	33	1.00	33.0	660
Disposal - Effluent and Plant Solids	D	20	0.5	20	33	1.00	33.0	660
Storage	T	20	0.5	20	33	1.00	33.0	660
Treatment Site	T	50	2.0	25	33	1.00	33.0	825
	TOTAL	*610*				*5.00*	*165.0*	*11,055*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.02	0.00	0.00
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.00	0.00	0.00
0.07	*0.71*	*3.42*	*0.09*	*0.09*	*0.00*	*0.01*	*0.03*	*0.00*	*0.00*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
27,373	0.2	24,836
2,190	0.0	1,987
2,190	0.0	1,987
2,190	0.0	1,987
2,737	0.0	2,484
36,680	*0.2*	*33,280*

Materials Trips to/from Contractor's Yard

Materials Supplied	Pro Code	RT per year	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Piping - Collection	C	60	2.0	60	207	1.00	207.0	12,420
Piping - Conveyance	C	18	2.0	18	207	1.00	207.0	3,820
Lining - Polyethylene	T	1	2.0	1	331	1.00	331.0	331
Riprap	T	18	2.0	18	78	1.00	78.0	1,404
LDPE (2% Black C) Tubing	T	1	2.0	1	2,186	1.00	2,186.0	2,186
	TOTAL	*98*				*5.00*	*3,009.0*	*20,161*

Mileage in SLO County

RT/1-way Mileage**	Total VMT/d	Total VMT/yr
35	35.0	2,100
35	35.0	646
35	35.0	35
70	70.0	1,260
79	79.0	79
	254.0	*4,120*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.01	0.00	0.00
0.30	0.77	3.12	0.11	0.10	0.00	0.00	0.01	0.00	0.00
0.33	0.87	3.52	0.12	0.11	0.00	0.00	0.00	0.00	0.00
1.07	2.79	11.31	0.39	0.36	0.00	0.01	0.02	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.85	*4.81*	*19.50*	*0.68*	*0.62*	*0.00*	*0.01*	*0.04*	*0.00*	*0.00*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
59,436	2.4	53,966
18,280	0.7	16,598
1,584	0.1	1,438
6,719	0.3	6,101
10,461	0.4	9,498
96,480	*4.0*	*87,601*

Project 4 Construction On-road Emissions

Materials Trips to/from Job Site

System/Activity	Pro Code	Total RT	Duration (yrs)	Work days/year	RT/1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Collection System - Gravity	C	500	2.0	250	5	1.00	5.0	1,250
Piping - Collection	C	750	2.0	250	5	1.50	7.5	1,875
Asphallt - Collection System	C	5,389	2.0	250	78	10.78	840.7	210,167
Piping - Conveyance	C	159	2.0	79	5	1.00	2.5	198
Raw Wastewater Pipeline	C	100	2.0	50	5	1.00	2.5	125
Asphallt - Conveyance System	C	458	2.0	229	78	1.00	39.0	8,927
Disposal - Effluent and Plant Solids	D	50	0.5	50	5	1.00	10.0	500
Treatment Concrete	T	12	2.0	6	22	1.00	11.0	66
Storage	T	4	2.0	2	5	1.00	2.5	5
	TOTAL	***7,421***				***19.28***	***920.7***	***223,113***

Mileage in SLO County

System/Activity	RT/1-way Mileage**	Total VMT/d	Total VMT/yr
Collection System - Gravity	5	5.0	1,250
Piping - Collection	5	7.5	1,875
Asphallt - Collection System	70	754.4	188,611
Piping - Conveyance	5	5.0	397
Raw Wastewater Pipeline	5	2.5	125
Asphallt - Conveyance System	70	35.0	8,011
Disposal - Effluent and Plant Solids	5	10.0	500
Treatment Concrete	22	11.0	66
Storage	5	2.5	5
TOTAL		***832.9***	***200,840***

EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection System - Gravity	0.03	0.44	0.39	0.01	0.01	0.00	0.01	0.01	0.00	0.00
Piping - Collection	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Collection System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Piping - Conveyance	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Raw Wastewater Pipeline	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphallt - Conveyance System	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Disposal - Effluent and Plant Solids	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Treatment Concrete	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Storage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.03***	***0.48***	***0.43***	***0.01***	***0.01***	***0.00***	***0.01***	***0.01***	***0.00***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection System - Gravity	2,400	0.0	2,178
Piping - Collection	3,601	0.1	3,267
Asphallt - Collection System	403,591	5.9	366,244
Piping - Conveyance	381	0.0	346
Raw Wastewater Pipeline	240	0.0	218
Asphallt - Conveyance System	17,142	0.3	15,556
Disposal - Effluent and Plant Solids	960	0.0	871
Treatment Concrete	127	0.0	115
Storage	10	0.0	9
TOTAL	***428,452***	***6.3***	***388,804***

SUMMARY

System/Activity	Pro Code	Complete RT per Day	Complete Total VMT/d	Complete Total VMT/yr	SLO County Only RT per Day	SLO County Only Total VMT/d	SLO County Only Total VMT/yr
Collection/Conveyance	C	126.3	5,275	1,222,199	126.3	4,843	1,186,433
Treatment	T	53.0	4,515	465,477	53.0	2,104	462,930
Disposal	D	46.1	987	238,838	46.1	990	239,037
TOTAL		***225.4***	***10,777***	***1,926,515***	***225.4***	***7,937***	***1,888,400***

SUMMARY EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	1.47	19.12	41.40	1.21	1.12	0.03	0.56	1.15	0.03	0.03
Treatment	1.63	12.23	17.31	0.62	0.57	0.01	0.27	0.06	0.00	0.00
Disposal	0.58	6.70	25.61	0.71	0.65	0.02	0.21	0.78	0.02	0.02
TOTAL	***3.68***	***38.05***	***84.31***	***2.54***	***2.34***	***0.06***	***1.03***	***1.99***	***0.06***	***0.05***

Sum GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection/Conveyance	2,516,440	53.1	2,283,887
Treatment	540,048	29.1	490,478
Disposal	1,082,157	11.1	981,928
TOTAL	***4,138,645***	***93.4***	***3,756,294***

* *RT = Round Trip*
** *Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*
*** All pipeline and below ground excavations include the assumption that there would be a requirement of 10% added fill dift to enable sufficient bed
**** Leachfield has 7 acres of 4 foot deep gravel, geotextile, and 4-inch perforated pipe to be brought in.
Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Project 1 Operational On-road Emissions

Employee Commute

System/Activity	# of Employees	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection	7.0	250	40	7	280	70,000
Conveyance	2.0	250	40	2	80	20,000
Facultative Ponds	2.0	264	40	2	80	21,120
TOTAL	*11.0*			*11*	*440*	*111,120*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.03	1.26	0.17	0.01	0.01	0.00	0.04	0.01	0.00	0.00
0.01	0.36	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
0.04	*1.62*	*0.22*	*0.01*	*0.01*	*0.00*	*0.06*	*0.01*	*0.00*	*0.00*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
78,555	4.3	71,346
22,444	1.2	20,385
23,701	1.3	21,526
124,701	*6.8*	*113,257*

Maintenance Trips

System/Activity	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Collection inspection	C	892	250	5	3.57	17.8	4,460
Collection pumpers	C	528	250	5	2.11	10.6	2,640
Conveyance	C	75	75	5	1.00	5.0	375
Facultative Ponds	T	11	11	5	1.00	5.0	54
TOTAL		*1,506*			*7.68*	*38.4*	*7,529*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.00	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	*0.22*	*0.04*	*0.00*	*0.00*	*0.00*	*0.01*	*0.00*	*0.00*	*0.00*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
7,336	0.4	6,663
4,342	0.2	3,944
617	0.0	560
88	0.0	80
12,384	*0.7*	*11,247*

Material Delivery Trips

Chemicals	Pro Code	RT per Year	Work days/year	1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Sodium Hypochlorite	T	26	26	207	1.00	207.0	5,382
Sodium Hydroxide	T	1	1	207	1.00	207.0	207
Polymer - Dewatering	T	3	3	219	1.00	219.0	657
Alum	T	1	1	207	1.00	207.0	207
Filter Polymer	T	3	3	219	1.00	219.0	657
Methanol	T	1	1	149	1.00	149.0	149
TOTAL		*35*			*6.00*	*1,208.0*	*7,259*

Miles in SLO County

1-way Mileage**	Total VMT/d	Total VMT/yr
35	35.0	910
35	35.0	35
35	35.0	105
35	35.0	35
35	35.0	105
67	67.0	67
	242.0	*1,257*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.01	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.28	0.74	2.98	0.10	0.10	0.00	0.00	0.00	0.00	0.00
1.02	*2.66*	*10.77*	*0.37*	*0.34*	*0.00*	*0.00*	*0.01*	*0.00*	*0.00*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
25,756	1.1	23,385
991	0.0	899
3,144	0.1	2,855
991	0.0	899
3,144	0.1	2,855
713	0.0	647
34,738	*1.4*	*31,541*

Product Trips

Product	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Solids	T	0	250	33	0.0	0.0	0
Septage	C	1,104	250	5	4.4	22.1	5,518
TOTAL		*1,104*			*4.4*	*22.1*	*5,518*

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	0.09	0.46	0.01	0.01	0.00	0.00	0.01	0.00	0.00
0.01	*0.09*	*0.46*	*0.01*	*0.01*	*0.00*	*0.00*	*0.01*	*0.00*	*0.00*

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
0	0.0	0
18,308	0.1	16,611
18,308	*0.1*	*16,611*

SUMMARY

System/Activity	Pro Code	Complete			SLO County Only		
		RT per Day	Total VMT/d	Total VMT/yr	RT per Day	Total VMT/d	Total VMT/yr
Collection/Conveyance	C	20.1	415	102,993	20.1	415	102,993
Treatment	T	9.0	1,293	28,433	9.0	327	22,431
Disposal	D	0.0	0	0	0.0	0	0
TOTAL		*29.1*	*1,708*	*131,426*	*29.1*	*742*	*125,424*

SUMMARY EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.05	1.91	0.71	0.03	0.03	0.00	0.06	0.02	0.00	0.00
1.02	2.68	10.78	0.37	0.34	0.00	0.01	0.01	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08	*4.59*	*11.49*	*0.40*	*0.37*	*0.00*	*0.07*	*0.03*	*0.00*	*0.00*

Sum GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
131,604	6.3	119,509
58,528	2.7	53,148
0	0.0	0
190,131	*9.1*	*172,657*

** RT = Round Trip*

*** Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*

4,769 new tanks
749 tanks outside Prohibition Zone
5 year turnaround
2 tanks per load
Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Project 2 Operational On-road Emissions

Employee Commute

System/Activity	# of Employees	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection	6.0	250	40	6	240	60,000
Conveyance	2.0	250	40	2.0	80	20,000
Oxy ditch/Biolac	2.5	264	40	2.5	100	26,400
TOTAL	***10.5***			***10.5***	***420***	***106,400***

EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection	0.03	1.08	0.15	0.01	0.01	0.00	0.03	0.00	0.00	0.00
Conveyance	0.01	0.45	0.06	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Oxy ditch/Biolac	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
TOTAL	***0.04***	***1.53***	***0.21***	***0.01***	***0.01***	***0.00***	***0.06***	***0.01***	***0.00***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection	67,333	3.7	61,154
Conveyance	22,444	1.2	20,385
Oxy ditch/Biolac	29,627	1.6	26,908
TOTAL	***119,404***	***6.5***	***108,446***

Maintenance Trips

System/Activity	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Pump stations, etc.	C	750	250	5	3.0	15.0	3,750
Annual cleaning	C	88	44	5	2.0	10.0	440
Conveyance	C	75	75	5	1.0	5.0	375
Oxy ditch/Biolac	T	11	11	5	1.0	5.0	54
	TOTAL	***924***			***7.0***	***35.0***	***4,619***

EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Pump stations, etc.	0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual cleaning	0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Conveyance	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oxy ditch/Biolac	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.01***	***0.20***	***0.04***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***

GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Pump stations, etc.	6,168	0.3	5,602
Annual cleaning	724	0.0	657
Conveyance	617	0.0	560
Oxy ditch/Biolac	88	0.0	80
TOTAL	***7,597***	***0.4***	***6,900***

Material Delivery Trips

Chemicals	Pro Code	RT per Year	Work days/year	1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Sodium Hypochlorite	T	26	26	207	1.0	207.0	5,382
Sodium Hydroxide	T	1	1	207	1.0	207.0	207
Polymer - Thickening	T	3	3	219	1.0	219.0	657
Polymer - Dewatering	T	3	3	219	1.0	219.0	657
Alum	T	1	1	207	1.0	207.0	207
Filter Polymer	T	3	3	219	1.0	219.0	657
	TOTAL	***37***			***6.0***	***1,278.0***	***7,767***

Miles in SLO County

Chemicals	1-way Mileage**	Total VMT/d	Total VMT/yr
Sodium Hypochlorite	35	35.0	910
Sodium Hydroxide	35	35.0	35
Polymer - Thickening	35	35.0	105
Polymer - Dewatering	35	35.0	105
Alum	35	35.0	35
Filter Polymer	35	35.0	105
TOTAL		***210.0***	***1,295***

EMISSIONS - SLO

Chemicals	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Sodium Hypochlorite	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.01	0.00	0.00
Sodium Hydroxide	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Polymer - Thickening	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Polymer - Dewatering	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Alum	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Filter Polymer	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.89***	***2.31***	***9.35***	***0.32***	***0.30***	***0.00***	***0.00***	***0.01***	***0.00***	***0.00***

GHG - All

Chemicals	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Sodium Hypochlorite	25,756	1.1	23,385
Sodium Hydroxide	991	0.0	899
Polymer - Thickening	3,144	0.1	2,855
Polymer - Dewatering	3,144	0.1	2,855
Alum	991	0.0	899
Filter Polymer	3,144	0.1	2,855
TOTAL	***37,169***	***1.5***	***33,748***

Product Trips

Product	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Solids	T	200	200	33	1.0	33.0	6,600
Septage	C	150	150	5	1.0	5.0	749
	TOTAL	***350***			***2.0***	***38.0***	***7,349***

EMISSIONS - SLO

Product	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Solids	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.02	0.00	0.00
Septage	0.00	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.02***	***0.16***	***0.79***	***0.02***	***0.02***	***0.00***	***0.00***	***0.02***	***0.00***	***0.00***

GHG - All

Product	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Solids	21,899	0.1	19,869
Septage	2,485	0.0	2,255
TOTAL	***24,384***	***0.2***	***22,123***

SUMMARY

System/Activity	Pro Code	Complete RT per Day	Complete Total VMT/d	Complete Total VMT/yr	SLO County Only RT per Day	SLO County Only Total VMT/d	SLO County Only Total VMT/yr
Collection/Conveyance	C	15.0	355	85,314	15.0	355	85,314
Treatment	T	10.5	1,416	41,142	10.5	348	34,349
Disposal	D	0.0	0	0	0.0	0	0
	TOTAL	***25.5***	***1,771***	***126,456***	***25.5***	***703***	***119,663***

SUMMARY EMISSIONS - SLO

System/Activity	Pounds per day ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	Tons per quarter ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	0.04	1.72	0.34	0.02	0.02	0.00	0.05	0.01	0.00	0.00
Treatment	0.90	2.48	10.04	0.34	0.32	0.00	0.02	0.03	0.00	0.00
Disposal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	***0.95***	***4.20***	***10.38***	***0.36***	***0.33***	***0.00***	***0.07***	***0.03***	***0.00***	***0.00***

Sum GHG - All

System/Activity	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection/Conveyance	99,771	5.4	90,613
Treatment	88,783	3.3	80,605
Disposal	0	0.0	0
TOTAL	***188,554***	***8.6***	***171,218***

** RT = Round Trip*

*** Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*

749 tanks outside Prohibition Zone

5 year turnaround

2 tanks per load

Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Project 3 Operational On-road Emissions

Employee Commute

System/Activity	# of Employees	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection	6.0	250	40	6	240	60,000
Conveyance	2.0	250	40	2	80	20,000
Oxy ditch/Biolac	2.5	264	40	3	100	26,400
TOTAL	*10.5*			*11*	*420*	*106,400*

EMISSIONS - SLO

	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection	0.03	1.08	0.15	0.01	0.01	0.00	0.03	0.00	0.00	0.00
Conveyance	0.01	0.45	0.06	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Oxy ditch/Biolac	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
TOTAL	*0.04*	*1.53*	*0.21*	*0.01*	*0.01*	*0.00*	*0.06*	*0.01*	*0.00*	*0.00*

GHG - All

	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection	67,333	3.7	61,154
Conveyance	22,444	1.2	20,385
Oxy ditch/Biolac	29,627	1.6	26,908
TOTAL	*119,404*	*6.5*	*108,446*

Maintenance Trips

System/Activity	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Pump stations, etc.	C	750	250	5	3.0	15.0	3,750
Annual cleaning	C	88	44	5	2.0	10.0	440
Conveyance	C	75	75	5	1.0	5.0	375
Oxy ditch/Biolac	T	11	11	5	1.0	5.0	54
TOTAL		*924*			*7.0*	*35.0*	*4,619*

EMISSIONS - SLO

	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Pump stations, etc.	0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual cleaning	0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Conveyance	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oxy ditch/Biolac	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	*0.01*	*0.20*	*0.04*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*

GHG - All

	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Pump stations, etc.	6,168	0.3	5,602
Annual cleaning	724	0.0	657
Conveyance	617	0.0	560
Oxy ditch/Biolac	88	0.0	80
TOTAL	*7,597*	*0.4*	*6,900*

Material Delivery Trips

Chemicals	Pro Code	RT per Year	Work days/year	1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr	Miles in SLO County: 1-way Mileage**	Total VMT/d	Total VMT/yr
Sodium Hypochlorite	T	26	26	207	1.0	207.0	5,382	35	35.0	910
Sodium Hydroxide	T	1	1	207	1.0	207.0	207	35	35.0	35
Polymer - Thickening	T	3	3	219	1.0	219.0	657	35	35.0	105
Polymer - Dewatering	T	3	3	219	1.0	219.0	657	35	35.0	105
Alum	T	1	1	207	1.0	207.0	207	35	35.0	35
Filter Polymer	T	3	3	219	1.0	219.0	657	35	35.0	105
TOTAL		*37*			*6.0*	*1,278.0*	*7,767*		*210.0*	*1,295*

EMISSIONS - SLO

	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Sodium Hypochlorite	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.01	0.00	0.00
Sodium Hydroxide	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Polymer - Thickening	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Polymer - Dewatering	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Alum	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
Filter Polymer	0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
TOTAL	*0.89*	*2.31*	*9.35*	*0.32*	*0.30*	*0.00*	*0.00*	*0.01*	*0.00*	*0.00*

GHG - All

	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Sodium Hypochlorite	25,756	1.1	23,385
Sodium Hydroxide	991	0.0	899
Polymer - Thickening	3,144	0.1	2,855
Polymer - Dewatering	3,144	0.1	2,855
Alum	991	0.0	899
Filter Polymer	3,144	0.1	2,855
TOTAL	*37,169*	*1.5*	*33,748*

Product Trips

Product	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Solids	T	200	200	33	1.0	33.0	6,600
Septage	C	150	150	5	1.0	5.0	749
TOTAL		*350*			*2.0*	*38.0*	*7,349*

EMISSIONS - SLO

	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Solids	0.01	0.14	0.68	0.02	0.02	0.00	0.00	0.02	0.00	0.00
Septage	0.00	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	*0.02*	*0.16*	*0.79*	*0.02*	*0.02*	*0.00*	*0.00*	*0.02*	*0.00*	*0.00*

GHG - All

	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Solids	21,899	0.1	19,869
Septage	2,485	0.0	2,255
TOTAL	*24,384*	*0.2*	*22,123*

SUMMARY

System/Activity	Pro Code	Complete: RT per Day	Total VMT/d	Total VMT/yr	SLO County Only: RT per Day	Total VMT/d	Total VMT/yr
Collection/Conveyance	C	15.0	355	85,314	15.0	355	85,314
Treatment	T	10.5	1,416	40,821	10.5	348	34,349
Disposal	D	0.0	0	0	0.0	0	0
TOTAL		*25.5*	*1,771*	*126,135*	*25.5*	*703*	*119,663*

SUMMARY EMISSIONS - SLO

	Pounds per day					Tons per quarter				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Collection/Conveyance	0.04	1.72	0.34	0.02	0.02	0.00	0.05	0.01	0.00	0.00
Treatment	0.90	2.48	10.04	0.34	0.32	0.00	0.02	0.03	0.00	0.00
Disposal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	*0.95*	*4.20*	*10.38*	*0.36*	*0.33*	*0.00*	*0.07*	*0.03*	*0.00*	*0.00*

Sum GHG - All

	CO_2 tpy	NH_3 tpy	CO_2e MT/Y
Collection/Conveyance	99,771	5.4	90,613
Treatment	88,783	3.3	80,605
Disposal	0	0.0	0
TOTAL	*188,554*	*8.6*	*171,218*

* *RT = Round Trip*

** *Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*

749 tanks outside Prohibition Zone
5 year turnaround
2 tanks per load

Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Project 4 Operational On-road Emissions

Employee Commute

System/Activity	# of Employees	Work days/year	RT Mileage	RT* per Day	Total VMT/d	Total VMT/yr
Collection	6.0	250	40	6	240	60,000
Conveyance	2.0	250	40	2	80	20,000
Facultative Ponds	2.0	264	40	2	80	21,120
TOTAL	***10.0***			***10***	***400***	***101,120***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.03	1.08	0.15	0.01	0.01	0.00	0.03	0.00	0.00	0.00
0.01	0.36	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
0.03	***1.44***	***0.19***	***0.01***	***0.01***	***0.00***	***0.06***	***0.01***	***0.00***	***0.00***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
67,333	3.7	61,154
22,444	1.2	20,385
23,701	1.3	21,526
113,479	***6.2***	***103,065***

Maintenance Trips

System/Activity	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Pump stations, etc.	C	750	250	5	3.0	15.0	3,750
Annual cleaning	C	88	44	5	2.0	10.0	440
Conveyance	C	75	75	5	1.0	5.0	375
Facultative Ponds	T	11	11	5	1.0	5.0	54
	TOTAL	***924***			***7.0***	***35.0***	***4,619***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.01	***0.20***	***0.04***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
6,168	0.3	5,602
724	0.0	657
617	0.0	560
88	0.0	80
7,597	***0.4***	***6,900***

Material Delivery Trips

Chemicals	Pro Code	RT per Year	Work days/year	1-way Mileage**	RT per Day	Total VMT/d	Total VMT/yr
Sodium Hypochlorite	T	26	26	207	1.0	207.0	5,382
Sodium Hydroxide	T	1	1	207	1.0	207.0	207
Polymer - Dewatering	T	3	3	219	1.0	219.0	657
Alum	T	1	1	207	1.0	207.0	207
Filter Polymer	T	3	3	219	1.0	219.0	657
	TOTAL	***34***			***5.0***	***1,059.0***	***7,110***

Miles in SLO County

1-way Mileage**	Total VMT/d	Total VMT/yr
35	35.0	910
35	35.0	35
35	35.0	105
35	35.0	35
35	35.0	105
	175.0	***1,190***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.01	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.15	0.38	1.56	0.05	0.05	0.00	0.00	0.00	0.00	0.00
0.74	1.92	7.79	0.27	0.25	0.00	0.00	0.01	0.00	0.00
1.33	***3.46***	***14.02***	***0.49***	***0.45***	***0.00***	***0.00***	***0.01***	***0.00***	***0.00***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
25,756	1.1	23,385
991	0.0	899
3,144	0.1	2,855
991	0.0	899
3,144	0.1	2,855
34,025	***1.4***	***30,894***

Product Trips

Product	Pro Code	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Solids	T	0	250	33	0.0	0.0	0
Septage	C	150	150	5	1.0	5.0	749
TOTAL		***150***			***1.0***	***5.0***	***749***

EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.00	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.02	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	***0.04***	***0.21***	***0.01***	***0.01***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***

GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
0	0.0	0
2,485	0.0	2,255
2,485	***0.0***	***2,255***

SUMMARY

System/Activity	Pro Code	Complete			SLO County Only		
		RT per Day	Total VMT/d	Total VMT/yr	RT per Day	Total VMT/d	Total VMT/yr
Collection/Conveyance	C	15.0	355	85,314	15.0	355	85,314
Treatment	T	8.0	1,144	28,284	8.0	260	22,364
Disposal	D	0.0	0	0	0.0	0	0
	TOTAL	***23.0***	***1,499***	***113,598***	***23.0***	***615***	***107,678***

SUMMARY EMISSIONS - SLO

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.04	1.63	0.33	0.02	0.02	0.00	0.05	0.01	0.00	0.00
1.33	3.51	14.13	0.49	0.45	0.00	0.02	0.02	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.38	***5.14***	***14.46***	***0.51***	***0.47***	***0.00***	***0.06***	***0.02***	***0.00***	***0.00***

Sum GHG - All

CO_2 tpy	NH_3 tpy	CO_2e MT/Y
99,771	5.4	90,613
57,815	2.7	52,500
0	0.0	0
157,586	***8.1***	***143,113***

** RT = Round Trip*

*** Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip*

749 tanks outside Prohibition Zone
5 year turnaround
2 tanks per load
Pro Codes: C = collection/conveyance; T = treatment, D = disposal

Existing Septage Removal

Product	RT per Year	Work days/year	RT Mileage	RT per Day	Total VMT/d	Total VMT/yr
Septage	856	250	78	3.4	267.1	66,784

Criteria Emissions

Pounds per day					Tons per quarter				
ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
0.12	1.15	5.54	0.15	0.14	0.00	0.04	0.17	0.00	0.00

CHG Emissions

CO_2	NH_3	CO_2e
tpy	tpy	MT/Y
221,585	1.4	201,045

RT = Round Trip

4,281 currrent tanks

5 year turnaround

2 tanks per load

Pipeline Lengths & Sizes

System **Pipe Info** **Truck Loads**

STEP	Desc	Dia Used (in)	LF	>> Yard	>> Site
Collection	4 " laterals	4	129,000	12.9	161.3
	10"/8"/6" PVC force main	8	31,600	6.3	79.0
	2"-4" pressure sewer collector	4	203,600	20.4	254.5

Gravity	Desc	Dia Used (in)	LF	>> Yard	>> Site
Collection	4 " laterals	4	140,000	14.0	175.0
	8-18" sewer & force mains	8	230,000	46.0	575.0

Conveyance	Desc	Dia Used (in)	LF	>> Yard	>> Site
Raw wastewater	10" Midtown to Giacomazzi	10	18,700	4.3	46.8
	14" Midtown to Giacomazzi	14	18,700	6.0	46.8
	14" Midtown to Tonini	14	28,500	9.1	71.3
Effluent	12" Giacomazzi to Leachfield	12	17,000	4.5	42.5
	12" Tonini to Leachfield	12	28,500	7.6	71.3
	12" Giacomazzi to Sprayfield	12	9,800	2.6	24.5
	12" Tonini to Sprayfield	12	6,500	*1.7*	16.3

Title : SLO 2007
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/10/07 17:19:32
Scen Year: 2007 -- All model years in the range 1997 to 2007 selected
Season : Annual
Area : San Luis Obispo
****

Year: 2007 -- Model Years 1997 to 2007 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average for San Luis Obispo

Reactive Organic Gases										
Speed MPH	**LDA Gas**	**LDT1 Gas**	**LDT2 Gas**	**MDV Gas**	**LHD1 Gas**	**LHD1 Diesel**	**LHD2 Gas**	**LHD2 Diesel**	**MHD Diesel**	**HHD Diesel**
5	0.138	0.177	0.196	0.319	0.050	0.404	0.058	0.488	0.457	9.146
10	0.083	0.109	0.121	0.196	0.032	0.317	0.036	0.383	0.359	5.016
15	0.052	0.070	0.079	0.128	0.022	0.255	0.025	0.307	0.288	2.347
20	0.036	0.049	0.054	0.088	0.016	0.209	0.018	0.252	0.236	1.236
25	0.027	0.037	0.040	0.064	0.012	0.175	0.013	0.212	0.198	0.978
30	0.021	0.029	0.032	0.049	0.009	0.150	0.010	0.181	0.170	0.776
35	0.018	0.024	0.027	0.041	0.007	0.132	0.008	0.159	0.149	0.629
40	0.016	0.022	0.023	0.036	0.006	0.118	0.007	0.142	0.133	0.537
45	0.015	0.020	0.022	0.034	0.005	0.108	0.006	0.130	0.122	0.501
50	0.015	0.020	0.021	0.033	0.005	0.101	0.005	0.122	0.114	0.520
55	0.016	0.020	0.022	0.034	0.005	0.097	0.005	0.117	0.109	0.595
60	0.017	0.022	0.024	0.038	0.005	0.095	0.005	0.114	0.107	0.724
32.5	***0.038***	***0.050***	***0.055***	***0.088***	***0.015***	***0.180***	***0.016***	***0.217***	***0.204***	***1.917***

Carbon Monoxide										
Speed MPH	**LDA Gas**	**LDT1 Gas**	**LDT2 Gas**	**MDV Gas**	**LHD1 Gas**	**LHD1 Diesel**	**LHD2 Gas**	**LHD2 Diesel**	**MHD Diesel**	**HHD Diesel**
5	2.646	3.264	3.535	3.960	0.687	2.850	0.843	2.968	5.469	14.115
10	2.410	2.953	3.202	3.584	0.457	1.965	0.561	2.047	3.771	10.147
15	2.201	2.683	2.912	3.258	0.321	1.418	0.394	1.477	2.721	7.144
20	2.017	2.449	2.659	2.974	0.239	1.071	0.293	1.115	2.055	5.234
25	1.853	2.243	2.438	2.726	0.187	0.846	0.230	0.882	1.624	4.398
30	1.708	2.064	2.243	2.508	0.155	0.700	0.191	0.729	1.344	3.697
35	1.578	1.906	2.071	2.316	0.136	0.606	0.167	0.631	1.163	3.130
40	1.463	1.766	1.920	2.147	0.126	0.549	0.154	0.572	1.054	2.699
45	1.360	1.644	1.786	1.997	0.123	0.521	0.151	0.542	0.999	2.403
50	1.268	1.535	1.668	1.866	0.127	0.517	0.156	0.538	0.991	2.242
55	1.185	1.440	1.564	1.749	0.139	0.536	0.170	0.559	1.030	2.217
60	1.111	1.356	1.471	1.647	0.160	0.583	0.196	0.607	1.119	2.326
32.5	***1.733***	***2.109***	***2.289***	***2.561***	***0.238***	***1.014***	***0.292***	***1.056***	***1.945***	***4.979***

Emfac2007 Emission Factors: V2.3 Nov 1 2006

Oxides of Nitrogen

Speed MPH	LDA Gas	LDT1 Gas	LDT2 Gas	MDV Gas	LHD1 Gas	LHD1 Diesel	LHD2 Gas	LHD2 Diesel	MHD Diesel	HHD Diesel
5	0.297	0.380	0.591	0.775	0.158	7.606	0.211	8.710	13.448	43.141
10	0.259	0.328	0.512	0.667	0.166	6.310	0.221	7.227	11.157	29.314
15	0.230	0.289	0.451	0.586	0.174	5.424	0.232	6.212	9.591	20.910
20	0.208	0.259	0.406	0.525	0.182	4.831	0.243	5.533	8.542	17.881
25	0.191	0.237	0.372	0.480	0.190	4.459	0.253	5.107	7.884	17.203
30	0.178	0.221	0.346	0.447	0.198	4.264	0.264	4.883	7.539	16.672
35	0.169	0.210	0.329	0.424	0.206	4.225	0.275	4.838	7.469	16.289
40	0.163	0.203	0.318	0.411	0.214	4.337	0.285	4.967	7.668	16.054
45	0.160	0.200	0.313	0.405	0.222	4.613	0.296	5.283	8.156	15.966
50	0.160	0.201	0.313	0.407	0.230	5.084	0.307	5.823	8.989	16.026
55	0.162	0.205	0.320	0.418	0.238	5.806	0.317	6.649	10.266	16.234
60	0.167	0.215	0.333	0.438	0.246	6.870	0.328	7.868	12.147	16.589
32.5	***0.195***	***0.246***	***0.384***	***0.499***	***0.202***	***5.319***	***0.269***	***6.092***	***9.405***	***20.190***

PM_{10}

Speed MPH	LDA Gas	LDT1 Gas	LDT2 Gas	MDV Gas	LHD1 Gas	LHD1 Diesel	LHD2 Gas	LHD2 Diesel	MHD Diesel	HHD Diesel
5	0.039	0.044	0.083	0.081	0.019	0.109	0.026	0.110	0.576	2.109
10	0.025	0.029	0.054	0.053	0.012	0.086	0.017	0.086	0.452	1.400
15	0.017	0.020	0.037	0.036	0.008	0.069	0.012	0.069	0.363	0.885
20	0.012	0.014	0.027	0.026	0.006	0.056	0.008	0.057	0.298	0.594
25	0.009	0.011	0.020	0.020	0.004	0.047	0.006	0.048	0.250	0.488
30	0.008	0.009	0.016	0.016	0.003	0.041	0.005	0.041	0.214	0.412
35	0.006	0.007	0.014	0.013	0.003	0.036	0.004	0.036	0.187	0.365
40	0.006	0.007	0.012	0.012	0.002	0.032	0.003	0.032	0.168	0.349
45	0.005	0.006	0.012	0.011	0.002	0.029	0.003	0.029	0.154	0.361
50	0.005	0.006	0.011	0.011	0.002	0.027	0.003	0.028	0.144	0.404
55	0.006	0.006	0.012	0.012	0.002	0.026	0.002	0.026	0.138	0.476
60	0.006	0.007	0.013	0.013	0.002	0.026	0.002	0.026	0.135	0.577
32.5	***0.012***	***0.014***	***0.026***	***0.025***	***0.005***	***0.049***	***0.008***	***0.049***	***0.257***	***0.702***

$PM_{2.5}$

Speed MPH	LDA Gas	LDT1 Gas	LDT2 Gas	MDV Gas	LHD1 Gas	LHD1 Diesel	LHD2 Gas	LHD2 Diesel	MHD Diesel	HHD Diesel
5	0.037	0.041	0.077	0.075	0.017	0.1	0.024	0.101	0.53	1.94
10	0.024	0.027	0.05	0.049	0.011	0.079	0.016	0.08	0.416	1.288
15	0.016	0.018	0.034	0.033	0.008	0.063	0.011	0.064	0.334	0.814
20	0.012	0.013	0.025	0.024	0.005	0.052	0.008	0.052	0.274	0.546
25	0.009	0.01	0.019	0.018	0.004	0.044	0.006	0.044	0.23	0.449
30	0.007	0.008	0.015	0.015	0.003	0.037	0.004	0.038	0.197	0.379
35	0.006	0.007	0.013	0.012	0.003	0.033	0.004	0.033	0.172	0.336
40	0.005	0.006	0.011	0.011	0.002	0.029	0.003	0.03	0.155	0.321
45	0.005	0.006	0.011	0.01	0.002	0.027	0.003	0.027	0.141	0.332
50	0.005	0.006	0.011	0.01	0.002	0.025	0.002	0.025	0.132	0.372
55	0.005	0.006	0.011	0.011	0.002	0.024	0.002	0.024	0.127	0.438
60	0.006	0.006	0.012	0.012	0.002	0.024	0.002	0.024	0.124	0.531
32.5	***0.011***	***0.013***	***0.024***	***0.023***	***0.005***	***0.045***	***0.007***	***0.045***	***0.236***	***0.646***

Emfac2007 Emission Factors: V2.3 Nov 1 2006

Carbon Dioxide										
Speed MPH	LDA Gas	LDT1 Gas	LDT2 Gas	MDV Gas	LHD1 Gas	LHD1 Diesel	LHD2 Gas	LHD2 Diesel	MHD Diesel	HHD Diesel
5	942.2	1,189.9	1,190.8	1,623.5	2,513.5	519.0	2,513.5	519.0	1,505.0	3,845.4
10	712.0	899.1	899.9	1,226.8	1,672.3	519.0	1,672.3	519.0	1,505.0	3,165.4
15	558.4	705.2	705.8	962.2	1,175.5	519.0	1,175.5	519.0	1,505.0	2,596.0
20	454.5	574.0	574.5	783.2	873.0	519.0	873.0	519.0	1,505.0	2,183.2
25	384.0	485.0	485.4	661.7	685.0	519.0	685.0	519.0	1,505.0	2,042.7
30	336.7	425.3	425.6	580.3	567.9	519.0	567.9	519.0	1,505.0	1,924.2
35	306.5	387.1	387.4	528.1	497.4	519.0	497.4	519.0	1,505.0	1,827.8
40	289.5	365.6	365.9	498.9	460.3	519.0	460.3	519.0	1,505.0	1,753.4
45	283.8	358.5	358.8	489.1	450.1	519.0	450.1	519.0	1,505.0	1,701.0
50	288.8	364.8	365.1	497.7	465.0	519.0	465.0	519.0	1,505.0	1,670.7
55	305.0	385.2	385.6	525.6	507.5	519.0	507.5	519.0	1,505.0	1,662.4
60	334.4	422.3	422.6	576.2	585.2	519.0	585.2	519.0	1,505.0	1,676.0
32.5	***433.0***	***546.8***	***547.3***	***746.1***	***871.1***	***519.0***	***871.1***	***519.0***	***1,505.0***	***2,170.7***

Methane										
Speed MPH	LDA Gas	LDT1 Gas	LDT2 Gas	MDV Gas	LHD1 Gas	LHD1 Diesel	LHD2 Gas	LHD2 Diesel	MHD Diesel	HHD Diesel
5	0.061	0.069	0.071	0.086	0.041	0.019	0.044	0.023	0.021	0.425
10	0.047	0.054	0.055	0.07	0.027	0.015	0.031	0.018	0.017	0.233
15	0.037	0.043	0.043	0.056	0.018	0.012	0.021	0.014	0.013	0.109
20	0.028	0.033	0.035	0.046	0.013	0.01	0.015	0.012	0.011	0.057
25	0.022	0.026	0.028	0.039	0.01	0.008	0.011	0.01	0.009	0.045
30	0.018	0.022	0.023	0.034	0.008	0.007	0.009	0.008	0.008	0.036
35	0.015	0.019	0.02	0.03	0.006	0.006	0.007	0.007	0.007	0.029
40	0.013	0.017	0.018	0.027	0.005	0.005	0.006	0.007	0.006	0.025
45	0.013	0.016	0.017	0.025	0.004	0.005	0.005	0.006	0.006	0.023
50	0.012	0.016	0.017	0.025	0.004	0.005	0.005	0.006	0.005	0.024
55	0.013	0.016	0.017	0.026	0.004	0.004	0.004	0.005	0.005	0.028
60	0.014	0.018	0.019	0.028	0.004	0.004	0.004	0.005	0.005	0.034
32.5	***0.024***	***0.029***	***0.030***	***0.041***	***0.012***	***0.008***	***0.014***	***0.010***	***0.009***	***0.089***

Gasoline/Diesel Fuel Rate - mi/gal										
Speed MPH	LDA Gas	LDT1 Gas	LDT2 Gas	MDV Gas	LHD1 Gas	LHD1 Diesel	LHD2 Gas	LHD2 Diesel	MHD Diesel	HHD Diesel
5	9.358	7.411	7.402	5.433	3.524	19.422	3.523	19.422	6.698	2.621
10	12.374	9.800	9.787	7.186	5.296	19.422	5.296	19.422	6.698	3.184
15	15.765	12.486	12.469	9.156	7.534	19.422	7.534	19.422	6.698	3.883
20	19.353	15.328	15.306	11.241	10.145	19.422	10.144	19.422	6.698	4.617
25	22.893	18.133	18.106	13.299	12.929	19.422	12.928	19.422	6.698	4.935
30	26.098	20.672	20.641	15.162	15.596	19.422	15.594	19.422	6.698	5.238
35	28.672	22.711	22.677	16.658	17.806	19.422	17.804	19.422	6.698	5.515
40	30.358	24.047	24.010	17.638	19.241	19.422	19.238	19.422	6.698	5.749
45	30.977	24.537	24.501	17.996	19.678	19.422	19.676	19.422	6.698	5.926
50	30.461	24.127	24.093	17.695	19.049	19.422	19.047	19.422	6.698	6.033
55	28.865	22.861	22.830	16.765	17.453	19.422	17.452	19.422	6.698	6.064
60	26.355	20.873	20.846	15.305	15.136	19.422	15.134	19.422	6.698	6.014
32.5	***23.461***	***18.582***	***18.556***	***13.628***	***13.616***	***19.422***	***13.614***	***19.422***	***6.698***	***4.982***

Emfac2007 Emission Factors: V2.3 Nov 1 2006

EMFAC 2007 Vehicle Classes		
Abbr	Description	Weight Class (lbs)
LDA	Passenger Cars	all
LDT1	Light duty Trucks	0 - 3,750
LDT2	Light duty Trucks	3,751 - 5,750
MDV	Medium duty trucks	5,751 - 8,500
LHD1	Light heavy duty	8,501 - 10,000
LHD2	Light heavy duty	10,001 - 14,000
MHD	Meduim heavy duty	14,001 - 33,000
HHD	Heavy heavy duty	33,001 - 60,000

PROJECT ASSUMPTIONS

Operations	Class	Fuel	Emission Factor (g/mi)						
			ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Employee Commute	LDA/LDT	G	0.048	2.044	0.275	0.017	0.016	509.0	0.028
Maintenance Trips	MDV	G	0.088	2.561	0.499	0.025	0.023	746.1	0.041
Material Delivery Trips	HHD	D	1.917	4.979	20.190	0.702	0.646	2,170.7	0.089
Product Trips	MHD	D	0.204	1.945	9.405	0.257	0.236	1,505.0	0.009

Construction	Class	Fuel	Emission Factor (g/mi)						
			ROG	CO	NO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Employee Commute	LDA/LDT	G	0.048	2.044	0.275	0.017	0.016	509.0	0.028
Excavation Material Trips	MHD	D	0.204	1.945	9.405	0.257	0.236	1,505.0	0.009
Construction Waste Trips	MHD	D	0.204	1.945	9.405	0.257	0.236	1,505.0	0.009
Materials Trips to/from Contractor's Yard	HHD	D	1.917	4.979	20.190	0.702	0.646	2,170.7	0.089
Materials Trips to/from Job Site	LHD	G	0.015	0.265	0.236	0.007	0.006	871.1	0.013

ASSUMPTIONS

Travel Distances

To & From Contractor Storage	Total 1-way miles	Miles to County Line	
Agoura Hills, CA	172	35	via hwy 101 S
Carson, CA	219	35	via hwy 101 S
Cold Canyon, CA	16.5		
Fresno, CA	149	67	via hwy 41 E
Gurnee, IL	2,186	79	via hwy 58 E
Los Angeles, CA	207	35	via hwy 101 S
San Luis Obispo, CA	11		
Santa Maria, CA	39	35	via hwy 101 S
Santee, CA	331	35	via hwy 101 S
Visalia, CA	147	67	via hwy 41 E
Philadelphia	2,875	79	via hwy 58 E
Florida	2,468	79	via hwy 58 E
Alabama	2,190	79	via hwy 58 E

To & From Job Site	1-way	To County Line	
Treatment Plant	2.5		
Santa Maria, CA	39	35	via hwy 101 S

Excavation for pipelines with need 20% exported due to pipeline displacement.

Excavatiuon for pipelines will require 10% added material to create functional bed for piles.

Excavation for treatment plant and storage ponds will be balanced.

Mileages for long-distance HD trucks were listed as one-way only, due to usual practice of getting new load for return trip

Septage hauling will be with 3,000 gallon trucks. Since each new septic tank is estimated at 1,500 gallon and the old tanks average 1,200 gallons, the septage hauler wouldhave to make a trip to the treatment site for every two tanks.

Septage hauling will be performed for the 749 tanks that lie outside the Prohibition Zone.

Materials/Construction On-Road Truck Trip Information for Treatment Plants

To/From Contractor's Yard

Category	Truck Capacity	Location	Miles 1-way	Annual Delivery Frequency* STEP/Fac (Project #1) Trips	VMT	Grav/Bio (Projects #2&3) ** Trips	VMT	Grav/Fac (Project #4) Trips	VMT
Construction Materials Supplied									
Treatment Concrete	10 CY	San Luis Obispo, CA	11	6	132	12	264	6	132
Septic Tank - Fiberglass	33 tanks/truck	Agoura Hills, CA	172	5	1,720				
Septic Tank - Aggregate Base	16 CY	Santa Maria, CA	39	22	1,716				
Collection System Asphalt	7.5 CY	Santa Maria, CA	39	3	234	22	1,716	22	1,716
Collection System Aggregate Base	16 CY	Santa Maria, CA	39	6	468	98	7,644	98	7,644
Lining - Polyethylene		Santee, CA	331	1	662	1	662	1	662
Piping - PVC		Visalia, CA	147	1	294	1	294	1	294
Riprap	18 CY	Santa Maria, CA	39	18	1,404			18	1,404
LDPE (2% Black C) Tubing		Gurnee, IL	2,186	1	4,372	1	4,372	1	4,372
Chemicals*									
Sodium Hypochlorite		Los Angeles, CA	207	26	10,764	26	10,764	26	10,764
Sodium Hydroxide		Los Angeles, CA	207	1	414	1	414	1	414
Polymer - Thickening		Carson, CA	219			3	1,314		
Polymer - Dewatering		Carson, CA	219	3	1,314	3	1,314	3	1,314
Alum		Los Angeles, CA	207	1	414	1	414	1	414
Filter Polymer		Carson, CA	219	3	1,314	3	1,314	3	1,314
Methanol		Fresno, CA	149	1	298				
Construction Materials Disposal									
Collection System Asphalt	23 tons	Santa Maria, CA	39	1	78	9	702	9	702
Collection System Aggregate Base	23 tons	Santa Maria, CA	39	6	468	92	7,176	92	7,176
Solids		McCarthy Family Farms	142	32	9,088	200	56,800	38	10,792
Septage		Los Osos WWTP	2	441	1,764	60	240	60	240

** Annual frequency for chemical delivery is dependent on the shelf-life of the chemicals as provided by vendors, not by the capacity of the delivery truck.*

*** Biolac for Proposed Projects # 2 & 3 is used due to being most conservative*

Truck capacities, trip rates, and locations supplied by Corollo Engineering

Surface and Soil Disturbance

Collection Systems

GRAVITY		Number	Length	Width	Depth	Dia	Exc. Dia	Yd^3
Pump Stations								
Triplex	West Paso	1			21.0	10.0	18	198
	Lupine	1			28.0	12.0	20	326
Duplex	Baywood	1			21.0	10.0	18	198
	East Ysbel	1			22.5	10.0	18	212
	East Paso	1			21.0	10.0	18	198
	Mountain View	1			21.0	10.0	18	198
	Sunny Oaks	1			20.0	10.0	18	188
Pocket		12			16.5	10.0	18	1,866
Manholes		907			8	4	8	13,508
							Subtotal	***16,893***
Collection			230,000					
Depth					Avg			
<8 ft.			172,213	4	6.0			153,078
9-12 ft.			51,550	4	10.5			80,189
13-15 ft.			5,503	4	14.0			11,414
>16-18 ft.			734	4	17.0			1,849
Sum			***230,000***					***246,529***
LPGPs		238	5			2.5	4	555
LPGPs	Laterals	238	75	2	4			5,299
Laterals		4,769	50	2	4			70,652
							Subtotal	***76,505***
							GRAVITY TOTAL	**339,927**

STEP		Number	Length	Width	Depth	Diameter	Exc. Diam	Yd^3
Collection			203,600					
10"/8'/6" Force Main			31,600	3	5			17,556
Collector line Exc		50%	101,800	2	4			30,163
Bored - 3000 Excavation pts		50%	4	4	5			9,000
Service Connect to Main		4,769	3	3	4			6,359
Appurtenances Connections to Main		500	3	3	4			667
							Subtotal	***63,744***
STEP Tanks								
Tank Excavations		4,769	16	8	8			180,869
Laterals		4,769	50	2	4			70,652
LPGPs		238	5			2.5	4	555
LPGPs	Laterals	238	75	2	4			5,299
							Subtotal	***257,374***
							STEP TOTAL	***321,118***

Asphalt Area Calculations

GRAVITY				Roadway Disturb				Trips		
E-Dia	Length	Width	Number	AREA (ft^2)	(ft^2)	(yd^2)	days	Agg (yd^3)	Asph (yd^3)	Total RT
18			1	254	0	0	0.0	0	0	0
20			1	314	0	0	0.0	0	0	0
18			1	254	0	0	0.0	0	0	0
18			1	254	0	0	0.0	0	0	0
18			1	254	0	0	0.0	0	0	0
18			1	254	0	0	0.0	0	0	0
18			1	254	0	0	0.0	0	0	0
18			12	3,054	3,054	339	0.1	57	19	15
8			907	45,591	45,591	5,066	1.0	844	281	225
			Subtotal	***50,485***	***48,644***	***5,405***	***1.1***	***901***	***300***	***240***
E-Dia	**Length**	**Width**	**Number**	**AREA (ft^2)**	**(ft^2)**	**(yd^2)**	**days**	**Agg (yd^3)**	**Asph (yd^3)**	**Total RT**
	172,213	4		688,852	619,967	68,885	13.8	11,481	3,827	3,062
	51,550	4		206,200	185,580	20,620	4.1	3,437	1,146	916
	5,503	4		22,012	19,811	2,201	0.4	367	122	98
	734	4		2,936	2,642	294	0.1	49	16	13
			Subtotal	***920,000***	***828,000***	***92,000***	***18.4***	***15,333***	***5,111***	***4,089***
E-Dia	**Length**	**Width**	**Number**	**AREA (ft^2)**	**(ft^2)**	**(yd^2)**	**days**			**Total RT**
4			238	2,991	0	0	0.0	0	0	0
	75	2	238	35,768	0	0	0.0	0	0	0
	50	2	4,769	476,900	214,605	23,845	4.8	3,974	1,325	1,060
			Subtotal	***515,658***	***214,605***	***23,845***	***4.8***	***3,974***	***1,325***	***1,060***
			GRAVITY TOTAL	***1,486,144***	***1,091,249***	***121,250***	***24.2***	***20,208***	***6,736***	***5,389***

STEP				Roadway Disturb				Trips		
E-Dia	Length	Width	Number	AREA (ft^2)	(ft^2)	(yd^2)	days	Agg (yd^3)	Asph (yd^3)	Total RT
	31,600	3		94,800	85,320	9,480	1.9	1,580	527	421
	101,800	2		203,600	183,240	20,360	4.1	3,393	1,131	905
	4	4	3,000	48,000	43,200	4,800	1.0	800	267	213
	3	3	4,769	42,921	38,629	4,292	0.9	715	238	191
	3	3	500	4,500	4,050	450	0.1	75	25	20
			Subtotal	***393,821***	***354,439***	***39,382***	***7.9***	***6,564***	***2,188***	***1,750***
E-Dia	**Length**	**Width**	**Number**	**AREA (ft^2)**	**(ft^2)**	**(yd^2)**	**days**	**Agg (yd^3)**	**Asph (yd^3)**	**Total RT**
	16	8	4,769	610,432	0	0	0.0	0	0	0
	50	2	4,769	476,900	214,605	23,845	4.8	3,974	1,325	1,060
4			238	2,996	0	0	0.0	0	0	0
	75	2	238	35,768	0	0	0.0	0	0	0
			Subtotal	***1,126,096***	***214,605***	***23,845***	***4.8***	***3,974***	***1,325***	***1,060***
			STEP TOTAL	***1,519,917***	***569,044***	***63,227***	***12.6***	***10,538***	***3,513***	***2,810***

Surface and Soil Disturbance

Conveyance Systems

Raw Wastewater		Length	Width	Depth	Diameter	Exc. Diam	Yd^3
Pipeline to Giacomazzi		18,700	3	5			10,389
Pipeline to Tonini		28,500	3	5			15,833

Treated Effluent		Length	Width	Depth	Diameter	Exc. Diam	Yd^3
Pipeline to Broderson & Tonini		26,800	3	5			14,889
Pipeline to Broderson & Tonini (PP#4)		33,300	3	5			18,500

1. Total length of sewer = 230,000 and total MH = 907 from Carollo FSA, Table 3-1
2. Total Length of STEP lines from Ripley Pacific TM-4, opinion of Probable Csot of Construction -- Probibition Zone Only
3. Total number of connections = 4769

Asphalt Area Calculations

Raw Wastewater				Roadway Disturb				Trips		
	Length	Width		AREA (ft^2)	(ft^2)	(yd^2)	days	Agg (yd^3)	Asph (yd^3)	Total RT
	18,700	3		56,100	28,050	3,117	0.6	519	173	139
	28,500	3		85,500	42,750	4,750	1.0	792	264	211

Treated Effluent				Roadway Disturb				Trips		
	Length	Width		AREA (ft^2)	(ft^2)	(yd^2)	days	Agg (yd^3)	Asph (yd^3)	Total RT
	26,800	3		80,400	40,200	4,467	0.9	744	248	199
	33,300	3		99,900	49,950	5,550	1.1	925	308	247

Assumptions (K/J)
5,000 yd^2/d
2 inches Asphalt
6 inches aggregate
10 yd^3 per truck
2 trips per truck

Assumptions (County & MBA)
90% Of collection system pipeline that will need repaving
50% Of conveyance system pipeline that will need repaving

SUMMARY Construction Off-road

Proposed Project #1

System	Emissions (lb/d)				Emissions (t/q)				Fuel Use
	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	Total gallons
Collection/Conveyance	42.6	159.5	338.2	28.0	4.39	17.05	34.75	2.98	86,622
Treatment	15.8	77.3	201.0	8.8	0.63	3.13	7.65	0.36	102,323
Disposal	9.6	69.6	163.5	4.7	0.28	2.02	4.76	0.14	82,519
TOTAL	***68.0***	***306.4***	***702.7***	***41.6***	***5.31***	***22.21***	***47.16***	***3.48***	***271,464***

Proposed Project #2

System	Emissions (lb/d)				Emissions (t/q)				Fuel Use
	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	Total gallons
Collection/Conveyance	30.4	117.1	257.3	20.6	1.21	4.40	9.18	0.81	81,565
Treatment	35.8	168.0	439.8	20.4	0.78	3.72	9.13	0.46	87,828
Disposal	14.7	101.2	239.1	7.3	0.32	2.26	5.33	0.16	91,026
TOTAL	***80.9***	***386.3***	***936.1***	***48.3***	***2.31***	***10.38***	***23.64***	***1.43***	***260,420***

Proposed Project #3

System	Emissions (lb/d)				Emissions (t/q)				Fuel Use
	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	Total gallons
Collection/Conveyance	30.4	117.1	257.3	20.6	1.21	4.40	9.18	0.81	81,565
Treatment	40.9	199.6	515.3	23.0	0.82	3.96	9.69	0.48	96,335
Disposal	9.6	69.6	163.5	4.7	0.28	2.02	4.76	0.14	82,519
TOTAL	***80.9***	***386.3***	***936.1***	***48.3***	***2.31***	***10.38***	***23.64***	***1.43***	***260,420***

Proposed Project #4

System	Emissions (lb/d)				Emissions (t/q)				Fuel Use
	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	Total gallons
Collection/Conveyance	30.4	111.6	246.9	19.5	1.23	4.44	9.28	0.82	83,496
Treatment	15.8	77.3	201.0	8.8	0.63	3.13	7.65	0.36	102,323
Disposal	9.6	69.6	163.5	4.7	0.28	2.02	4.76	0.14	82,519
TOTAL	***55.8***	***258.5***	***611.4***	***33.1***	***2.15***	***9.60***	***21.69***	***1.32***	***268,337***

Proposed Project #1 Off Road Emissions

Collection

Activity	Crews	Size (lf)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}
Force Main	2	31,600	63	track-mounted excavator	125	0.57	1	8	1,006	14.4	3.81	30.5	3,832	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.03	0.11	0.27	0.02
			63	front end loader	73	0.54	1	8	1,006	8.0	2.11	16.9	2,120	0.99	3.49	6.90	0.69	1.4	4.9	9.6	1.0	0.02	0.08	0.15	0.02
			63	rubber tired backhoe	75	0.55	1	8	1,006	8.3	2.21	17.6	2,219	0.99	3.49	6.90	0.69	1.4	5.1	10.0	1.0	0.02	0.08	0.16	0.02
Pressure collector - open trench	1	101,800	170	track-mounted excavator	125	0.57	1	8	1,357	14.4	3.81	30.5	5,169	0.68	2.70	6.90	0.38	0.9	3.4	8.7	0.5	0.02	0.07	0.18	0.01
			170	front end loader	73	0.54	1	8	1,357	8.0	2.11	16.9	2,860	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.01	0.05	0.10	0.01
			170	rubber tired backhoe	75	0.55	1	8	1,357	8.3	2.21	17.6	2,993	0.99	3.49	6.90	0.69	0.7	2.5	5.0	0.5	0.02	0.05	0.11	0.01
Pressure collector - directional drilling	1	101,800	127	rubber tired backhoe	75	0.55	1	8	1,018	8.3	2.21	17.6	2,245	0.99	3.49	6.90	0.69	0.7	2.5	5.0	0.5	0.01	0.04	0.08	0.01
			127	drilling equipment **	120	0.75	1	8	1,018	18.2	4.81	38.5	4,898	0.99	3.49	6.90	0.69	1.6	5.5	11.0	1.1	0.02	0.09	0.17	0.02
Activity	**Crews**	**Tanks**	**Duration (days)**	**Equipment**						**Diesel Fuel Consumption Rates**				**Emission Factors (g/bhp-hr)**				**Emissions (lbs/d)**				**Emissions (tpq)**			
				Veh Type	**BHP**	**Load Factor**	**# per crew**	**hrs/day**	*** total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_x**	**PM_{10}**	**ROG**	**CO**	**NO_x**	**PM_{10}**	**ROG**	**CO**	**NO_x**	**PM_{10}**
Laterals/septic tanks	18	4,679	250	rubber tired backhoe	75	0.55	1	8	19,076	8.3	2.21	17.6	42,070	0.99	3.49	6.90	0.69	13.0	45.7	90.4	9.0	3.86	13.62	26.93	2.69
			250	crane	194	0.43	1	1	2,385	16.9	4.46	4.5	10,635	0.32	2.70	6.25	0.15	1.1	8.9	20.7	0.5	0.32	2.66	6.17	0.15
Activity	**Crews**	**Area (yd^2)**	**Duration (days)**	**Equipment**						**Diesel Fuel Consumption Rates**				**Emission Factors (g/bhp-hr)**				**Emissions (lbs/d)**				**Emissions (tpq)**			
				Veh Type	**BHP**	**Load Factor**	**# per crew**	**hrs/day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_x**	**PM_{10}**	**ROG**	**CO**	**NO_x**	**PM_{10}**	**ROG**	**CO**	**NO_x**	**PM_{10}**
Asphalt - exhaust	1	63,227	12.6	motor grader	174	0.61	1	8	101	21.5	5.67	45.4	572	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.01	0.02	0.00
				loader	73	0.54	1	8	101	8.0	2.11	16.9	212	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.00	0.01	0.00
				paver	99	0.53	1	8	101	10.6	2.81	22.4	283	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.01	0.01	0.00
				roller	95	0.56	1	8	101	10.8	2.84	22.8	287	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.01	0.00
											Collection Totals	***315.6***	***80,394***				***Collection Totals***	***26.9***	***101.8***	***213.1***	***18.0***	***4.34***	***16.88***	***34.37***	***2.95***

Conveyance

Activity	Crews	Size (lf)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}
Raw wastewater to Giacomazzi	2	18,700	21	track-mounted excavator	125	0.57	1	8	340	14.4	3.81	30.5	1,295	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.04	0.09	0.01
			21	front end loader	73	0.54	1	8	340	8.0	2.11	16.9	717	0.99	3.49	6.90	0.69	1.4	4.9	9.6	1.0	0.01	0.03	0.05	0.01
			21	rubber tired backhoe	75	0.55	1	8	340	8.3	2.21	17.6	750	0.99	3.49	6.90	0.69	1.4	5.1	10.0	1.0	0.01	0.03	0.05	0.01
			11	dewatering pumps	20	0.62	1	4	85	2.5	0.66	2.7	56	1.45	5.00	5.55	0.60	0.3	1.1	1.2	0.1	0.00	0.00	0.00	0.00
Effluent to Broderson	2	17,000	12	track-mounted excavator	125	0.57	1	8	196	14.4	3.81	30.5	747	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.02	0.05	0.00
			12	front end loader	73	0.54	1	8	196	8.0	2.11	16.9	413	0.99	3.49	6.90	0.69	1.4	4.9	9.6	1.0	0.00	0.01	0.03	0.00
			12	rubber tired backhoe	75	0.55	1	8	196	8.3	2.21	17.6	432	0.99	3.49	6.90	0.69	1.4	5.1	10.0	1.0	0.00	0.02	0.03	0.00
			12	dewatering pumps	20	0.62	1	2	49	2.5	0.66	1.3	32	1.45	5.00	5.55	0.60	0.2	0.5	0.6	0.1	0.00	0.00	0.00	0.00
Incremental to Tonini	1	9,800	25	track-mounted excavator	125	0.57	1	8	196	14.4	3.81	30.5	747	0.68	2.70	6.90	0.38	0.9	3.4	8.7	0.5	0.00	0.01	0.03	0.00
			25	front end loader	73	0.54	1	8	196	8.0	2.11	16.9	413	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.01	0.01	0.00
			25	rubber tired backhoe	75	0.55	1	8	196	8.3	2.21	17.6	432	0.99	3.49	6.90	0.69	0.7	2.5	5.0	0.5	0.00	0.01	0.02	0.00
			25	dewatering pumps	20	0.62	1	2	49	2.5	0.66	1.3	32	1.45	5.00	5.55	0.60	0.1	0.3	0.3	0.0	0.00	0.00	0.00	0.00
Activity	**Crews**	**Area (yd^2)**	**Duration (days)**	**Equipment**						**Diesel Fuel Consumption Rates**				**Emission Factors (g/bhp-hr)**				**Emissions (lbs/d)**				**Emissions (tpq)**			
				Veh Type	**BHP**	**Load Factor**	**# per crew**	**hrs/day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_x**	**PM_{10}**	**ROG**	**CO**	**NO_x**	**PM_{10}**	**ROG**	**CO**	**NO_x**	**PM_{10}**
Asphalt - exhaust	1	7,583	1.5	motor grader	174	0.61	1	8	12	21.5	5.67	45.4	68	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.00	0.00	0.00
				loader	73	0.54	1	8	12	8.0	2.11	16.9	25	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.00	0.00	0.00
				paver	99	0.53	1	8	12	10.6	2.81	22.4	34	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.00	0.00	0.00
				roller	95	0.56	1	8	12	10.8	2.84	22.8	34	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.00	0.00	0.00
											Conveyance Totals	***307.7***	***6,228***				***Conveyance Totals***	***15.7***	***57.7***	***125.1***	***10.0***	***0.05***	***0.17***	***0.38***	***0.03***

Proposed Project #1 Off Road Emissions

Treatment

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	Load Factor	#	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Facultative ponds - headworks, ponds, & admin & maintenance structures	132	Earth moving - tracked	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Earth moving - wheeled	147	0.64	3	8	3,168	19.0	5.03	40.2	15,935	0.68	2.70	6.90	0.38	3.4	13.4	34.3	1.9	0.17	0.67	1.70	0.09
	132	Grading	174	0.61	2	8	2,112	21.5	5.67	45.4	11,985	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
	132	Compaction roller	95	0.56	1	8	1,056	10.8	2.84	22.8	3,004	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.02	0.05	0.11	0.01
	176	Backhoe - wheeled	75	0.55	3	8	4,224	8.3	2.21	17.6	9,315	0.99	3.49	6.90	0.69	2.2	7.6	15.1	1.5	0.14	0.50	0.99	0.10
	132	Trackhoe - excavator	125	0.57	2	4	1,056	14.4	3.81	15.2	4,023	0.68	2.70	6.90	0.38	0.9	3.4	8.7	0.5	0.03	0.11	0.29	0.02
	147	Mobile crane	194	0.43	3	8	3,520	16.9	4.46	35.7	15,699	0.32	2.70	6.25	0.15	1.4	11.9	27.6	0.7	0.08	0.66	1.52	0.04
	132	Water truck - dust suppression	479	0.57	1	8	1,056	55.3	14.60	116.8	15,415	0.32	0.92	6.25	0.15	1.5	4.4	30.1	0.7	0.03	0.07	0.50	0.01
	132	Asphalt spreader/compaction	95	0.56	1	4	528	10.8	2.84	11.4	1,502	0.99	3.49	6.90	0.69	0.5	1.6	3.2	0.3	0.01	0.03	0.05	0.01
Seasonal Storage	30	Earth moving - tracked	313	0.72	2	8	480	45.6	12.05	96.4	5,783	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.02	0.16	0.37	0.01
	30	Grading	174	0.61	2	8	480	21.5	5.03	40.2	2,414	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.02	0.08	0.19	0.01
									Treatment Totals	***401.5***	***102,323***				***Treatment Totals***	***15.8***	***77.3***	***201.0***	***8.8***	***0.63***	***3.13***	***7.65***	***0.36***

Disposal

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	LF	#	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Leachfield @ Broderson	132	Cat D7 with blade & ripper *	240	0.74	1	8	1,056	35.9	9.50	76.0	10,027	0.32	2.70	6.25	0.15	1.0	8.5	19.6	0.5	0.02	0.14	0.32	0.01
	132	Belly feed scrapers	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Cat 966 loader with bucket *	262	0.65	1	8	1,056	34.5	9.10	72.8	9,615	0.32	2.70	6.25	0.15	1.0	8.1	18.8	0.5	0.02	0.13	0.31	0.01
Sprayfield @ Tonini	132	Earth moving - tracked	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Grading	174	0.61	2	8	2,112	21.5	5.67	45.4	11,985	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
									Disposal Totals	***387.0***	***82,519***				***Disposal Totals***	***9.6***	***69.6***	***163.5***	***4.7***	***0.28***	***2.02***	***4.76***	***0.14***
	*	*total hours = 38,152 over 2 years*							***GRAND TOTALS***	***1,412***	***271,464***				***GRAND TOTALS***	***68.0***	***306.4***	***702.7***	***41.6***	***5.3***	***22.2***	***47.2***	***3.5***

Project 2 Off Road Emissions

Collection

Activity	Crews	Size (lf)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Mainline (including 907 manholes)	3	230,000	219	track-mounted excavator	125	0.57	1	8	5,257	14.4	3.81	30.5	20,025	0.68	2.70	6.90	0.38	2.6	10.2	26.0	1.4	0.21	0.84	2.14	0.12
			219	front end loader	73	0.54	1	8	5,257	8.0	2.11	16.9	11,079	0.99	3.49	6.90	0.69	2.1	7.3	14.4	1.4	0.17	0.60	1.18	0.12
			219	rubber tired backhoe	75	0.55	1	8	5,257	8.3	2.21	17.6	11,594	0.99	3.49	6.90	0.69	2.2	7.6	15.1	1.5	0.18	0.63	1.24	0.12
			219	dewatering pumps	20	0.62	1	2	1,314	2.5	0.66	1.3	871	1.45	5.00	5.55	0.60	0.2	0.8	0.9	0.1	0.02	0.07	0.07	0.01
Laterals	4	140,000	397	rubber tired backhoe	75	0.55	1	8	12,717	8.3	2.21	17.6	28,046	0.99	3.49	6.90	0.69	2.9	10.2	20.1	2.0	0.57	2.02	3.99	0.40
Activity	**Crews**	**Stations**	**Duration (days)**	**Equipment**						**Diesel Fuel Consumption Rates**				**Emission Factors (g/bhp-hr)**				**Emissions (lbs/d)**				**Emissions (tpq)**			
				Veh Type	**BHP**	**Load Factor**	**# per crew**	**hrs/ day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**
Pump stations	1	19	20	cranes	399	0.43	1	4	80	34.7	9.17	36.7	734	0.32	0.92	6.25	0.15	0.5	1.4	9.5	0.2	0.00	0.00	0.02	0.00
			20	pile driving ***	230	0.43	1	2	40	20.0	5.29	10.6	212	0.32	2.70	6.25	0.15	0.1	1.2	2.7	0.1	0.00	0.00	0.01	0.00
			20	rubber tired backhoe	75	0.55	1	4	80	8.3	2.21	8.8	176	0.99	3.49	6.90	0.69	0.4	1.3	2.5	0.3	0.00	0.00	0.01	0.00
Activity	**Crews**	**Area (yd^2)**	**Duration (days)**	**Equipment**						**Diesel Fuel Consumption Rates**				**Emission Factors (g/bhp-hr)**				**Emissions (lbs/d)**				**Emissions (tpq)**			
				Veh Type	**BHP**	**Load Factor**	**# per crew**	**hrs/ day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**
Asphalt	1	121,250	24.2	motor grader	174	0.61	1	8	194	21.5	5.67	45.4	1,099	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.02	0.04	0.00
				loader	73	0.54	1	8	194	8.0	2.11	16.9	408	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.01	0.01	0.00
				paver	99	0.53	1	8	194	10.6	2.81	22.4	543	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.01	0.02	0.00
				roller	95	0.56	1	8	194	10.8	2.84	22.8	551	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.02	0.00
											Collection Totals	***247.5***	***75,337***				***Collection Totals***	***14.7***	***53.9***	***121.7***	***9.5***	***1.16***	***4.20***	***8.75***	***0.78***

Conveyance

Activity	Crews	Size (lf)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Raw wastewater to Giacomazzi	2	18,700	21	track-mounted excavator	125	0.57	1	8	340	14.4	3.81	30.5	1,295	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.04	0.09	0.01
			21	front end loader	73	0.54	1	8	340	8.0	2.11	16.9	717	0.99	3.49	6.90	0.69	1.4	7.3	14.4	1.4	0.01	0.04	0.08	0.01
			21	rubber tired backhoe	75	0.55	1	8	340	8.3	2.21	17.6	750	0.99	3.49	6.90	0.69	1.4	7.6	15.1	1.5	0.01	0.04	0.08	0.01
			11	dewatering pumps	20	0.62	1	4	85	2.5	0.66	2.7	56	1.45	5.00	5.55	0.60	0.3	1.6	1.8	0.2	0.00	0.00	0.00	0.00
Effluent to Broderson	2	17,000	12	track-mounted excavator	125	0.57	1	8	196	14.4	3.81	30.5	747	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.02	0.05	0.00
			12	front end loader	73	0.54	1	8	196	8.0	2.11	16.9	413	0.99	3.49	6.90	0.69	1.4	4.9	9.6	1.0	0.00	0.01	0.03	0.00
			12	rubber tired backhoe	75	0.55	1	8	196	8.3	2.21	17.6	432	0.99	3.49	6.90	0.69	1.4	5.1	10.0	1.0	0.00	0.02	0.03	0.00
			12	dewatering pumps	20	0.62	1	2	49	2.5	0.66	1.3	32	1.45	5.00	5.55	0.60	0.2	0.5	0.6	0.1	0.00	0.00	0.00	0.00
Incremental to Tonini	1	9,800	25	track-mounted excavator	125	0.57	1	8	196	14.4	3.81	30.5	747	0.68	2.70	6.90	0.38	0.9	3.4	8.7	0.5	0.00	0.01	0.03	0.00
			25	front end loader	73	0.54	1	8	196	8.0	2.11	16.9	413	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.01	0.01	0.00
			25	rubber tired backhoe	75	0.55	1	8	196	8.3	2.21	17.6	432	0.99	3.49	6.90	0.69	0.7	2.5	5.0	0.5	0.00	0.01	0.02	0.00
			25	dewatering pumps	20	0.62	1	2	49	2.5	0.66	1.3	32	1.45	5.00	5.55	0.60	0.1	0.3	0.3	0.0	0.00	0.00	0.00	0.00
Activity	**Crews**	**Area (yd^2)**	**Duration (days)**	**Equipment**						**Diesel Fuel Consumption Rates**				**Emission Factors (g/bhp-hr)**				**Emissions (lbs/d)**				**Emissions (tpq)**			
				Veh Type	**BHP**	**Load Factor**	**# per crew**	**hrs/ day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**
Asphalt	1	7,583	1.5	motor grader	174	0.61	1	8	12	21.5	5.67	45.4	68	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.00	0.00	0.00
				loader	73	0.54	1	8	12	8.0	2.11	16.9	25	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.00	0.00	0.00
				paver	99	0.53	1	8	12	10.6	2.81	22.4	34	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.00	0.00	0.00
				roller	95	0.56	1	8	12	10.8	2.84	22.8	34	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.00	0.00	0.00
											Conveyance Totals	***307.7***	***6,228***				***Conveyance Totals***	***15.7***	***63.2***	***135.6***	***11.1***	***0.05***	***0.20***	***0.43***	***0.04***

Project 2 Off Road Emissions

Treatment

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	Load Factor	#	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Oxidation ditch or Biolac - headworks,secondary treatment, secondary clarification, & admin & maintenance structures	88	Earth moving - tracked	313	0.72	2	6	1,056	45.6	12.05	72.3	12,723	0.32	2.70	6.25	0.15	1.9	16.1	37.3	0.9	0.04	0.35	0.82	0.02
	88	Earth moving - wheeled	147	0.64	3	6	1,584	19.0	5.03	30.2	7,967	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
	88	Grading	174	0.61	2	8	1,408	21.5	5.67	45.4	7,990	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.06	0.22	0.57	0.03
	88	Compaction roller	95	0.56	1	8	704	10.8	2.84	22.8	2,002	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.01	0.04	0.07	0.01
	88	Backhoe - wheeled	75	0.55	6	8	4,224	8.3	2.21	17.6	9,315	0.99	3.49	6.90	0.69	4.3	15.2	30.1	3.0	0.29	1.01	1.99	0.20
	88	Trackhoe - excavator	125	0.57	3	4	1,056	14.4	3.81	15.2	4,023	0.68	2.70	6.90	0.38	1.3	5.1	13.0	0.7	0.04	0.17	0.43	0.02
	88	Mobile crane	194	0.43	5	8	3,520	16.9	4.46	35.7	15,699	0.32	2.70	6.25	0.15	2.4	19.9	46.0	1.1	0.13	1.09	2.53	0.06
	88	Water truck - dust suppression	479	0.57	2	6	1,056	55.3	14.60	87.6	15,415	0.32	0.92	6.25	0.15	2.3	6.6	45.1	1.1	0.05	0.15	0.99	0.02
	66	Asphalt spreader/compaction	95	0.56	2	4	528	10.8	2.84	11.4	1,502	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.02	0.05	0.11	0.01
Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	Load Factor	#	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Solids processing components - dewatering	15	Earth moving - tracked	313	0.72	2	8	238	45.6	12.05	96.4	2,870	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.01	0.08	0.18	0.00
	15	Earth moving - wheeled	147	0.64	3	8	357	19.0	5.03	40.2	1,797	0.68	2.70	6.90	0.38	3.4	13.4	34.3	1.9	0.02	0.08	0.19	0.01
	15	Grading	174	0.61	2	8	238	21.5	5.67	45.4	1,352	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.01	0.04	0.10	0.01
	15	Compaction roller	95	0.56	1	8	119	10.8	2.84	22.8	339	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.01	0.00
	15	Backhoe - wheeled	75	0.55	3	8	357	8.3	2.21	17.6	788	0.99	3.49	6.90	0.69	2.2	7.6	15.1	1.5	0.01	0.04	0.08	0.01
	15	Trackhoe - excavator	125	0.57	2	8	238	14.4	3.81	30.5	907	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.03	0.06	0.00
	15	Mobile crane	194	0.43	2	8	238	16.9	4.46	35.7	1,062	0.32	2.70	6.25	0.15	0.9	7.9	18.4	0.4	0.00	0.03	0.07	0.00
	15	Water truck - dust suppression	479	0.57	1	8	119	55.3	14.60	116.8	1,738	0.32	0.92	6.25	0.15	1.5	4.4	30.1	0.7	0.00	0.01	0.06	0.00
	15	Asphalt spreader/compaction	95	0.56	1	8	119	10.8	2.84	22.8	339	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.01	0.00
									Treatment Totals	***766.2***	***87,828***				*Treatment Totals*	***35.8***	***168.0***	***439.8***	***20.4***	***0.78***	***3.72***	***9.13***	***0.46***

Disposal

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	LF	#	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Leachfield @ Broderson	132	Cat D7 with blade & ripper *	240	0.74	1	8	1,056	35.9	9.50	76.0	10,027	0.32	2.70	6.25	0.15	1.0	8.5	19.6	0.5	0.02	0.14	0.32	0.01
	132	Belly feed scrapers	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Cat 966 loader with bucket *	262	0.65	1	8	1,056	34.5	9.10	72.8	9,615	0.32	2.70	6.25	0.15	1.0	8.1	18.8	0.5	0.02	0.13	0.31	0.01
Sprayfield @ Tonini	132	Earth moving - tracked	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Grading	174	0.61	2	8	2,112	21.5	5.67	45.4	11,985	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
Seasonal Storage	30	Earth moving - tracked	313	0.72	2	8	480	45.6	12.05	96.4	5,783	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.02	0.16	0.37	0.01
	30	Grading	174	0.61	2	8	480	21.5	5.67	45.4	2,724	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.02	0.08	0.19	0.01
									Disposal Totals	***528.8***	***91,026***				*Disposal Totals*	***14.7***	***101.2***	***239.1***	***7.3***	***0.32***	***2.26***	***5.33***	***0.16***
									GRAND TOTALS	***1,850***	***260,420***				*GRAND TOTALS*	***80.9***	***386.3***	***936.1***	***48.3***	***2.3***	***10.4***	***23.6***	***1.4***

Project 3 Off Road Emissions

Collection

Activity	Crews	Size (lf)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}
Mainline (including 907 manholes)	3	230,000	219	track-mounted excavator	125	0.57	1	8	5,257	14.4	3.81	30.5	20,025	0.68	2.70	6.90	0.38	2.6	10.2	26.0	1.4	0.21	0.84	2.14	0.12
			219	front end loader	73	0.54	1	8	5,257	8.0	2.11	16.9	11,079	0.99	3.49	6.90	0.69	2.1	7.3	14.4	1.4	0.17	0.60	1.18	0.12
			219	rubber tired backhoe	75	0.55	1	8	5,257	8.3	2.21	17.6	11,594	0.99	3.49	6.90	0.69	2.2	7.6	15.1	1.5	0.18	0.63	1.24	0.12
			219	dewatering pumps	20	0.62	1	2	1,314	2.5	0.66	1.3	871	1.45	5.00	5.55	0.60	0.2	0.8	0.9	0.1	0.02	0.07	0.07	0.01
Laterals	4	140,000	397	rubber tired backhoe	75	0.55	1	8	12,717	8.3	2.21	17.6	28,046	0.99	3.49	6.90	0.69	2.9	10.2	20.1	2.0	0.57	2.02	3.99	0.40
Activity	Crews	Stations	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}
Pump stations	1	19	20	cranes	399	0.43	1	4	80	34.7	9.17	36.7	734	0.32	0.92	6.25	0.15	0.5	1.4	9.5	0.2	0.00	0.00	0.02	0.00
			20	pile driving ***	230	0.43	1	2	40	20.0	5.29	10.6	212	0.32	2.70	6.25	0.15	0.1	1.2	2.7	0.1	0.00	0.00	0.01	0.00
			20	rubber tired backhoe	75	0.55	1	4	80	8.3	2.21	8.8	176	0.99	3.49	6.90	0.69	0.4	1.3	2.5	0.3	0.00	0.00	0.01	0.00
Activity	Crews	Area (yd^2)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}
Asphalt	1	121,250	24.2	motor grader	174	0.61	1	8	194	21.5	5.67	45.4	1,099	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.02	0.04	0.00
				loader	73	0.54	1	8	194	8.0	2.11	16.9	408	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.01	0.01	0.00
				paver	99	0.53	1	8	194	10.6	2.81	22.4	543	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.01	0.02	0.00
				roller	95	0.56	1	8	194	10.8	2.84	22.8	551	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.02	0.00
										Collection Totals		***247.5***	***75,337***				*Collection Totals*	***14.7***	***53.9***	***121.7***	***9.5***	***1.16***	***4.20***	***8.75***	***0.78***

Conveyance

Activity	Crews	Size (lf)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}
Raw wastewater to Giacomazzi	2	18,700	21	track-mounted excavator	125	0.57	1	8	340	14.4	3.81	30.5	1,295	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.04	0.09	0.01
			21	front end loader	73	0.54	1	8	340	8.0	2.11	16.9	717	0.99	3.49	6.90	0.69	1.4	7.3	14.4	1.4	0.01	0.04	0.08	0.01
			21	rubber tired backhoe	75	0.55	1	8	340	8.3	2.21	17.6	750	0.99	3.49	6.90	0.69	1.4	7.6	15.1	1.5	0.01	0.04	0.08	0.01
			11	dewatering pumps	20	0.62	1	4	85	2.5	0.66	2.7	56	1.45	5.00	5.55	0.60	0.3	1.6	1.8	0.2	0.00	0.00	0.00	0.00
Effluent to Broderson	2	17,000	12	track-mounted excavator	125	0.57	1	8	196	14.4	3.81	30.5	747	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.02	0.05	0.00
			12	front end loader	73	0.54	1	8	196	8.0	2.11	16.9	413	0.99	3.49	6.90	0.69	1.4	4.9	9.6	1.0	0.00	0.01	0.03	0.00
			12	rubber tired backhoe	75	0.55	1	8	196	8.3	2.21	17.6	432	0.99	3.49	6.90	0.69	1.4	5.1	10.0	1.0	0.00	0.02	0.03	0.00
			12	dewatering pumps	20	0.62	1	2	49	2.5	0.66	1.3	32	1.45	5.00	5.55	0.60	0.2	0.5	0.6	0.1	0.00	0.00	0.00	0.00
Incremental to Tonini	1	9,800	25	track-mounted excavator	125	0.57	1	8	196	14.4	3.81	30.5	747	0.68	2.70	6.90	0.38	0.9	3.4	8.7	0.5	0.00	0.01	0.03	0.00
			25	front end loader	73	0.54	1	8	196	8.0	2.11	16.9	413	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.01	0.01	0.00
			25	rubber tired backhoe	75	0.55	1	8	196	8.3	2.21	17.6	432	0.99	3.49	6.90	0.69	0.7	2.5	5.0	0.5	0.00	0.01	0.02	0.00
			25	dewatering pumps	20	0.62	1	2	49	2.5	0.66	1.3	32	1.45	5.00	5.55	0.60	0.1	0.3	0.3	0.0	0.00	0.00	0.00	0.00
Activity	Crews	Area (yd^2)	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
				Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}	ROG	CO	NO_x	PM_{10}
Asphalt	1	7,583	1.5	motor grader	174	0.61	1	8	12	21.5	5.67	45.4	68	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.00	0.00	0.00
				loader	73	0.54	1	8	12	8.0	2.11	16.9	25	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.00	0.00	0.00
				paver	99	0.53	1	8	12	10.6	2.81	22.4	34	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.00	0.00	0.00
				roller	95	0.56	1	8	12	10.8	2.84	22.8	34	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.00	0.00	0.00
										Conveyance Totals		***307.7***	***6,228***				*Conveyance Totals*	***15.7***	***63.2***	***135.6***	***11.1***	***0.05***	***0.20***	***0.43***	***0.04***

Project 3 Off Road Emissions

Treatment

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	Load Factor	#	hrs/day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Oxidation ditch or Biolac - headworks,secondary treatment, secondary clarification, & admin & maintenance structures	88	Earth moving - tracked	313	0.72	2	6	1,056	45.6	12.05	72.3	12,723	0.32	2.70	6.25	0.15	1.9	16.1	37.3	0.9	0.04	0.35	0.82	0.02
	88	Earth moving - wheeled	147	0.64	3	6	1,584	19.0	5.03	30.2	7,967	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
	88	Grading	174	0.61	2	8	1,408	21.5	5.67	45.4	7,990	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.06	0.22	0.57	0.03
	88	Compaction roller	95	0.56	1	8	704	10.8	2.84	22.8	2,002	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.01	0.04	0.07	0.01
	88	Backhoe - wheeled	75	0.55	6	8	4,224	8.3	2.21	17.6	9,315	0.99	3.49	6.90	0.69	4.3	15.2	30.1	3.0	0.29	1.01	1.99	0.20
	88	Trackhoe - excavator	125	0.57	3	4	1,056	14.4	3.81	15.2	4,023	0.68	2.70	6.90	0.38	1.3	5.1	13.0	0.7	0.04	0.17	0.43	0.02
	88	Mobile crane	194	0.43	5	8	3,520	16.9	4.46	35.7	15,699	0.32	2.70	6.25	0.15	2.4	19.9	46.0	1.1	0.13	1.09	2.53	0.06
	88	Water truck - dust suppression	479	0.57	2	6	1,056	55.3	14.60	87.6	15,415	0.32	0.92	6.25	0.15	2.3	6.6	45.1	1.1	0.05	0.15	0.99	0.02
	66	Asphalt spreader/compaction	95	0.56	2	4	528	10.8	2.84	11.4	1,502	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.02	0.05	0.11	0.01
Seasonal Storage	30	Earth moving - tracked	313	0.72	2	8	480	45.6	12.05	96.4	5,783	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.02	0.16	0.37	0.01
	30	Grading	174	0.61	2	8	480	21.5	5.67	45.4	2,724	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.02	0.08	0.19	0.01
Activity	**Duration (days)**	**Equipment**						**Diesel Fuel Consumption Rates**				**Emission Factors (g/bhp-hr)**				**Emissions (lbs/d)**				**Emissions (tpq)**			
		Veh Type	**BHP**	**Load Factor**	**#**	**hrs/day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**
Solids processing components - dewatering	15	Earth moving - tracked	313	0.72	2	8	238	45.6	12.05	96.4	2,870	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.01	0.08	0.18	0.00
	15	Earth moving - wheeled	147	0.64	3	8	357	19.0	5.03	40.2	1,797	0.68	2.70	6.90	0.38	3.4	13.4	34.3	1.9	0.02	0.08	0.19	0.01
	15	Grading	174	0.61	2	8	238	21.5	5.67	45.4	1,352	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.01	0.04	0.10	0.01
	15	Compaction roller	95	0.56	1	8	119	10.8	2.84	22.8	339	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.01	0.00
	15	Backhoe - wheeled	75	0.55	3	8	357	8.3	2.21	17.6	788	0.99	3.49	6.90	0.69	2.2	7.6	15.1	1.5	0.01	0.04	0.08	0.01
	15	Trackhoe - excavator	125	0.57	2	8	238	14.4	3.81	30.5	907	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.03	0.06	0.00
	15	Mobile crane	194	0.43	2	8	238	16.9	4.46	35.7	1,062	0.32	2.70	6.25	0.15	0.9	7.9	18.4	0.4	0.00	0.03	0.07	0.00
	15	Water truck - dust suppression	479	0.57	1	8	119	55.3	14.60	116.8	1,738	0.32	0.92	6.25	0.15	1.5	4.4	30.1	0.7	0.00	0.01	0.06	0.00
	15	Asphalt spreader/compaction	95	0.56	1	8	119	10.8	2.84	22.8	339	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.01	0.00
									Treatment Totals	***908.0***	***96,335***				***Treatment Totals***	***40.9***	***199.6***	***515.3***	***23.0***	***0.82***	***3.96***	***9.69***	***0.48***

Disposal

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	LF	#	hrs/day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Leachfield @ Broderson	132	Cat D7 with blade & ripper *	240	0.74	1	8	1,056	35.9	9.50	76.0	10,027	0.32	2.70	6.25	0.15	1.0	8.5	19.6	0.5	0.02	0.14	0.32	0.01
	132	Belly feed scrapers	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Cat 966 loader with bucket *	262	0.65	1	8	1,056	34.5	9.10	72.8	9,615	0.32	2.70	6.25	0.15	1.0	8.1	18.8	0.5	0.02	0.13	0.31	0.01
Sprayfield @ Tonini	132	Earth moving - tracked	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Grading	174	0.61	2	8	2,112	21.5	5.67	45.4	11,985	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
									Disposal Totals	***387.0***	***82,519***				***Disposal Totals***	***9.6***	***69.6***	***163.5***	***4.7***	***0.28***	***2.02***	***4.76***	***0.14***
									GRAND TOTALS	***1,850***	***260,420***				***GRAND TOTALS***	***80.9***	***386.3***	***936.1***	***48.3***	***2.3***	***10.4***	***23.6***	***1.4***

Project 4 Off Road Emissions

Collection

Activity	Crews	Size (lf)	Duration (days)	Equipment: Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	Diesel Fuel Consumption Rates: LMPH	GPH	GPD	Total Fuel (gals)	Emission Factors (g/bhp-hr): ROG	CO	NO_X	PM_{10}	Emissions (lbs/d): ROG	CO	NO_X	PM_{10}	Emissions (tpq): ROG	CO	NO_X	PM_{10}
Mainline (including 907 manholes)	3	230,000	219	track-mounted excavator	125	0.57	1	8	5,257	14.4	3.81	30.5	20,025	0.68	2.70	6.90	0.38	2.6	10.2	26.0	1.4	0.21	0.84	2.14	0.12
			219	front end loader	73	0.54	1	8	5,257	8.0	2.11	16.9	11,079	0.99	3.49	6.90	0.69	2.1	7.3	14.4	1.4	0.17	0.60	1.18	0.12
			219	rubber tired backhoe	75	0.55	1	8	5,257	8.3	2.21	17.6	11,594	0.99	3.49	6.90	0.69	2.2	7.6	15.1	1.5	0.18	0.63	1.24	0.12
			219	dewatering pumps	20	0.62	1	2	1,314	2.5	0.66	1.3	871	1.45	5.00	5.55	0.60	0.2	0.8	0.9	0.1	0.02	0.07	0.07	0.01
Laterals	4	140,000	397	rubber tired backhoe	75	0.55	1	8	12,717	8.3	2.21	17.6	28,046	0.99	3.49	6.90	0.69	2.9	10.2	20.1	2.0	0.57	2.02	3.99	0.40
Activity	**Crews**	**Stations**	**Duration (days)**	**Veh Type**	**BHP**	**Load Factor**	**# per crew**	**hrs/ day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**
Pump stations	1	19	20	cranes	399	0.43	1	4	80	34.7	9.17	36.7	734	0.32	0.92	6.25	0.15	0.5	1.4	9.5	0.2	0.00	0.00	0.02	0.00
			20	pile driving ***	230	0.43	1	2	40	20.0	5.29	10.6	212	0.32	2.70	6.25	0.15	0.1	1.2	2.7	0.1	0.00	0.00	0.01	0.00
			20	rubber tired backhoe	75	0.55	1	4	80	8.3	2.21	8.8	176	0.99	3.49	6.90	0.69	0.4	1.3	2.5	0.3	0.00	0.00	0.01	0.00
Activity	**Crews**	**Area (yd^2)**	**Duration (days)**	**Veh Type**	**BHP**	**Load Factor**	**# per crew**	**hrs/ day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**
Asphalt	1	121,250	24.2	motor grader	174	0.61	1	8	194	21.5	5.67	45.4	1,099	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.02	0.04	0.00
				loader	73	0.54	1	8	194	8.0	2.11	16.9	408	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.01	0.01	0.00
				paver	99	0.53	1	8	194	10.6	2.81	22.4	543	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.01	0.02	0.00
				roller	95	0.56	1	8	194	10.8	2.84	22.8	551	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.01	0.02	0.00
											Collection Totals	***247.5***	***75,337***				***Collection Totals***	***14.7***	***53.9***	***121.7***	***9.5***	***1.16***	***4.20***	***8.75***	***0.78***

Conveyance

Activity	Crews	Size (lf)	Duration (days)	Equipment: Veh Type	BHP	Load Factor	# per crew	hrs/ day	total hrs/yr	Diesel Fuel Consumption Rates: LMPH	GPH	GPD	Total Fuel (gals)	Emission Factors (g/bhp-hr): ROG	CO	NO_X	PM_{10}	Emissions (lbs/d): ROG	CO	NO_X	PM_{10}	Emissions (tpq): ROG	CO	NO_X	PM_{10}
Raw wastewater to Giacomazzi	2	28,500	32	track-mounted excavator	125	0.57	1	8	518	14.4	3.81	30.5	1,974	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.05	0.14	0.01
			32	front end loader	73	0.54	1	8	518	8.0	2.11	16.9	1,092	0.99	3.49	6.90	0.69	1.4	4.9	9.6	1.0	0.01	0.04	0.08	0.01
			32	rubber tired backhoe	75	0.55	1	8	518	8.3	2.21	17.6	1,143	0.99	3.49	6.90	0.69	1.4	5.1	10.0	1.0	0.01	0.04	0.08	0.01
			16	dewatering pumps	20	0.62	1	4	130	2.5	0.66	2.7	86	1.45	5.00	5.55	0.60	0.3	1.1	1.2	0.1	0.00	0.00	0.00	0.00
Effluent to Broderson	2	26,800	19	track-mounted excavator	125	0.57	1	8	309	14.4	3.81	30.5	1,177	0.68	2.70	6.90	0.38	1.7	6.8	17.3	1.0	0.01	0.03	0.08	0.00
			19	front end loader	73	0.54	1	8	309	8.0	2.11	16.9	651	0.99	3.49	6.90	0.69	1.4	4.9	9.6	1.0	0.01	0.02	0.05	0.00
			19	rubber tired backhoe	75	0.55	1	8	309	8.3	2.21	17.6	681	0.99	3.49	6.90	0.69	1.4	5.1	10.0	1.0	0.01	0.02	0.05	0.00
			19	dewatering pumps	20	0.62	1	2	77	2.5	0.66	1.3	51	1.45	5.00	5.55	0.60	0.2	0.5	0.6	0.1	0.00	0.00	0.00	0.00
Incremental to Tonini	1	6,500	16	track-mounted excavator	125	0.57	1	8	130	14.4	3.81	30.5	495	0.68	2.70	6.90	0.38	0.9	3.4	8.7	0.5	0.00	0.01	0.02	0.00
			16	front end loader	73	0.54	1	8	130	8.0	2.11	16.9	274	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.00	0.01	0.00
			16	rubber tired backhoe	75	0.55	1	8	130	8.3	2.21	17.6	287	0.99	3.49	6.90	0.69	0.7	2.5	5.0	0.5	0.00	0.01	0.01	0.00
			16	dewatering pumps	20	0.62	1	2	33	2.5	0.66	1.3	22	1.45	5.00	5.55	0.60	0.1	0.3	0.3	0.0	0.00	0.00	0.00	0.00
Activity	**Crews**	**Area (yd^2)**	**Duration (days)**	**Veh Type**	**BHP**	**Load Factor**	**# per crew**	**hrs/ day**	**total hrs/yr**	**LMPH**	**GPH**	**GPD**	**Total Fuel (gals)**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**	**ROG**	**CO**	**NO_X**	**PM_{10}**
Asphalt	1	10,300	2.1	motor grader	174	0.61	1	8	17	21.5	5.67	45.4	95	0.68	2.70	6.90	0.38	1.3	5.1	12.9	0.7	0.00	0.00	0.00	0.00
				loader	73	0.54	1	8	17	8.0	2.11	16.9	35	0.99	3.49	6.90	0.69	0.7	2.4	4.8	0.5	0.00	0.00	0.00	0.00
				paver	99	0.53	1	8	17	10.6	2.81	22.4	47	0.99	3.49	6.90	0.69	0.9	3.2	6.4	0.6	0.00	0.00	0.00	0.00
				roller	95	0.56	1	8	17	10.8	2.84	22.8	48	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.00	0.00	0.00	0.00
											Conveyance Totals	***307.7***	***8,159***				***Conveyance Totals***	***15.7***	***57.7***	***125.1***	***10.0***	***0.07***	***0.24***	***0.53***	***0.04***

Project 4 Off Road Emissions

Treatment

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	Load Factor	#	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Facultative ponds - headworks, ponds, & admin & maintenance structures	132	Earth moving - tracked	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Earth moving - wheeled	147	0.64	3	8	3,168	19.0	5.03	40.2	15,935	0.68	2.70	6.90	0.38	3.4	13.4	34.3	1.9	0.17	0.67	1.70	0.09
	132	Grading	174	0.61	2	8	2,112	21.5	5.67	45.4	11,985	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
	132	Compaction roller	95	0.56	1	8	1,056	10.8	2.84	22.8	3,004	0.99	3.49	6.90	0.69	0.9	3.3	6.5	0.6	0.02	0.05	0.11	0.01
	176	Backhoe - wheeled	75	0.55	3	8	4,224	8.3	2.21	17.6	9,315	0.99	3.49	6.90	0.69	2.2	7.6	15.1	1.5	0.14	0.50	0.99	0.10
	132	Trackhoe - excavator	125	0.57	2	4	1,056	14.4	3.81	15.2	4,023	0.68	2.70	6.90	0.38	0.9	3.4	8.7	0.5	0.03	0.11	0.29	0.02
	147	Mobile crane	194	0.43	3	8	3,520	16.9	4.46	35.7	15,699	0.32	2.70	6.25	0.15	1.4	11.9	27.6	0.7	0.08	0.66	1.52	0.04
	132	Water truck - dust suppression	479	0.57	1	8	1,056	55.3	14.60	116.8	15,415	0.32	0.92	6.25	0.15	1.5	4.4	30.1	0.7	0.03	0.07	0.50	0.01
	132	Asphalt spreader/compaction	95	0.56	1	4	528	10.8	2.84	11.4	1,502	0.99	3.49	6.90	0.69	0.5	1.6	3.2	0.3	0.01	0.03	0.05	0.01
Seasonal Storage	30	Earth moving - tracked	313	0.72	2	8	480	45.6	12.05	96.4	5,783	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.02	0.16	0.37	0.01
	30	Grading	174	0.61	2	8	480	21.5	5.67	45.4	2,724	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.02	0.08	0.19	0.01
									Treatment Totals	***401.5***	***102,323***				***Treatment Totals***	***15.8***	***77.3***	***201.0***	***8.8***	***0.63***	***3.13***	***7.65***	***0.36***

Disposal

Activity	Duration (days)	Equipment						Diesel Fuel Consumption Rates				Emission Factors (g/bhp-hr)				Emissions (lbs/d)				Emissions (tpq)			
		Veh Type	BHP	LF	#	hrs/ day	total hrs/yr	LMPH	GPH	GPD	Total Fuel (gals)	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}	ROG	CO	NO_X	PM_{10}
Leachfield @ Broderson	132	Cat D7 with blade & ripper *	240	0.74	1	8	1,056	35.9	9.50	76.0	10,027	0.32	2.70	6.25	0.15	1.0	8.5	19.6	0.5	0.02	0.14	0.32	0.01
	132	Belly feed scrapers	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Cat 966 loader with bucket *	262	0.65	1	8	1,056	34.5	9.10	72.8	9,615	0.32	2.70	6.25	0.15	1.0	8.1	18.8	0.5	0.02	0.13	0.31	0.01
Sprayfield @ Tonini	132	Earth moving - tracked	313	0.72	2	8	2,112	45.6	12.05	96.4	25,446	0.32	2.70	6.25	0.15	2.5	21.5	49.7	1.2	0.08	0.71	1.64	0.04
	132	Grading	174	0.61	2	8	2,112	21.5	5.67	45.4	11,985	0.68	2.70	6.90	0.38	2.5	10.1	25.8	1.4	0.08	0.33	0.85	0.05
									Disposal Totals	***387.0***	***82,519***				***Disposal Totals***	***9.6***	***69.6***	***163.5***	***4.7***	***0.28***	***2.02***	***4.76***	***0.14***
									GRAND TOTALS	***1,344***	***268,337***				***GRAND TOTALS***	***55.8***	***258.5***	***611.4***	***33.1***	***2.1***	***9.6***	***21.7***	***1.3***

Offroad Emission Factors - Tier 1

Veh Type	BHP	Load Factor	Emission Factor (g/bhp-hr)			
			ROG	CO	NO_X	PM_{10}
dewatering pumps	20	0.62	1.45	5.00	5.55	0.60
loader	73	0.54	0.99	3.49	6.90	0.69
backhoes	75	0.55	0.99	3.49	6.90	0.69
compaction	95	0.56	0.99	3.49	6.90	0.69
roller	95	0.56	0.99	3.49	6.90	0.69
paver	99	0.62	0.99	3.49	6.90	0.69
drilling equipment	120	0.75	0.99	3.49	6.90	0.69
excavator	125	0.57	0.68	2.70	6.90	0.38
wheeled dozer	147	0.64	0.68	2.70	6.90	0.38
grader	174	0.61	0.68	2.70	6.90	0.38
crane	194	0.43	0.32	2.70	6.25	0.15
pile driving	230	0.43	0.32	2.70	6.25	0.15
track type tractor *(Cat D7 with blade & ripper)*	240	0.74	0.32	2.70	6.25	0.15
wheeled loader *(Cat 966 with bucket)*	262	0.65	0.32	0.92	6.25	0.15
scrapers	313	0.72	0.32	0.92	6.25	0.15
track type tractor	313	0.72	0.32	0.92	6.25	0.15
crane	399	0.43	0.32	0.92	6.25	0.15
water truck	479	0.57	0.32	0.92	6.25	0.15

From: CARB. Mail-Out#: MSC 99-14. Notice of Public Meeting To Consider Approval of California's Emissions Inventory for Off-Road Large Compression-Ignited Engines (>25hp) Using the New Offroad Emissions Model. January 27, 2000.

From: CARB. OFFORAD Modeling Change Technical Memo

The fuel consumption rate for a piece of equipment depends on the engine size, load factor, the condition of the equipment, operator's habit, environmental conditions, and the basic design of equipment.

To determine the hourly fuel cost, the total fuel cost is divided by the productive time of the equipment. If fuel consumption records are not available, the following formula can be used to estimate liters of fuel used per machine hour,

$$LMPH = \frac{K \times GHP \times LF}{KPL}$$

where:

- LMPH is the liters used per machine hour,
- K is the kg of fuel used per brake hp/hour,
- GHP is the gross engine horsepower at governed engine rpm,
- LF is the load factor in percent, and
- KPL is the weight of fuel in kg/liter.

Typical values are given in Table 3.3. The load factor is the ratio of the average horsepower used to gross horsepower available at the flywheel.

TABLE 3.3. Weights, fuel consumption rates, and load factors for diesel and gasoline engines.

Engine	Weight (KPL) kg/liter	Fuel Consumption (K) kg/brake hp-hour	Load Factor (LF)		
			Low	Med	High
Gasoline	0.72	0.21	0.38	0.54	0.7
Diesel	0.84	0.17	0.38	0.54	0.7

Source:

Cost Control in Forest Harvesting and Road Construction. Food and Agriculture Organization of the United Nations. Rome, 1992

Non-Exhaust PM_{10} Emission Summary

Proposed Project #1

System	Cut/Fill (PM_{10})			Fugitive (PM_{10})			Total Non-exhaust PM_{10} Emissions		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection/Conveyance	43.44	6.30	138.1	4.18	0.57	12.4	47.62	6.87	150.5
Treatment	9.52	2.92	64.1	3.52	0.44	9.6	13.04	3.36	73.7
Disposal	15.72	4.30	94.2	0.77	0.39	8.4	16.49	4.68	102.7
TOTALS	***68.68***	***13.52***	***296.4***	***8.47***	***1.39***	***30.5***	***77.15***	***14.91***	***326.9***

Proposed Project #2

System	Cut/Fill (PM_{10})			Fugitive (PM_{10})			Total Non-exhaust PM_{10} Emissions		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection/Conveyance	45.58	6.57	144.0	4.10	0.56	10.3	49.67	7.12	154.3
Treatment	6.34	2.54	55.6	2.20	0.28	6.0	8.54	2.81	61.7
Disposal	15.72	4.30	94.2	1.65	0.83	18.1	17.37	5.12	112.3
TOTALS	***67.64***	***13.41***	***293.8***	***7.95***	***1.66***	***34.4***	***75.59***	***15.06***	***328.2***

Proposed Project #3

System	Cut/Fill (PM_{10})			Fugitive (PM_{10})			Total Non-exhaust PM_{10} Emissions		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection/Conveyance	45.58	6.57	144.0	4.10	0.56	12.2	49.67	7.12	156.1
Treatment	6.23	2.48	54.4	3.08	0.39	8.4	9.31	2.87	62.8
Disposal	15.72	4.30	94.2	0.77	0.39	8.4	16.49	4.68	102.7
TOTALS	***67.53***	***13.35***	***292.6***	***7.95***	***1.33***	***29.0***	***75.47***	***14.68***	***321.6***

Proposed Project #4

System	Cut/Fill (PM_{10})			Fugitive (PM_{10})			Total Non-exhaust PM_{10} Emissions		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection/Conveyance	42.38	5.30	116.1	4.22	0.47	10.3	46.60	5.77	126.4
Treatment	9.50	2.91	63.8	3.52	0.44	9.6	13.02	3.35	73.5
Disposal	20.26	6.57	144.0	0.77	0.39	8.4	21.03	6.96	152.4
TOTALS	***72.14***	***14.78***	***324.0***	***8.51***	***1.29***	***28.4***	***80.65***	***16.07***	***352.3***

Cut/Fill Calculations

Proposed Project #1

Project Facility	Pro Code	Total yd^3 excavated	Total yd^3 Imported	Total yd^3 Exported	Duration (months)	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})		
						Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection System	C	322,000	32,200	64,400	24	19.00	2.37	52.0	21.25	2.66	58.2
Leachfield	D	73,000	0	45,173	12	4.31	1.08	23.6	9.94	2.48	54.5
Sprayfield	D	25,000	0	0	6	1.48	0.74	16.2	0.00	0.00	0.0
Raw Water Conveyance	C	10,400	1,040	2,080	12	0.61	0.15	3.4	0.69	0.17	3.8
Treated Effluent Conveyance	C	15,100	1,510	3,020	6	0.89	0.45	9.8	1.00	0.50	10.9
Wastewater Treatment Plant	T	83,000	0	0	24	4.90	0.61	13.4	0.00	0.00	0.0
Solids Processing and Disposal	T	1,330	0	0	6	0.08	0.04	0.9	0.00	0.00	0.0
Seasonal Storage	T	77,000	0	0	6	4.54	2.27	49.8	0.00	0.00	0.0
TOTAL		***606,830***	***34,750***	***114,673***		***35.80***	***7.71***	***169.0***	***32.87***	***5.81***	***127.4***

Proposed Project #2

Project Facility	Pro Code	Total yd^3 excavated	Total yd^3 Imported	Total yd^3 Exported	Duration (months)	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})		
						Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection System	C	339,000	33,900	67,800	24	20.00	2.50	54.8	22.37	2.80	61.3
Leachfield	D	73,000	0	45,173	12	4.31	1.08	23.6	9.94	2.48	54.5
Sprayfield	D	25,000	0	0	6	1.48	0.74	16.2	0.00	0.00	0.0
Raw Water Conveyance	C	10,500	1,050	2,100	12	0.62	0.15	3.4	0.69	0.17	3.8
Treated Effluent Conveyance	C	15,100	1,510	3,020	6	0.89	0.45	9.8	1.00	0.50	10.9
Wastewater Treatment Plant	T	28,600	0	0	24	1.69	0.21	4.6	0.00	0.00	0.0
Solids Processing and Disposal	T	1,900	0	0	6	0.11	0.06	1.2	0.00	0.00	0.0
Seasonal Storage	T	77,000	0	0	6	4.54	2.27	49.8	0.00	0.00	0.0
TOTAL		***570,100***	***36,460***	***118,093***		***33.64***	***7.45***	***163.4***	***34.00***	***5.95***	***130.5***

Proposed Project #3

Project Facility	Pro Code	Total yd^3 excavated	Total yd^3 Imported	Total yd^3 Exported	Duration (months)	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})		
						Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection System	C	339,000	33,900	67,800	24	20.00	2.50	54.8	22.37	2.80	61.3
Leachfield	D	73,000	0	45,173	12	4.31	1.08	23.6	9.94	2.48	54.5
Sprayfield	D	25,000	0	0	6	1.48	0.74	16.2	0.00	0.00	0.0
Raw Water Conveyance	C	10,500	1,050	2,100	12	0.62	0.15	3.4	0.69	0.17	3.8
Treated Effluent Conveyance	C	15,100	1,510	3,020	6	0.89	0.45	9.8	1.00	0.50	10.9
Wastewater Treatment Plant	T	28,600	0	0	24	1.69	0.21	4.6	0.00	0.00	0.0
Solids Processing and Disposal	T	1,900	0	0	6	0.11	0.06	1.2	0.00	0.00	0.0
Seasonal Storage	T	77,000	0	0	6	4.54	2.27	49.8	0.00	0.00	0.0
TOTAL		***570,100***	***36,460***	***118,093***		***33.64***	***7.45***	***163.4***	***34.00***	***5.95***	***130.5***

Proposed Project #4

Project Facility	Pro Code	Total yd^3 excavated	Total yd^3 Imported	Total yd^3 Exported	Duration (months)	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})		
						Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection System	C	339,000	33,900	67,800	24	20.00	2.50	54.8	22.37	2.80	61.3
Leachfield	D	73,000	0	45,173	12	4.31	1.08	23.6	9.94	2.48	54.5
Sprayfield	D	25,000	0	0	6	1.48	0.74	16.2	0.00	0.00	0.0
Raw Water Conveyance	C	16,100	1,610	3,220	12	0.95	0.24	5.2	1.06	0.27	5.8
Treated Effluent Conveyance	C	15,100	1,510	3,020	6	0.89	0.45	9.8	1.00	0.50	10.9
Wastewater Treatment Plant	T	83,000	0	0	24	4.90	0.61	13.4	0.00	0.00	0.0
Solids Processing and Disposal	T	1,000	0	0	6	0.06	0.03	0.6	0.00	0.00	0.0
Seasonal Storage	D	77,000	0	0	6	4.54	2.27	49.8	0.00	0.00	0.0
TOTAL		***629,200***	***37,020***	***119,213***		***37.12***	***7.91***	***173.4***	***34.37***	***6.05***	***132.5***

Cut/Fill PM_{10} Emission Summary

Proposed Project #1

System	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})			Total Cut/Fill (PM_{10})		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection / Conveyance	20.50	2.97	65.2	22.94	3.33	72.9	43.44	6.30	138.1
Treatment	9.52	2.92	64.1	0.00	0.00	0.0	9.52	2.92	64.1
Disposal	5.78	1.81	39.8	9.94	2.48	54.5	15.72	4.30	94.2

Proposed Project #2

System	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})			Total Cut/Fill (PM_{10})		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection / Conveyance	21.51	3.10	68.0	24.06	3.47	76.0	45.58	6.57	144.0
Treatment	6.34	2.54	55.6	0.00	0.00	0.0	6.34	2.54	55.6
Disposal	5.78	1.81	39.8	9.94	2.48	54.5	15.72	4.30	94.2

Proposed Project #3

System	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})			Total Cut/Fill (PM_{10})		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection / Conveyance	21.51	3.10	68.0	24.06	3.47	76.0	45.58	6.57	144.0
Treatment	6.23	2.48	54.4	0.00	0.00	0.0	6.23	2.48	54.4
Disposal	5.78	1.81	39.8	9.94	2.48	54.5	15.72	4.30	94.2

Proposed Project #4

System	Onsite Fill (PM_{10})			Offsite Fill (PM_{10})			Total Cut/Fill (PM_{10})		
	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d	Tot tons	tpq	lbs/d
Collection / Conveyance	20.00	2.50	54.8	22.37	2.80	61.3	42.38	5.30	116.1
Treatment	9.50	2.91	63.8	0.00	0.00	0.0	9.50	2.91	63.8
Disposal	10.33	4.09	89.6	9.94	2.48	54.5	20.26	6.57	144.0

Low Level Fugitive Dust Emission Estimate Approach from URBEMIS

Factors

0.11 tons per acre-month **days / month =** 30.4

0.059 tons per 10^3 yd^3 of onsite cut-fill

0.22 tons per 10^3 yd^3 of offsite cut-fill

Fugitive Dust Calculations

Proposed Project #1

System	Total ft^2	Total acres	Months	Acres per month	Fugitive Dust (PM_{10}) tons/mo	tpq	lbs/d
Collection	1,519,917	34.89	24	1.45	0.16	0.48	10.5
Conveyance	136,500	3.13	12	0.26	0.03	0.09	1.9
Treatment		32	24	1.33	0.15	0.44	9.6
Disposal		7	6	1.17	0.13	0.39	8.4
			Totals	***4.21***	***0.46***	***1.39***	***30.5***

Proposed Project #2

System	Total ft^2	Total acres	Months	Acres per month	Fugitive Dust (PM_{10}) tons/mo	tpq	lbs/d
Collection	1,486,144	34.12	24	1.42	0.16	0.47	10.3
Conveyance	136,500	3.13	12	0.26	0.03	0.09	1.9
Treatment		20	24	0.83	0.09	0.28	6.0
Disposal		15	6	2.50	0.28	0.83	18.1
			Totals	***5.02***	***0.55***	***1.66***	***36.3***

Proposed Project #3

System	Total ft^2	Total acres	Months	Acres per month	Fugitive Dust (PM_{10}) tons/mo	tpq	lbs/d
Collection	1,486,144	34.12	24	1.42	0.16	0.47	10.3
Conveyance	136,500	3.13	12	0.26	0.03	0.09	1.9
Treatment		28	24	1.17	0.13	0.39	8.4
Disposal		7	6	1.17	0.13	0.39	8.4
			Totals	***4.02***	***0.44***	***1.33***	***29.0***

Proposed Project #4

System	Total ft^2	Total acres	Months	Acres per month	Fugitive Dust (PM_{10}) tons/mo	tpq	lbs/d
Collection	1,486,144	34.12	24	1.42	0.16	0.47	10.3
Conveyance	185,400	4.26	12	0.35	0.04	0.12	2.6
Treatment		32	24	1.33	0.15	0.44	9.6
Disposal		7	6	1.17	0.13	0.39	8.4
			Totals	***4.28***	***0.47***	***1.41***	***30.9***

Project	Acreage Scenarios							
	Treatment Facility					Disposal Facility		
	Admin	WWTP	Storage	Biosolids	TOTAL	Leachfield	Storage	TOTAL
#1	4	20	8	0	**32**	7	0	**7**
#2	4	10	0	6	**20**	7	8	**15**
#3	4	10	8	6	**28**	7	0	**7**
#4	4	20	8	0	**32**	7	0	**7**

Low Level Fugitive Dust Emission Estimate Approach from URBEMIS

Factors

0.11 tons per acre-month **days / month =** 30.4

0.059 tons per 10^3 yd^3 of onsite cut-fill

0.22 tons per 10^3 yd^3 of offsite cut-fill

Operational GHG Emissions

System/Source	Metric Tons CO_2e/yr			
	Project 1	Project 2	Project 3	Project 4
Collection				
On road vehicular	119,509	90,613	90,613	90,613
Energy Usage	169	199	199	199
Septic Tanks	624	0	0	0
Total Collection	***120,302***	***90,812***	***90,812***	***90,812***
Treatment				
On road vehicular	53,148	80,605	80,605	52,500
Energy Usage	425	541	541	493
Chemical Production off-site	356	14	14	346
Total Treatment	***53,929***	***81,159***	***81,159***	***53,339***
Disposal				
On road vehicular	0	0	0	0
Total Disposal	***0***	***0***	***0***	***0***
GRAND TOTAL	***174,231***	***171,971***	***171,971***	***144,151***
Existing operations	201,885	201,885	201,885	201,885
NET CHANGE	***-27,654***	***-29,914***	***-29,914***	***-57,734***
Percent Difference	-15.9%	-17.4%	-17.4%	-40.1%

Existing Septic Tanks = *840* *Metric Tons CO_2 e/yr*

Existing Septage Transport = *201,045* *Metric Tons CO_2 e/yr*

Total GHG ***201,885*** *Metric Tons CO_2 e/yr*

Construction GHG Emissions

System/Source	Metric Tons CO_2e/yr			
	Project 1	Project 2	Project 3	Project 4
Collection/Conveyance				
On road vehicular	2,843,651	2,231,998	2,231,998	2,283,887
Off road equipment	440	414	414	424
Construction materials off-site	804	1,243	1,243	960
Total Collection/Conveyance	***2,844,895***	***2,233,655***	***2,233,655***	***2,285,271***
Treatment				
On road vehicular	490,602	409,118	492,661	490,478
Off road equipment	519	446	489	519
Construction materials off-site	2,115	3,043	3,043	3,095
Total Treatment	***493,236***	***412,607***	***496,193***	***494,092***
Disposal				
On road vehicular	981,492	1,340,228	981,492	981,928
Off road equipment	838	924	838	838
Total Disposal	***982,330***	***1,341,152***	***982,330***	***982,766***
GRAND TOTAL	***4,320,462***	***3,987,415***	***3,712,179***	***3,762,129***

Operational On-road GHG Emissions

Proposed Project #1

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	131,604	6.3	119,509
Treatment	58,528	2.7	53,148
Disposal	0	0.0	0
TOTAL	***190,131***	***9.1***	***172,657***

Proposed Project #2

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	99,771	5.4	90,613
Treatment	88,783	3.3	80,605
Disposal	0	0.0	0
TOTAL	***188,554***	***8.6***	***171,218***

Proposed Project #3

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	99,771	5.4	90,613
Treatment	88,783	3.3	80,605
Disposal	0	0.0	0
TOTAL	***188,554***	***8.6***	***171,218***

Proposed Project #4

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	99,771	5.4	90,613
Treatment	57,815	2.7	52,500
Disposal	0	0.0	0
TOTAL	***157,586***	***8.1***	***143,113***

CO_2 and CH_4 from EMFAC

Construction On-road GHG Emissions

Proposed Project #1

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	3,132,980	76.6	2,843,651
Treatment	540,185	29.1	490,602
Disposal	1,081,676	11.1	981,492
TOTAL	***4,754,842***	***116.8***	***4,315,746***

Proposed Project #2

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	2,459,252	52.6	2,231,998
Treatment	450,477	23.8	409,118
Disposal	1,173,663	32.7	1,340,228
TOTAL	***4,083,392***	***109.1***	***3,981,345***

Proposed Project #3

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	2,459,252	52.6	2,231,998
Treatment	542,464	28.7	492,661
Disposal	1,081,676	11.1	981,492
TOTAL	***4,083,392***	***92.5***	***3,706,152***

Proposed Project #4

System	CO_2 (t/y)	NH_3 (t/y)	CO_2e (Mt/y)
Collection/Conveyance	2,516,440	53.1	2,283,887
Treatment	540,048	29.1	490,478
Disposal	1,082,157	11.1	981,928
TOTAL	***4,138,645***	***93.4***	***3,756,294***

CO_2 and CH_4 from EMFAC

Construction Off-road GHG Emissions

Proposed Project #1

System	Total gals	Duration	Gal/yr	CO_2 (MTPY)
Collection/Conveyance	86,622	2.0	43,311	439.6
Treatment	102,323	2.0	51,161	519.3
Disposal	82,519	0.5	82,519	837.6
TOTAL	***271,464***		***176,991***	***1,796.5***

Proposed Project #2

System	Total gals	Duration	Gal/yr	CO_2 (MTPY)
Collection/Conveyance	81,565	2.0	40,783	413.9
Treatment	87,828	2.0	43,914	445.7
Disposal	91,026	0.5	91,026	923.9
TOTAL	***260,420***		***175,723***	***1,783.6***

Proposed Project #3

System	Total gals	Duration	Gal/yr	CO_2 (MTPY)
Collection/Conveyance	81,565	2.0	40,783	413.9
Treatment	96,335	2.0	48,168	488.9
Disposal	82,519	0.5	82,519	837.6
TOTAL	***260,420***		***171,469***	***1,740.4***

Proposed Project #4

System	Total gals	Duration	Gal/yr	CO_2 (MTPY)
Collection/Conveyance	83,496	2.0	41,748	423.7
Treatment	102,323	2.0	51,161	519.3
Disposal	82,519	0.5	82,519	837.6
TOTAL	***268,337***		***175,428***	***1,780.6***

CO_2 calculated using CCAR Emission Factor for diesel of 10.15 kg CO_2/gallon

Project 4	1,648,651	#########	105,218	857,555	602,609,775	603	655

Energy GHG Summary

Alternative	Collection		Treatment		TOTAL	
	kWh/yr	CO_2e/yr	kWh/yr	CO_2e/yr	kWh/yr	CO_2e/yr
PP1 - STEP PM Fac Pond	425,000	169	1,070,000	425	1,495,000	594
PP2 - Gravity Ox Ditch/Biolac	500,000	199	1,360,000	541	1,860,000	739
PP3 - Gravity Ox Ditch/Biolac	500,000	199	1,360,000	541	1,860,000	739
PP4 - Gravity PM Fac Pond	500,000	199	1,240,000	493	1,740,000	692

From Carollo Engineering

Lining - Polyethylene	18,601,311	0	18,601,311

GHG from Construction Materials

Material Name	Metric Tons of CO_2e		
	Project 1	Projects 2 & 3	Project 4
Treatment - Concrete	223	670	229
Treatment - Earthwork	164	6	164
Septic Tanks	381	0	0
Collection System	37	567	567
Collection Total	***804***	***1,243***	***960***
Lining - Polyethylene	19	0	19
Piping - PVC	2,063	3,043	3,043
LDPE (2% Black C) Tubing	33	0	33
Treatment Total	***2,115***	***3,043***	***3,095***
GRAND TOTAL	***2,919***	***4,286***	***4,055***

From Carollo Engineering

Alum	5,431,954	5,401,095	5,401,095

GHG from Chemical Production

Chemical Name	Metric Tons of CO_2e		
	Project 1	**Projects 2 & 3**	**Project 4**
Sodium Hypochlorite	**12.1**	**12.1**	**12.1**
Sodium Hydroxide	**20.5**	**20.5**	**20.5**
Polymer - Thickening	**0.0**	**1.6**	**0.0**
Polymer - Dewatering	0.8	4.8	1.0
Alum	5.4	5.4	5.4
Filter Polymer	3.6	3.6	3.6
Methanol	346.1	0.0	346.1
TOTAL	***355.9***	***13.8***	***356.0***

From Carollo Engineering

GHG from Septage

	Annual lbs of BOD	Methane (kg CH_4/year)	Total CO_2e Emissions kgs/year	Metric Tons/year
Existing	146,690	40,006	840,132	840
Project 1	108,912	29,703	623,769	624
Projects 2 & 3	0	0	0	0
Project 4	0	0	0	0

Existing Septage Removal Trucks	
4,281	= current tanks
78	= round trip mileage to Santa Maria
5	= years turnaround
2	= tanks per load
250	= workdays per year
428.1	= 1-way trips per year
MHD	= EMFAC Vehicle Class
221,585	= tons per yeat CO_2
1.4	= tons per yeat NH_3
201,045	= metric tons per yeat CO_2e

K-3: Personal Communication with San Luis Obispo County Air Pollution Control District

Telephone Contact Form

Job Number:	0224.0002.0	**Project Name:**	LOS OSOS WASTEWATER
Contact Name/Position:	ANDREW MUTZIGER / AIR QUALITY SPECIALIST		
Company/Agency:	SAN LUIS OBISPO APCD.		
Phone:	805-781-5912	**MBA Staff Name:**	JOE O'BANNON

Date	**Time**	**Items Discussed**
10/22/08	→	(Q) REQUEST WHETHER OR NOT DISTRICT WOULD REQUIRE A CONSISTENCY ANALYSIS PURSUANT TO THEIR CLEAN AIR PLAN.
		(A) NONE NEEDED
		(Q) HOW SHOULD WE DEAL WITH CONSTRUCTION GHG EMISSIONS WITH REGARDS TO SIGNIFICANCE DETERMINATION
		(A) ~~Go~~ DISTRICT DOES NOT HAVE SPECIFIC THRESHOLDS FOR GHG, BUT THE LIKED OUR APPROACH. W/ REGARDS TO CONSTRUCTION THE TEMPORARY NATURE WOULD PROBABLY RENDER THEM INCONSEQUENTIAL

Follow-up Actions

K-4: E-Mail Communication with San Luis Obispo County Air Pollution Control District

From: <kbrooks_apcd@co.slo.ca.us>
To: "Joe O'Bannon" <JObannon@brandman.com>
Date: 10/23/2008 4:06 PM
Subject: Re: Odor complaints request
Attachments: mbwwtfcmphist.doc

Thank you for your information request for the last five years of complaint history on the City of Morro Bay Waste Water Treatment Facility. A review of the files found one complaint. A copy of the complaint record is attached.

Karen L. Brooks
Manager, Compliance and Monitoring
San Luis Obispo County Air Pollution Control District
phone: 805.781.5912
fax: 805.781.1002
www.slocleanair.org
(See attached file: mbwwtfcmphist.doc)

"Joe O'Bannon"
<JObannon@brandma
n.com> To
<kbrooks@co.slo.ca.us>
10/23/2008 02:58 cc
PM
Subject
Odor complaints request

Andy told me that my public request for documented odor complaints from the Morro Bay WWTP was sent to you for answer. I was just wondering where you were on that request.

****
Joe O'Bannon
Senior Air Quality Scientist
Michael Brandman Associates
2000 ‘O’ Street, Suite 200
Sacramento, CA 95811-5299
v - (916) 447-1100 x1403
f - (916) 447-1210
c - (916) 214-6534
http://www.brandman.com

jobannon@brandman.com

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN LUIS OBISPO

Complaint Report

Complaint #		Status	Reviewer	Date Rec.	Resp.Due	Date Closed
07-163	(1)	Closed	MFE	10/9/2007		3/12/2008

Site: 399-1 City of Morro Bay WWTF
Facility: 65 - City of Morro Bay WWTF
Brief Description: H2S Emissions
Description: There are H2S emissions from the collection system of the MB WWTP at Island St and North Main St in Morro Bay. The manhole is corroded from the H2S and there are liquids flowing into Alva Paul Creek.
Notes: I informed John Gunderlock at the Morro Bay wastewater treatment plant of the call at 1615 hours. He said he would have it checked out. Returned call the next day. No unusual events or odors were found.