APPENDIX A

Air Quality and Greenhouse Gases Report

AIR QUALITY and GREENHOUSE GAS TECHNICAL REPORT for the North Norco Channel Stage 11 Project City of Norco, California

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AUGUST 2014

Printed on 30% post-consumer recycled material.

TABLE OF CONTENTS

Section **Page No.**

APPENDICES

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The proposed North Norco Channel, Stage 11 Project (project) is located in the City of Norco east of Interstate 15 and is bounded to the south by Mulberry Lane, to the west by Sierra Avenue, the north by 7th Street and to the east by Temescal Avenue. The project includes implementation of the North Norco Channel, Stage 11; North Norco Channel – Line N-2, Stage 1; Norco Master Development Plan (MDP) Line NC, Stage 1; Norco MDP Lateral NC-1, Stage 1. The purpose of the project is to reduce flood risk in the project area and the objective is to convey the 100-year peak discharge and provide safe access across the road crossings at 6th Street, Valley View Avenue and Corona Avenue.

The project is located within the South Coast Air Basin (SCAB) and is within the jurisdictional boundaries of the South Coast Air Quality Management District (SCAQMD). The air quality impact analysis evaluates the potential for significant adverse impacts to the ambient air quality due to construction and operational emissions resulting from the project relative to the SCAQMD environmental thresholds of significance.

Construction of the project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling excavated earth materials. The analysis concludes that the estimated daily construction emissions would not exceed the SCAQMD's significance thresholds for criteria pollutants.

Once the drainage system is constructed, no routine daily operational activities that would generate air pollutant emissions will occur. Maintenance activities, such as vegetation removal and erosion repair, will typically occur as needed and is expected to occur no more than two times per year. Maintenance activities are anticipated to require use of hand tools and small pieces of equipment and would be less intensive than the anticipated project construction activities, which require use of heavy equipment. In the event that repair of the channel, laterals, and associated infrastructure is required, repair activities would be similar to the project's construction activities, but would occur on a localized portion of the drainage system. In addition, the project will not require additional employees to maintain the channel and laterals; therefore, there will be no additional routine vehicular traffic or associated mobile source emissions from the existing condition. Impacts associated with project maintenance and potential repair of the drainage system would be less than significant.

The project would not conflict with the SCAQMD 2012 Air Quality Management Plan. The project would not expose nearby residential sensitive receptors to substantial pollutant emissions during construction or maintenance. Potential odors generated during project construction and

maintenance, which are primarily associated with diesel equipment and gasoline fumes, would be temporary and generally confined to the project site, resulting in a less-than-significant odor impact. No mitigation measures would be required to reduce air quality impacts.

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gas (GHG) emissions. The California Natural Resources Agency (CNRA) has adopted statewide qualitative GHG emissions thresholds of significance in Appendix G to the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). There are no statewide numeric GHG emission thresholds of significance.

As of the date that this report was prepared, the SCAQMD and the Riverside County Flood Control and Water Conservation District (District) have yet to adopt screening criteria and/or numeric significance thresholds for GHG emissions for the construction, operation and maintenance of the project. Furthermore, neither the District, the City of Norco, nor the SCAQMD have adopted an applicable plan, policy, or regulation to reduce GHG emissions or GHG-reduction measures that would apply to the GHG emissions associated with the project.

The California Air Pollution Control Officers Association (CAPCOA) published a white paper in January 2008 evaluating and addressing GHG emissions from projects subject to CEQA. The white paper, which is intended as a resource and not a guidance document, studied non-zero quantitative thresholds, including ones based on capture of 90 percent or more of likely future discretionary developments. A significance threshold of 900 metric tons of carbon dioxide equivalent (MT CO_2E) per year was the lowest non-zero threshold evaluated in the white paper; this threshold would apply to industrial, residential, and commercial projects. In October 2008, CARB presented a Preliminary Draft Staff Proposal with a threshold of 7,000 MT CO_2E per year for operational emissions (excluding transportation-related emissions) from industrial projects (CARB 2008). In October 2008, SCAQMD presented to the Governing Board the *Draft Guidance Document – Interim CEQA GHG Significance Threshold* (SCAQMD 2008b), which included a potential threshold for industrial projects with an incremental GHG emissions increase that falls below (or is mitigated to be less than) 10,000 MT CO_2E per year. For purposes of this assessment, a threshold of 900 MT CO_2E was used to evaluate the significance of the project's GHG emissions during construction. Maintenance activities and potential repair of the drainage system would be temporary and would require less intensive activities than were analyzed under the project construction scenario; therefore, GHG emissions associated with these activities would be less than estimated construction-generated GHG emissions and were not quantified in this assessment.

Construction of the project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road hauling and vendor trucks, and worker vehicles. The estimated total GHG emissions during construction of both Phase 1 and Phase 2 would be approximately 184 MT CO_2E in 2015, 251 MT CO_2E in 2016, and 117 MT CO_2E in 2017, for a total of 552 MT CO_2E during project construction. Anticipated maintenance and potential repair activities would not result in a substantial source of GHG maintenance emissions. Project-generated annual GHG emissions are anticipated to be well below the annual threshold value of 900 MT CO_2E evaluated by CAPCOA. Therefore, impacts associated with the project's potential to generate GHG emissions that may have a significant impact on the environment would be less than significant

At this time, no mandatory GHG regulations or finalized agency guidelines adopted for the purpose of reducing GHG emissions apply to implementation of the project, and therefore no conflict could occur. Therefore, cumulative GHG impacts would be less than significant.

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Air Quality and Greenhouse Gas Technical Report for the North Norco Channel Stage 11 Project

1 INTRODUCTION

1.1 Purpose

The purpose of this report is to estimate and evaluate the potential air quality impacts associated with implementation of the District's project relative to the SCAQMD environmental thresholds of significance.

The purpose of the project is to reduce flood risk in the project area. The objective is to convey the 100-year peak discharge and provide safe access across the road crossings at 6th Street, Valley View Avenue and Corona Avenue.

1.2 Project Location and Existing Conditions

The project is located in the City of Norco east of Interstate 15 and is bounded to the south by Mulberry Lane, to the west by Sierra Avenue, the north by 7th Street and to the east by Temescal Avenue. Please see Figure 1, Regional Map, and Figure 2, Vicinity Map.

The project reach is currently an interim earthen trapezoidal channel and the main channel is identified on the Corona North USGS quadrangle map as an unnamed stream. The existing District-maintained interim channel is earthen lined prior to reaching the southern terminus of the project area, at which point the channel becomes concrete-lined and trapezoidal. The existing concrete trapezoidal channel has a base width of 12 feet, a depth of 8 feet and side slopes at 1.5 to 1 (horizontal to vertical). After the channel flows off site, it remains concrete-lined and is referred to as "Ditch" on the USGS quadrangle map. The channel continues to flow through Residential/Urban/Exotic areas until it enters the Prado Flood Control Basin and the Santa Ana River via Temescal Wash, approximately 2.7 miles southwest of the project area.

The project area consists of an earthen channel and paved roadways. The 6^{th} Street portion of the project area is surrounded by commercial properties on the north and south sides of the road. These properties include trailer sales and maintenance, animal feed stores, equipment rental, restaurants, drug store, veterinarian, cleaners, and various other commercial businesses. The remainder of the project area is primarily surrounded by residential properties, many with horses and other livestock; one commercial property was located in the northeast portion of the project area.

Land uses in the project vicinity include a mixture of rural and low density residential development, some commercial/retail, and equestrian use. The drainages are largely supported by urban nuisance and storm flows. At the time of the biological survey (Dudek), the main channel was primarily dry. There were flows in the southern portion of the main channel where the concrete-lined channel flows into the main drainage, and the concrete-lined tributary to the main drainage contained flowing water.

The City of Norco General Plan land use designation within the North Norco Channel is Water Related (WR); the City's General Plan land use designation within the proposed laterals is Residential Agricultural (RA). According to the City's Zoning Map, the project alignment is located in areas designated as Limited Development (LD) and within existing road rights-of-way. The project is a use that is permitted within the Limited Development (LD) zone.

1.3 Project Description

North Norco Channel improvements will begin immediately upstream of the confluence with Line NA or approximately 1,635 feet downstream of 6th Street. The upstream end of the proposed improvements will join the existing 8-foot wide by 5-foot high reinforced concrete box (RCB) culvert of Line N-1 near Rose Court. The overall length of the North Norco Channel improvements is approximately 5,912 feet. The recommended improvements beginning at the downstream limit include a concrete-lined rectangular channel with a 24-foot base width, depth of 8 feet and access roads on both sides of the channel. A maintenance access ramp is located approximately 840 feet downstream of 6th Street. At 6th Street, the rectangular channel will continue under a proposed slab bridge. Between 6th Street and Valley View Avenue, the concrete-lined rectangular channel with a 24-foot base width, 8-foot depth, and two access roads continue. Under Valley View Avenue, a double cell RCB culvert, measuring 11 feet 8 inches by 6 feet, will be used to have a compatible base width as the rectangular channel. Upstream of Valley View Avenue, the RCB will transition to a trapezoidal channel. Between Valley View Avenue and Corona Avenue, the concrete lined earthen bottom trapezoidal channel will have a reduced base width of 18 feet, side slopes at 1.5 to 1, a reduced depth of 7 feet, a 3-foot toedown of the concrete slope lining and one access road along the south and east side of the channel. A maintenance access ramp is located approximately 400 feet upstream of Valley View Avenue. A double cell RCB, measuring 8-feet wide by 6-feet high, will be used under Corona Avenue. Upstream of Corona Avenue, the channel section will be a concrete-lined earthen bottom trapezoidal channel with an 18-foot base width, 6-foot depth, side slopes still at 1.5 to 1 and one access road along the south or east bank. A maintenance access ramp is proposed within this reach.

Norco Line N-2 will be located along 6th Street between North Norco Channel and Corona Avenue. The existing parallel dual 30-inch reinforced concrete pipe (RCP) storm drain will remain and tie into the proposed improvements for Line N-2. The proposed facility will include a 9-foot wide by 4-foot high RCB culvert for approximately 1,500 linear feet beginning at the confluence with North Norco Channel. As the facility extends upstream, it transitions to a 7-foot wide by 4-foot high RCB culvert for approximately 150 linear feet then transitions to a 48-inch

RCP for the remaining 170 feet. The proposed inlets will be standard catch basins (RCFC Std. CB100). This storm drain will provide 100-year flood protection once the overflow from Line NA is collected into this system.

Norco MDP Line NC will be aligned within Valley View Avenue and will extend about 350 feet upstream of Detroit Street. The downstream end of MDP Line NC will curve from its alignment in Valley View Avenue to confluence with North Norco main channel immediately downstream of the box culvert underneath Valley View Avenue. The storm drain will vary from an 8-foot wide by 4-foot high RCB to a 5-foot wide by 4-foot high RCB. The proposed inlets will be standard catch basins (RCFC Std. CB100) consisting of asphalt concrete dikes at both ends of the catch basin where street improvements are not constructed. This storm drain will provide 100-year flood protection.

Norco MDP Lateral NC-1 is aligned within Detroit Street and extends approximately 325 feet from the confluence with Line NC at Valley View Avenue. The proposed storm drain will be a 6-foot wide by 3-foot high RCB. See Figure 3, Project Plan, for project details.

Construction

The project will be constructed in two phases. Phase 1 will include construction of the North Norco Channel, which is assumed to commence in September 2015 and will last approximately 11 months, ending in July 2016. Phase 1 of the project will require multiple utility line relocations, which is anticipated to occur for approximately one month prior to construction, for a total construction duration of approximately 12 months. Phase 2 will include construction of the three laterals: Norco Line N-2, Line NC, and Lateral NC-1. Phase 2 is assumed to commence in November 2016 and end in April 2017, with a total duration of approximately 6 months. Phase 2 will also require relocation of utility lines, which is anticipated to occur for approximately 1.5 months prior to project construction, for a total construction duration of approximately 7.5 months.

For purposes of estimating project emissions during construction of Phase 1, the North Norco Channel, and based on information provided by the District, this analysis is based on the following assumptions (duration of phases is approximate):

- Utility trenching – 1 month (August 2015)
- Site preparation – 2 weeks (September 2015)
- Grading – 4 months (September 2015 – January 2016)
- Project construction – 6 months (January 2016 – July 2016)
- Paving – 2 weeks (July 2016)

The construction equipment mix used for estimating the construction air emissions of the project is based on information provided by the District and is shown in Table 1, Phase 1 North Norco Channel Construction Equipment. For this analysis, it was assumed that heavy construction equipment will operate 5 days a week (22 days per month) during project construction.

Table 1
Phase 1 North Norco Channel Construction Equipment

Construction Phase	Equipment	Quantity
Utility trenching	Tractors/loaders/backhoes	1
Site preparation	Tractors/loaders/backhoes	2
Grading	Excavators	2
	Rubber-tired loaders	2
Project construction	Crane	1
	Concrete pump (Pump 84 HP)	1
	Rubber-tired loaders	1
	Tractors/loaders/backhoes	1
Paving	Pavers	1
	Rollers	1
	Signal boards	2
	Tractors/loaders/backhoes	1

Note: Equipment types noted in parenthesis represent the equipment equivalent used in CalEEMod construction modeling.

It is anticipated that dump trucks and water trucks will be utilized during different phases of construction. It is assumed that one dump truck will be used during site preparation, two during site grading, and one during project paving. One water truck will be used during site preparation, two during grading, and one during project construction.

For purposes of estimating project emissions during construction of Phase 2, Line N-2, Line NC, and Lateral NC-1, and based on information provided by the District, this analysis is based on the following assumptions (duration of phases is approximate):

- Utility trenching – 1.5 months (September 2016 – October 2016)
- Project construction – 5.5 months (November 2016 – April 2017)
- Paving – 2 weeks (April 2017)

The construction equipment mix used for estimating the construction air emissions of the project is based on information provided by the District and is shown in Table 2, Phase 2 Line N-2, Line NC, and Lateral NC-1 Construction Equipment. For this analysis, it was assumed that heavy construction equipment will operate 5 days a week (22 days per month) during project construction.

Table 2
Phase 2 Line N-2, Line NC, and Lateral NC-1 Construction Equipment

Construction Phase	Equipment	Quantity
Utility trenching	Tractors/loaders/backhoes	1
Project construction	Excavators	2
	Rubber tired loaders	1
	Signal boards	2
	Tractors/loaders/backhoes	1
Paving	Pavers	1
	Rollers	1
	Signal boards	2
	Tractors/loaders/backhoes	1

As with the North Norco Channel construction, construction of the three laterals is anticipated to use dump trucks and water trucks. It is assumed that two dump trucks will be used during site project construction and one during paving. One water truck will be used during both site project construction and paving phases.

It is also anticipated that for construction of both phases, maintenance and/or delivery trucks will travel to and from the staging areas between three times per week on average and up to six times a week during peak construction activity. The number of construction personnel will range from 15 to 20 individuals depending on the phase of construction. To estimate motor vehicle emissions generated by worker vehicles (i.e., light-duty trucks and automobiles), it was assumed that each worker will generate two one-way trips per day.

Table 3, Project Construction Details, presents additional project assumptions, including disturbed and paved acres, earthwork quantities, and haul truck trips. Excavated material will be used onsite for fill to the maximum extent possible, and the excess material will be exported offsite. The capacity of the haul trucks that will export material is assumed to be 16 cubic yards.

Table 3
Project Construction Details

	North Norco Channel	Norco Line N-2	Norco Line NC	Lateral NC-1
Disturbed and Paved Areas (Total Acres)				
Acreage to be Paved	0.3	1.1	0.4	0.15
Total Disturbed Acreage	10.4	1.1	0.6	0.2
Daily Disturbed Acreage	0.1 - 0.2	0.1 - 0.2	0.1 - 0.2	0.1 - 0.2
	North Norco Channel	**Norco Line N-2, Line NC, and Lateral NC-1**		
Earthwork Quantities (Total Cubic Yards)				
Excavation	24,720	11,890		
Fill	5,400	4,390		
Export	19,320	7,500		
Import	-	-		
Haul Truck Trips for Export (Round-Trips)				
Total Truck Trips	1,208	468		
Daily Truck Trips	20	8		

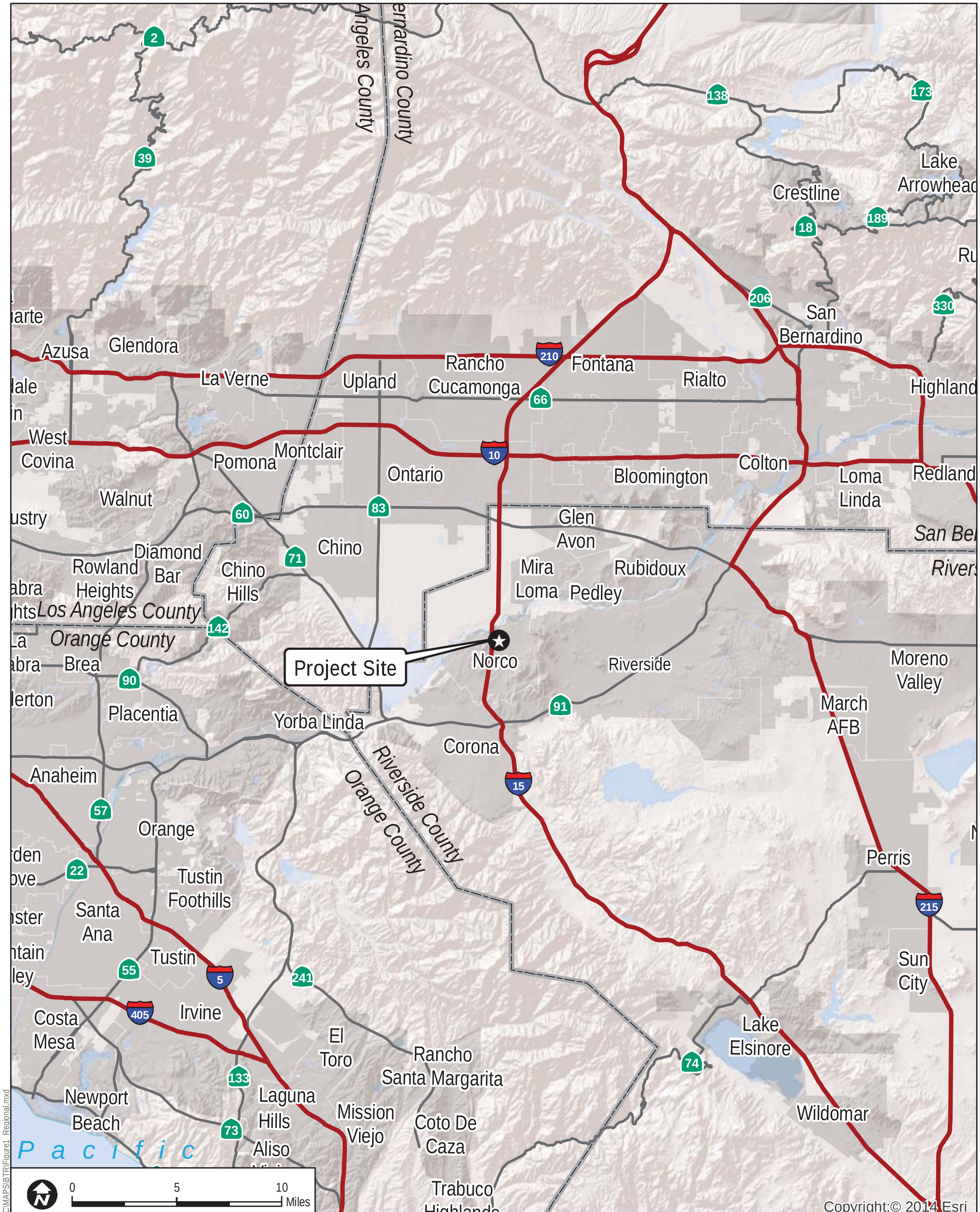
Operations

Once the project is constructed, no routine daily operational activities that will generate air pollutant emissions and/or objectionable odors will occur; therefore, operations will not be discussed further in this report.

Maintenance

Typical maintenance of the drainage system is anticipated to include periodic weed control, sediment and debris removal, tree and branch removal, and repair of failed or failing concrete lining, which are described as follows:

- *Weed Control*: The District will manage weeds by mowing, discing, hand labor or herbicide application, as needed to maintain channel capacity, comply with local fire regulations and maintain safe vehicle passage along access roads. The extent of these activities would be reduced under the project compared to existing conditions because the channel would be fully to partially lined with concrete.



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SOURCE: ESRI 2013

FIGURE 1

Regional Map

NORTH NORCO CHANNEL STAGE 11

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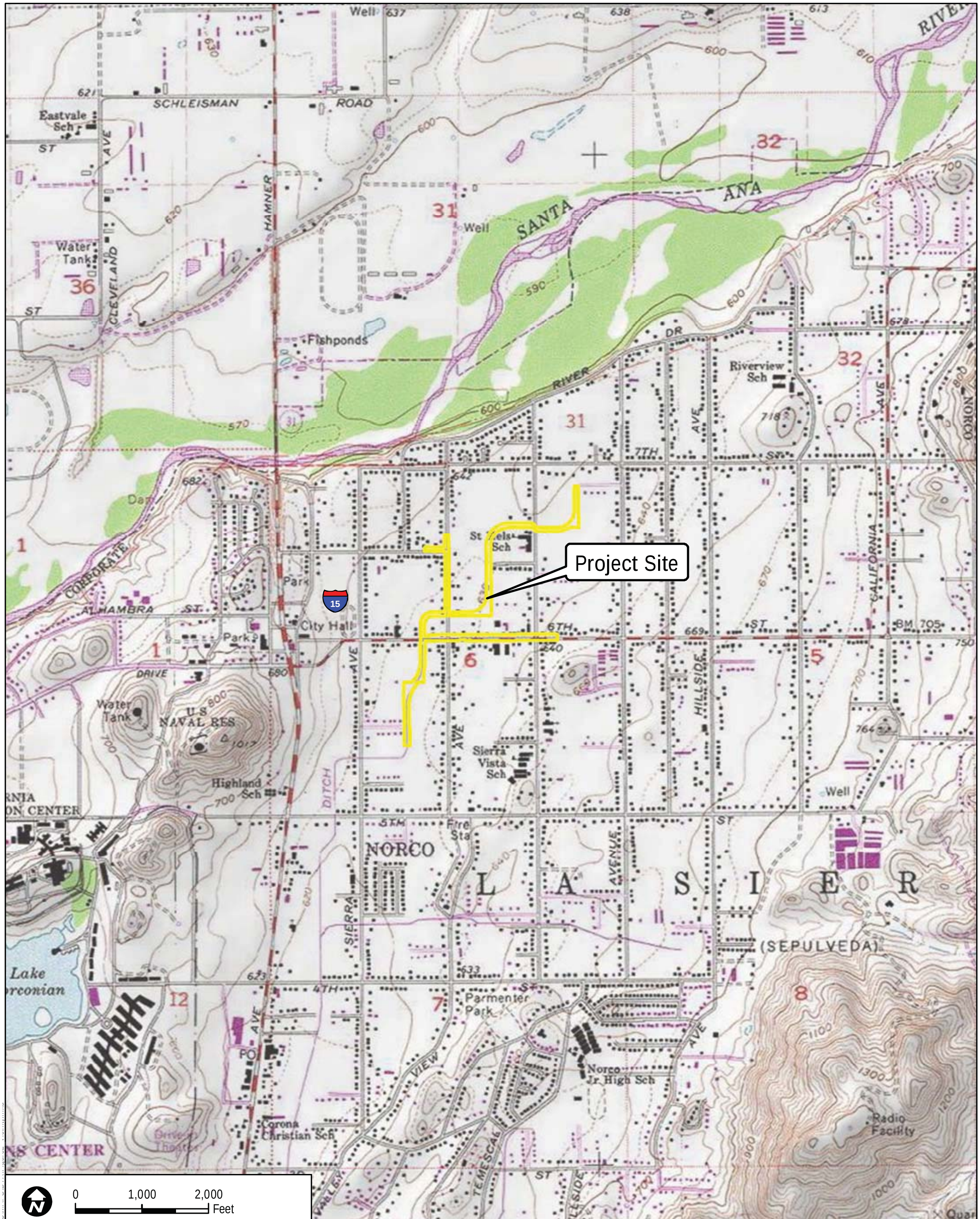

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SOURCE: USGS 7.5-Minute Series Quadrangle (Romoland, Murrieta)

FIGURE 2
Vicinity Map

NORTH NORCO CHANNEL STAGE 11 PROJECT

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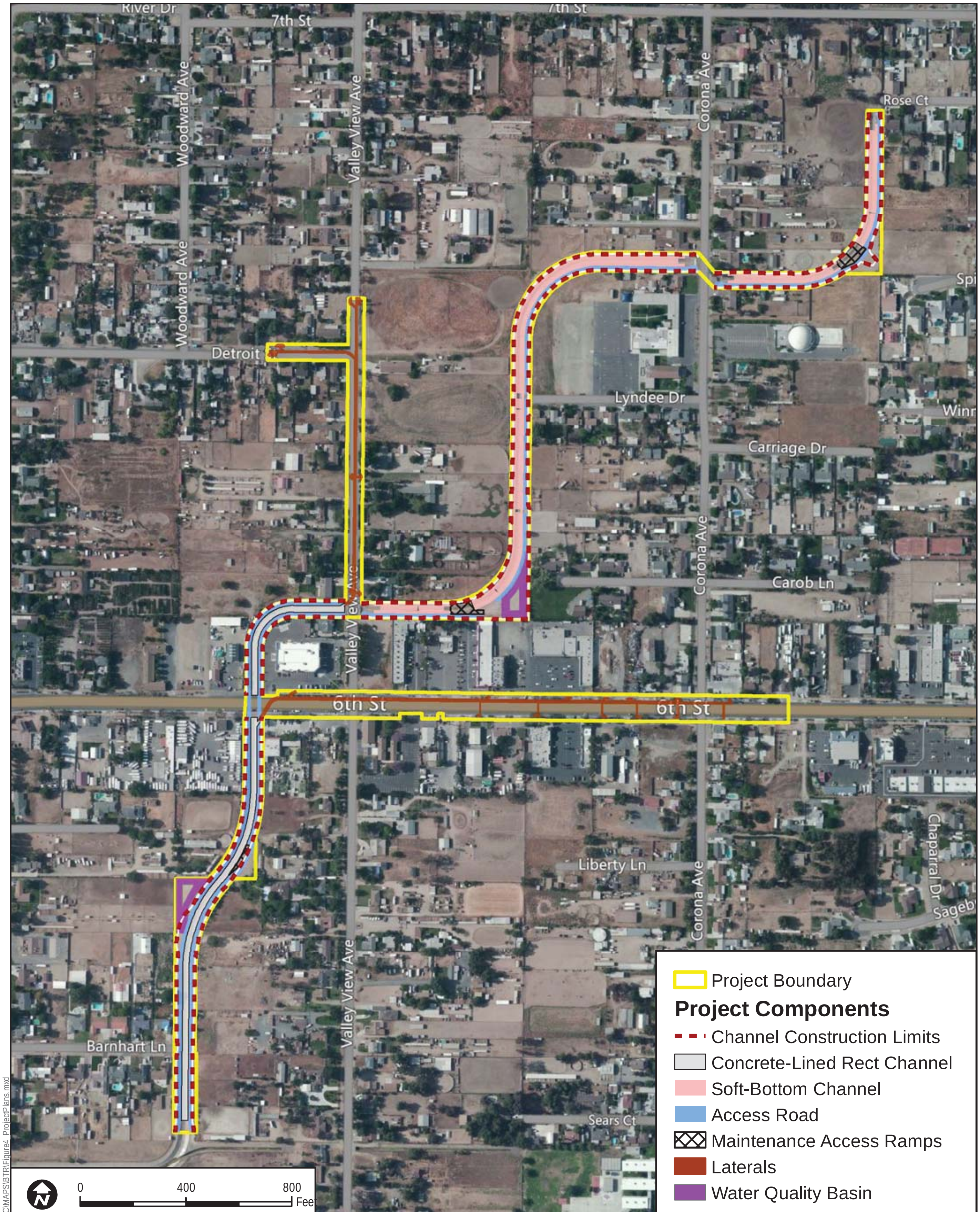

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SOURCE: Bing 2013

FIGURE 3
Project Plans

NORTH NORCO CHANNEL STAGE 11

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- *Sediment and debris removal*: The District will remove vegetation, sand, silt, sediment and debris, and other obstructions from culverts and bridges, outfall structures, drop structures, and other facilities as needed to maintain the carrying capacity of each structure. This maintenance activity occurs under existing conditions, and would continue to occur following construction of the project.

- *Trees and branches*: The District will remove trees and branches that have fallen into the channel or are in imminent danger of falling into the channel to maintain channel design capacity. This maintenance activity occurs under existing conditions, and would continue to occur following construction of the project, as needed.

- *Repair of failed or failing concrete lining*: The District will repair, as needed, failed, failing or deteriorated sections of concrete lining. This maintenance activity does not occur under existing conditions because the existing channel is earthen.

Anticipated maintenance activities will typically require use of hand tools and small construction equipment. Maintenance will typically occur as needed and is expected to be required no more than two times per year under normal (non-emergency) conditions. Maintenance activities are expected to be less intensive than project construction activities as they will not require the use of heavy equipment and will not occur for an extended period of time.

Source control best management practices (BMPs) that will be incorporated into this project include drainage facility inspection and maintenance (non-structural BMP), Municipal Separate Storm Sewer System (MS4) stenciling and signage (for inlets), and protection of slopes and channels.

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2 EXISTING CONDITIONS

2.1 Climate and Topography

The project is located within the SCAB which is characterized as having a Mediterranean climate (typified as semiarid with mild winters, warm summers, and moderate rainfall). The SCAB is a 6,745-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties.

The general region lies in the semipermanent, high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the SCAB is a function of the area's natural physical characteristics (i.e., weather and topography), as well as man-made influences (i.e., development patterns and lifestyle). Factors such as wind speed, wind direction, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the SCAB. With very low average wind speeds, there is a limited capacity to disperse air contaminants horizontally. The SCAB's combination of topography, low mean mixing height, abundant sunshine, and emissions from one of the largest urban areas in the United States has historically resulted in some of the worst air pollution in the nation.

The City of Norco's climate is characterized by relatively low rainfall, with warm summers and mild winters. Average temperatures range from a high of 93°F in August to a low of 40°F in December. Annual precipitation averages about 11–12 inches, falling mostly from December through March (City-Data.com 2014).

During spring and early summer, air pollution produced during any one day is typically blown out of the SCAB through mountain passes or lifted by warm, vertical currents adjacent to mountain slopes. The vertical dispersion of air pollutants in the SCAB is limited by temperature inversions in the atmosphere close to the earth's surface. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are carbon monoxide (CO), particulate matter, and nitrogen dioxide (NO_2) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen (NO_x) to form photochemical smog.

2.2 Sensitive Receptors

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems arise when the rate of pollutant emissions exceeds the rate of dispersion. Reduced visibility, eye irritation, and adverse health impacts upon those persons termed sensitive receptors are the most serious hazards of existing air quality conditions in the area. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory disease. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes.

3 POLLUTANTS AND EFFECTS

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include ozone (O_3), NO_2, CO, sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns in aerodynamic diameter (PM_{10}), particulate matter equal to or less than 10 microns in aerodynamic diameter ($PM_{2.5}$), and lead (Pb). These pollutants are discussed below[1]. In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a colorless gas that is formed in the atmosphere when volatile organic compounds (VOCs), sometimes referred to as reactive organic gases (ROGs), and NO_x react in the presence of ultraviolet sunlight. O_3 is not a primary pollutant; it is a secondary pollutant formed by complex interactions of two pollutants directly emitted into the atmosphere. The primary sources of VOCs and NO_x, the precursors of O_3, are automobile exhaust and industrial sources. Meteorology and terrain play major roles in O_3 formation and ideal conditions occur during summer and early autumn, on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. Short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes.

Nitrogen Dioxide. Most NO_2, like O_3, is not directly emitted into the atmosphere but is formed by an atmospheric chemical reaction between nitric oxide (NO) and atmospheric oxygen. NO and NO_2 are collectively referred to as NO_x and are major contributors to O_3 formation. High concentrations of NO_2 can cause breathing difficulties and result in a brownish-red cast to the atmosphere with reduced visibility. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis and some increase in bronchitis in children (2 and 3 years old) has also been observed at concentrations below 0.3 parts per million by volume (ppm).

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1 The following descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on the Environmental Protection Agency (EPA) Six Common Air Pollutants (EPA 2012) and the California Air Resources Board Glossary of Air Pollutant Terms (CARB 2012) published information.

Carbon Monoxide. CO is a colorless and odorless gas formed by the incomplete combustion of fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, such as the project location, automobile exhaust accounts for the majority of CO emissions. CO is a non-reactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions; primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. The highest levels of CO typically occur during the colder months of the year when inversion conditions are more frequent. In terms of health, CO competes with oxygen, often replacing it in the blood, thus reducing the blood’s ability to transport oxygen to vital organs. The results of excess CO exposure can be dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily by the combustion of sulfur-containing fossil fuels. Main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels. SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Fine particulate matter, or $PM_{2.5}$, is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOC. Inhalable or coarse particulate matter, or PM_{10}, is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system’s natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as Pb, sulfates, and nitrates, can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport absorbed gases, such as chlorides or ammonium, into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle, as well as produce haze and reduce regional visibility.

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline, the manufacturing of batteries, paint, ink, ceramics, and ammunition and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phase-out of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phase-out of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emission sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance including intelligence quotient performance, psychomotor performance, reaction time, and growth.

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a toxic air contaminant (TAC). Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources such as automobiles; and area sources such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced either on short-term (acute) or long-term (chronic) exposure to a given TAC.

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4 REGULATORY SETTING

Regulatory oversight for air quality in the SCAB is maintained at the regional level by the SCAQMD, CARB at the state level, and the U.S. Environmental Protection Agency (EPA) at the federal level. Applicable laws, regulations, and standards of these three agencies are described as follows.

4.1 Federal

The federal Clean Air Act (CAA), passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the CAA, including the setting of National Ambient Air Quality Standards (NAAQS) for major air pollutants, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions. NAAQS are established for "criteria pollutants" under the CAA, which are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and Pb.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The CAA requires the EPA to reassess the NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan that demonstrates how those areas will attain the standards within mandated time frames.

The CAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels.

4.2 State

CARB, which became part of the California Environmental Protection Agency (CalEPA) in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the CAA, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions where pollution levels must be below these standards before a basin can attain the standard. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 4, Ambient Air Quality Standards.

Table 4
Ambient Air Quality Standards

Pollutant	Average Time	California Standards[1]	National Standards[2]	
		Concentration[3]	*Primary[3,4]*	*Secondary[3,5]*
O_3	1 hour	0.09 ppm (180 μg/m³)	—	Same as Primary Standard
	8 hours	0.070 ppm (137 μg/m³)	0.075 ppm (147 μg/m³)	
NO_2[6]	1 hour	0.18 ppm (339 μg/m³)	0.100 ppm (188 μg/m³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 μg/m³)	0.053 ppm (100 μg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[7]	1 hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3 hours	—	—	0.5 ppm (1300 μg/m³)
	24 hours	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[7]	—
	Annual	—	0.030 ppm (for certain areas)[7]	—
PM_{10}[8]	24 hours	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$[8]	24 hours	No Separate State Standard	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[9,10]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[10]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1-hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[9]	24-hour	0.01 ppm (26 μg/m³)	—	—
Sulfates	24-hour	25 μg/m³	—	—
Visibility reducing particles	8-hour (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%	—	—

ppm= parts per million by volume   μg/m[3] = micrograms per cubic meter   mg/m[3]= milligrams per cubic meter

Source: CARB 2013

1 California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter—PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

5 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

6 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

7 On 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

8 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

9 CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

10 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

4.3 Local

While CARB is responsible for the regulation of mobile emission sources within the state, local AQMDs and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The SCAQMD is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the SCAB, where the project is located. The SCAQMD operates monitoring stations in the SCAB, develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections. The SCAQMD's Air Quality Management Plans (AQMPs) include control measures and strategies to be implemented to attain state and federal ambient air quality standards in the SCAB. The SCAQMD then implements these control measures as regulations to control or reduce criteria pollutant emissions from stationary sources or equipment.

The SCAQMD Governing Board adopted the 2003 AQMP on August 1, 2003. The 2003 AQMP updates the attainment demonstration for the federal standards for O_3 and PM_{10}, replaces the 1997 attainment demonstration for the federal CO standard, provides a basis for a maintenance plan for CO for the future, and updates the maintenance plan for the federal NO_2 standard that the SCAB has met since 1992. On March 10, 2009, the U.S. EPA issued a final rule partially approving and partially disapproving the 2003 AQMP. On February 2, 2011, the U.S. Court of Appeals for the Ninth Circuit ruled that U.S. EPA's partial approval was arbitrary and capricious. The Court further ruled that U.S. EPA should have ordered California to submit a revised attainment plan for the SCAB after it disapproved the 2003 AQMP and that EPA should have required transportation control measures.

On June 1, 2007, the SCAQMD Governing Board adopted the 2007 AQMP which includes the same updates as the 2003 AQMP and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. As part of the 2007 AQMP, the SCAQMD requested that the EPA "bump up" the O_3 nonattainment status from severe to extreme to allow additional time for the SCAB to achieve attainment with the federal standard. The additional time would provide for implementation of state and federal measures that apply to sources over which the SCAQMD does not have control. The 2007 AQMP has been approved by CARB; however, on November 22, 2010, the U.S. EPA issued a proposed rule to approve in part and disapprove in part the portions related to attainment of the Federal $PM_{2.5}$ standard. The EPA, however, approved the redesignation of the SCAB to an extreme O_3 nonattainment area, effective as of June 4, 2010.

On December 7, 2012, the SCAQMD Governing Board adopted the Final 2012 AQMP (SCAQMD 2013), which is designed to meet applicable federal and state requirements for O_3 and particulate matter. The 2012 AQMP demonstrates attainment of the federal 24-hour $PM_{2.5}$ standard by 2014 in the SCAB through adoption of all feasible measures. The 2012 AQMP also updates the EPA approved 8-hour O_3 control plan with new measures designed to reduce reliance on the Clean Air Act Section 182(e)(5) long-term measures for NO_x and VOC reductions. Based on general plans for cities and counties in the SCAB, demographic growth forecasts for various socioeconomic categories (i.e., population, housing, employment by industry) developed by the Southern California Association of Governments (SCAGs) for their 2012 Regional Transportation Plan were used in the 2012 AQMP.

Emissions that would result from mobile, stationary, and area sources during construction and maintenance of the project are subject to the rules and regulations of the SCAQMD. The SCAQMD rules applicable to the construction and maintenance of the project may include the following rules (SCAQMD 2011).

Rule 401 – Visible Emissions: This rule establishes the limit for visible emissions from stationary sources. This rule prohibits visible emissions dark or darker than Ringlemann No.1 for periods greater than 3 minutes in any hour.

Rule 402 – Nuisance: This rule prohibits the discharge of air pollutants from a facility that cause injury, detriment, nuisance, or annoyance to the public or damage to business or property.

Rule 403 - Fugitive Dust: This rule requires fugitive dust sources to implement best available control measures for all sources, and all forms of visible particulate matter are prohibited from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust.

Rule 431.2 - Sulfur Content of Liquid Fuels: The purpose of this rule is to limit the sulfur content in diesel and other liquid fuels for the purpose of both reducing the formation of SO_x and particulates during combustion and to enable the use of add-on control devices for diesel-fueled internal combustion engines. The rule applies to all refiners, importers, and other fuel suppliers such as distributors, marketers, and retailers, as well as to users of diesel, low-sulfur diesel, and other liquid fuels for stationary-source applications in the district. The rule also affects diesel fuel supplied for mobile source applications.

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5 LOCAL AIR QUALITY

5.1 Local Attainment Designation

An area is designated "in attainment" when it is in compliance with the NAAQS and/or CAAQS. These standards are set by the EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare with a margin of safety.

The criteria pollutants of primary concern considered in this air quality assessment include O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and Pb. Although there are no ambient standards for VOCs or NO_x, they are important because they are precursors to O_3.

The entire SCAB is designated as a nonattainment area for both federal and state O_3 standards. The EPA has classified the SCAB as an "extreme" nonattainment area and has mandated that it achieve attainment no later than June 15, 2024. The federal NO_2 standard was revised in 2010, and all areas of California have been designated unclassifiable/nonattainment. The SCAB is designated as an attainment area for the state NO_2 standards. The SCAB is designated as an attainment area for federal and state CO and SO_2 standards. The SCAB is designated as an attainment area for the federal PM_{10} standard and as a nonattainment area for the state PM_{10} standards. The SCAB is designated as a nonattainment area for both federal and state $PM_{2.5}$ standards. Riverside County is designated unclassifiable/attainment for state and federal lead standards.

The attainment classifications for these criteria pollutants are outlined in Table 5, South Coast Air Basin Attainment Classification.

Table 5
South Coast Air Basin Attainment Classification

Pollutant	Averaging Time	State Designation/Classification[a]	National Designation/Classification[b]
O_3	1 hour 8 hour	Nonattainment Nonattainment	— Nonattainment (Extreme)
NO_2	1 hour Annual arithmetic mean	Attainment	Attainment (Maintenance) – 1971 NAAQS Unclassifiable/Attainment – 2010 NAAQS
CO	1 hour 8 hour	Attainment	Attainment (Maintenance)
SO_2	1 hour, 24 hour, Annual arithmetic mean	Attainment	Unclassifiable
PM_{10}	24 hour, Annual arithmetic mean	Nonattainment	Attainment (Maintenance)

Table 5
South Coast Air Basin Attainment Classification

Pollutant	Averaging Time	State Designation/Classification[a]	National Designation/Classification[b]
$PM_{2.5}$	24 hour, Annual arithmetic mean	Nonattainment	Nonattainment
Lead (Pb)	Quarter	—	Unclassifiable/Attainment
	3-month average	—	Unclassifiable/Attainment
	30-day average	Attainment	—
Sulfates (SO_4)	24 hour	Attainment	—
Hydrogen sulfide (H_2S)	1 hour	Unclassified	—
Vinyl chloride[1]	24 hour	Unclassified	—
Visibility-reducing particles	8 hour (10:00 a.m.–6:00 p.m.)	Unclassified	—

Sources: [a] CARB 2013b, [b] EPA 2014a
Note: [1] CARB has identified lead and vinyl chloride as TACs with no threshold level of exposure for adverse health effects determined.

5.2 Air Quality Monitoring Data

The project area's local ambient air quality is monitored by SCAQMD and CARB. CARB monitors ambient air quality at approximately 250 air-monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations.

The nearest air-monitoring station to the project site is the Norco–Norconian monitoring station, which measures PM_{10}. The next closest monitoring station is the Riverside–Magnolia station, which measures NO_2, CO, and $PM_{2.5}$. For O_3 and SO_2, values from the Riverside–Rubidoux monitoring station, which is the closest monitoring station to the project site that measures those pollutants, were used in this analysis. The most recent background ambient air quality data from 2011–2013 are presented in Table 6, Ambient Air Quality Data. The number of days exceeding the ambient air quality standards is shown in Table 7, Frequency of Air Quality Standard Violations.

Table 6
Ambient Air Quality Data (ppm unless otherwise indicated)

Pollutant	Averaging Time	2011	2012	2013	Most Stringent Ambient Air Quality Standard	Monitoring Station
O_3	1 hour	0.128	0.126	0.123	0.09	Riverside–Rubidoux
	8 hour	0.115	0.102	0.104	0.070	
NO_2	1 hour	0.057	0.060	0.057	0.100	Riverside–

Table 6
Ambient Air Quality Data (ppm unless otherwise indicated)

Pollutant	Averaging Time	2011	2012	2013	Most Stringent Ambient Air Quality Standard	Monitoring Station
	Annual	N/A	N/A	N/A	0.030	Magnolia
CO	1 hour	3.1	2.7	2.3	20	Riverside–Magnolia
	8 hour	1.49	1.46	N/A	9.0	
SO_2	24 hour	0.001	0.001	0.001	0.040	Riverside–Rubidoux
	Annual	0.000	N/A	N/A	0.030	
PM_{10}	24 hour	58.0 μg/m³	51.0 μg/m³	56.0 μg/m³	50 μg/m³	Norco–Norconian
	Annual	27.0 μg/m³	26.0 μg/m³	N/A	20 μg/m³	
$PM_{2.5}$	24 hour	51.6 μg/m³	30.2 μg/m³	53.7 μg/m³	35 μg/m³	Riverside–Magnolia
	Annual	15.2 μg/m³	N/A	16.4 μg/m³	12.0 μg/m³	

Sources: CARB 2014; EPA 2014b (for 1-hour CO).
Notes:
Data taken from CARB iADAM (2014) or EPA AirData (2014) represent the highest concentrations experienced over a given year.
There is no federal standard for 1-hour ozone, nor is there a state 24-hour standard for $PM_{2.5}$.
μg/m³ = micrograms per cubic meter; N/A: insufficient data available to determine the value
Norco-Norconian: USNFAC, Norco
Riverside-Magnolia: 7002 Magnolia Avenue, Riverside
Riverside-Rubidoux: 5888 Mission Blvd., Rubidoux

Table 7
Frequency of Air Quality Standard Violations

Year	Number of Days Exceeding Standard					
	State 1-Hour O_3 (Riverside–Rubidoux)	*State 8-Hour O_3 (Riverside–Rubidoux)*	*Federal 8-Hour O_3 (Riverside–Rubidoux)*	*State 24-Hour PM_{10} [a] (Norco–Norconian)*	*Federal 24-Hour PM_{10} [a] (Norco–Norconian)*	*Federal 24-Hour $PM_{2.5}$[a] (Riverside–Magnolia)*
2011	4	92	67	12.2 (2)	0.0 (0)	7.1 (2)
2012	1	70	47	6.1 (1)	0.0 (0)	N/A (0)
2013	0	38	26	N/A (2)	0.0 (0)	3.0 (1)

Source: CARB 2014
Notes:
a Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and 3 days, respectively. Number of days exceeding the standards is mathematical estimates of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.
Exceedances of federal and state standards are only shown for ozone and particulate matter. All other criteria pollutants did not exceed either federal or state standards during the years shown.
N/A = insufficient data available to determine the value.

As Table 6 demonstrates, air quality within the project region is in compliance with both CAAQS and NAAQS for NO_2, CO, and SO_2. However, as shown in Table 7, federal and state 1-hour and 8 hour O_3 standards were exceeded during each of the last 3 years at the Riverside-Rubidoux monitoring station, with the exception of the state 1-hour O_3 standard in 2013. The

PM_{10} levels monitored at the Norco-Norconian station exceeded the state 24-hour standard during each of the 3 years studied and did not exceed the federal 24-hour standard in any years studied. The $PM_{2.5}$ levels monitored at the Norco-Norconian station exceeded the federal 24-hour standard during two of the 3 years studied.

6 THRESHOLDS OF SIGNIFICANCE

The State of California has developed guidelines to address the significance of air quality impacts based on Appendix G of the CEQA Guidelines, which provides guidance that a project would have a significant environmental impact if it would:

1. Conflict with or obstruct the implementation of the applicable air quality plan;
2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O3 precursors);
4. Expose sensitive receptors to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

In addition, Appendix G of the CEQA Guidelines indicates that, where available, the significance criteria established by the applicable air quality management district or pollution control district may be relied upon to determine whether the project would have a significant impact on air quality. The SCAQMD *CEQA Air Quality Handbook* (SCAQMD 1993), as revised in March 2011, sets forth quantitative emission significance thresholds below which a project would not have a significant impact on ambient air quality. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 8, SCAQMD Air Quality Significance Thresholds, are exceeded. A project would result in a substantial contribution to an existing air quality violation of the National Ambient Air Quality Standard or California Ambient Air Quality Standard for O_3 (Table 4), which is a nonattainment pollutant, if the project's construction emissions would exceed the SCAQMD VOC or NO_x thresholds shown in Table 8. These emission-based thresholds for O_3 precursors are intended to serve as a surrogate for an "ozone significance threshold" (i.e., the potential for adverse O_3 impacts to occur) because O_3 itself is not emitted directly (see the previous discussion of O_3 and its sources), and the effects of an individual project's emissions of O_3 precursors (VOC and NO_x) on O_3 levels in ambient air cannot be determined through air quality models or other quantitative methods.

Table 8
SCAQMD Air Quality Significance Thresholds

Criteria Pollutants Mass Daily Thresholds	
Pollutant	*Construction*
VOC	75 lbs/day
NO_x	100 lbs/day
CO	550 lbs/day
SO_x	150 lbs/day
PM_{10}	150 lbs/day
$PM_{2.5}$	55 lbs/day
Lead[a]	3 lbs/day
Toxic Air Contaminants and Odor Thresholds	
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402
Ambient Air Quality for Criteria Pollutants [b]	
NO_2 1-hour average NO_2 annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.030 ppm (state)
CO 1-hour average CO 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)
SO_2 1-hour average SO_2 24-hour average	0.25 ppm (state) 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)
PM_{10} 24-hour average PM_{10} annual arithmetic mean	10.4 $\mu g/m^3$ (construction)[c] 1 $\mu g/m^3$
$PM_{2.5}$ 24-hour average	10.4 $\mu g/m^3$ (construction)[c]

Source: SCAQMD 1993 (Revised in March 2011)

[a] The phase out of leaded gasoline started in 1976. Since gasoline no longer contains lead, the project is not anticipated to result in impacts related to lead; therefore, it is not discussed in this analysis.

[b] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2, unless otherwise stated.

[c] Ambient air quality threshold based on SCAQMD Rule 403.

Notes: lbs/day = pounds per day; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; ≥ = greater than or equal to

In addition to the above-listed emission-based thresholds, SCAQMD also recommends the evaluation of localized air quality impacts to sensitive receptors in the immediate vicinity of the project as a result of construction activities, referred to as a localized significance threshold (LST) analysis. Sensitive receptors include but are not limited to residential land uses, schools, open space and parks, recreational facilities, hospitals, resident care facilities, day-care facilities, or other facilities that may house individuals with health conditions that would be affected by poor air quality.

The significance thresholds for NO_2 and CO represent the allowable increase in concentrations above background levels in the vicinity of a project that would not cause or contribute to an exceedance of the relevant ambient air quality standards, while the threshold for PM_{10} represents compliance with Rule 403 (Fugitive Dust). The significance threshold for $PM_{2.5}$ is intended to ensure that construction emissions do not contribute substantially to existing exceedances of the $PM_{2.5}$ ambient air quality standards. For project sites of 5 acres or less, SCAQMD LST Methodology (SCAQMD 2008a) includes “lookup tables” that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance criteria (i.e., the emissions would not cause an exceedance of the applicable concentration limits for NO_2, CO, PM_{10}, and $PM_{2.5}$) without performing project-specific dispersion modeling. The allowable emission rates depend on the following parameters:

a. Source-Receptor Area in which the project is located
b. Size of the project site
c. Distance between the project site and the nearest sensitive receptor (e.g., residences, schools, hospitals).

The project site is located in SRA 22 (Corona/Norco). While the overall project area anticipated to be graded is anticipated to be 12.3 acres, the daily disturbed acreage is anticipated to be between 0.1 and 0.2 acres. There are an estimated 11 residences located within 10 to 20 feet (3 and 6 meters) of the construction site boundary. Because the distance to the nearest sensitive receptors (residences) are less than 25 meters and the daily disturbed acreage would be less than 1 acre, the values from the SCAQMD lookup tables for SRA 22 for 1 acre and 25 meters were used to determine the applicable LSTs. The thresholds are shown in Table 9, Localized Significance Thresholds for SRA 22.

Table 9
Localized Significance Thresholds for SRA 22

Pollutant	Threshold (pounds/day)
NO_2	118
CO	674
PM_{10}	4
$PM_{2.5}$	3

Source: SCAQMD 2008a, Appendix C. LST thresholds were determined based on the values for 1-acre site at a distance of 25 meters from the nearest sensitive receptor.

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7 IMPACTS

7.1 Consistency with Air Quality Plans

Projects are considered consistent with, and would not conflict with or obstruct implementation of, the AQMP if the growth in socioeconomic factors is consistent with the underlying regional plans used to develop the AQMP. Based on general plans for cities and counties in the SCAB, demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment by industry) developed by the SCAGs for their 2012 Regional Transportation Plan were used in the 2012 AQMP. The 2012 AQMP reduction and control measures, which are outlined to mitigate emissions, are based on existing and projected land use and development. The 2012 AQMP relies on the land use and population projections provided in SCAG' 2012 Regional Growth Forecast, which is generally consistent with the local plans; therefore, the 2012 AQMP is generally consistent with local general plans.

The City of Norco General Plan land use designation within the North Norco Channel is Water Related (WR); the City's General Plan land use designation within the proposed laterals is Residential Agricultural (RA). According to the City's Zoning Map, the project alignment is located in areas designated as Limited Development (LD) and within existing road rights-of-way. The project is a use that is permitted within the Limited Development (LD) zone. Channels, laterals, and associated public infrastructure currently exist within the WR and RA land use designations and the LD zoning designation. The project would not conflict with or propose to change existing land uses or applicable policies as designated in the City of Norco General Plan; thus, the project would not conflict with the applicable air quality plan. In addition, the project entails reduction in flood risk in the project area and includes construction, operation and maintenance of a drainage system that would a provide 100-year flood protection, and would neither increase population nor would it require additional long-term employment. Based on these considerations, impacts would be less-than-significant impact.

7.2 Construction Emissions

Construction of the project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling excavated earth materials. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation and, for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

Pollutant emissions associated with construction activity were quantified using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, available online (http://www.caleemod.com). Default values provided by the program were used where detailed project information was not available. A detailed depiction of the construction schedule—including information regarding phasing, equipment utilized during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Section 1.3, Project Description (Construction) of this report. Additional information is contained in the CalEEMod output, as provided in Appendix A and Appendix B.

Implementation of the project would generate construction-related air pollutant emissions from two general activity categories: entrained dust, and equipment and vehicle exhaust emissions. Entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. To account for dust control measures to comply with SCAQMD Rule 403 in the calculations, it was assumed that the active sites would be watered at least three times daily, resulting in an approximately 61% reduction. Exhaust from internal combustion engines used by construction equipment and hauling (dump trucks) and vendor trucks (i.e., delivery trucks) and worker vehicles results in emissions of NO_x, VOCs, CO, PM_{10}, and $PM_{2.5}$.

Table 10, Phase 1 – North Norco Channel, Estimated Maximum Daily Construction Emissions, presents the estimated maximum unmitigated daily construction emissions generated during construction of Phase 1 of the project, North Norco Channel, in 2015 and 2016.

Table 10
Phase 1 – North Norco Channel
Estimated Maximum Daily Construction Emissions (pounds/day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2015	2.56	33.03	18.71	0.05	2.11	1.29
2016	2.39	30.34	18.10	0.05	4.80	1.89
Maximum Daily Emissions	2.56	33.03	18.71	0.05	4.80	1.89
Emission Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Note: See Appendix A for detailed results

Table 11, Phase 2 - Norco Line N-2, Line NC, and Lateral NC-1, Estimated Maximum Daily Construction Emissions, presents the estimated maximum unmitigated daily construction emissions generated during construction of Phase 2 of the project, Norco Line N-2, Line NC, and Lateral NC-1, in 2016 and 2017.

Table 11
Phase 2 - Norco Line N-2, Line NC, and Lateral NC-1
Estimated Maximum Daily Construction Emissions
(pounds/day)

	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2016	2.02	21.94	15.62	0.03	1.78	1.10
2017	1.89	20.20	15.24	0.03	1.58	1.00
Maximum Daily Emissions	2.02	21.94	15.62	0.03	1.78	1.10
Emission Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Note: See Appendix A for detailed results

As shown in Tables 10 and 11, daily construction emissions would not exceed the SCAQMD thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. As such, the project would result in a less-than-significant impact during construction.

Utility relocation activities are anticipated to occur immediately prior to commencement of each phase. In the event that North Norco Channel utility trenching would occur concurrent with Phase 1 construction activities, it would result in the addition of 0.41 pounds per day of VOC, 3.83 pounds per day of NO_x, 3.06 pounds per day of CO, 0.00 pounds per day of SO_x, 0.35 pounds per day of PM_{10}, and 0.27 pounds per day of $PM_{2.5}$. If utility trenching for the three laterals would occur concurrent with Phase 2 construction activities it would result in the addition of 0.39 pounds per day of VOC, 3.62 pounds per day of NO_x, 3.01 pounds per day of CO, 0.00 pounds per day of SO_x, 0.33 pounds per day of PM_{10}, and 0.26 pounds per day of $PM_{2.5}$. Accordingly, project-generated construction emissions would not exceed the SCAQMD thresholds for VOC, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ even if trenching activities overlapped with other anticipated construction activities.

In addition, the project must adhere to SCAQMD Rules during construction-related activities: 401 (Visible Emissions), 403 (Fugitive Dust), and 431.2 (Sulfur Content of Liquid Fuels). These measures would assist in minimizing less-than-significant project-generated fugitive dust emissions and combustion pollutants.

7.3 Maintenance Emissions

Typical maintenance of the channel and laterals is anticipated to include periodic weed control, sediment and debris removal, trees and branches removal, and repair of failed or failing concrete lining, where applicable. These maintenance activities will typically require use of hand tools and small pieces of equipment and will be less intensive than the anticipated project construction activities, which require use of heavy equipment. As such, maintenance activities are expected to result in less daily criteria air pollutant emissions (Section 7.2 and Appendix A). In the event that repair of the channel, laterals, and associated infrastructure is required, the construction activities similar to those described above may occur on a localized portion of the drainage system, as analyzed in the project's construction emissions assessment. However, repair activity would likely result in less emissions compared to the analyzed construction scenario that assumes more intensive construction over larger portions of the project area.

Maintenance will typically occur as needed and is expected to occur no more than two times per year and potential repair activities will be temporary. Maintenance and potential repair of the drainage system would not result in a substantial source of long-term operational emissions.. The project will not require additional employees to maintain the channel and laterals; therefore, there will be no additional routine vehicular traffic or associated mobile source emissions. Based on these considerations, air quality impacts associated with maintenance activities would be less than significant.

7.4 Cumulative Impacts

The SCAB is a nonattainment area for O_3, NO_2, PM_{10}, and $PM_{2.5}$ under the NAAQS and/or CAAQS. The poor air quality in the SCAB is the result of cumulative emissions from motor vehicles, off-road equipment, commercial and industrial facilities, and other emission sources. Projects that emit these pollutants or their precursors (e.g., VOC and NO_x for O_3,) can potentially contribute to poor air quality. As indicated in Tables 10 and 11, the construction emissions from the project would not exceed SCAQMD significance thresholds. Emissions associated with maintenance activities would be less intensive than the analyzed project construction activities and would be less than significant. Furthermore, the project would not conflict with the SCAQMD 2012 AQMP, which addresses the cumulative emissions in the SCAB. Accordingly, the project contribution would not be cumulatively considerable in regards to emissions of nonattainment pollutants.

7.5 Sensitive Receptor Impacts

Sensitive receptors (residences) that could potentially be affected by construction activity within the project area are located approximately 10 feet from the proposed channel and laterals alignments.

As shown in Tables 10 and 11, which present estimated maximum daily construction emissions from construction of the project, construction activities would not generate substantial emissions of toxic air contaminants, specifically diesel exhaust particulate matter from construction equipment, and emissions would not exceed the SCAQMD maximum daily construction thresholds. Furthermore, construction would not occur in one area for an extended period.

Construction activities associated with the project would result in temporary sources of fugitive dust and construction vehicle emissions. Off-site emissions from haul trucks, vendor trucks, and worker vehicle trips are not included in the LST analysis. The maximum allowable daily emissions that would satisfy the SCAQMD localized significance criteria for SRA 22 (Corona/Norco) shown in Table 9 are compared to the maximum daily on-site construction emissions rounded to the nearest whole number and presented in Tables 12 and 13.

Table 12
Localized Significance Thresholds Analysis for
Phase 1 North Norco Channel Construction Emissions

Pollutant	Construction Emissions (pound/day)[a]	LST Criteria (pounds/day)[b]	Exceeds LST?
NO_2	23	118	No
CO	11	674	No
PM_{10}	1	4	No
$PM_{2.5}$	1	3	No

Sources: [a] Dudek 2013, [b] SCAQMD 2008.
Maximum onsite emissions shown for 2015 or 2016

Table 13
Localized Significance Thresholds Analysis for
Phase 2 Line N-2, Line NC, and Lateral NC-1 Construction Emissions

Pollutant	Construction Emissions (pound/day)[a]	LST Criteria (pounds/day)[b]	Exceeds LST?
NO_2	19	118	No
CO	11	674	No
PM_{10}	1	4	No
$PM_{2.5}$	1	3	No

Sources: [a] Dudek 2013, [b] SCAQMD 2008.
Maximum onsite emissions shown for 2016 or 2017

As shown in Tables 12 and 13, construction activities would not generate emissions in excess of site-specific LSTs; therefore, site-specific construction impacts on ambient air quality at sensitive receptor locations would be less than significant. In addition, diesel equipment would also be subject to the CARB Airborne Toxic Control Measure for in-use off-road diesel fleets, which would further reduce diesel particulate matter emissions.

CO Hotspots

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or state standards for CO are termed CO "hotspots." CO transport is extremely limited and disperses rapidly with distance from the source. Under certain extreme meteorological conditions, however, CO concentrations near a congested roadway or intersection may reach unhealthy levels, affecting sensitive receptors such as residents, school children, hospital patients, and the elderly. Typically, high CO concentrations are associated with severely congested intersections operating at an unacceptable level of service (level of service E or worse). Projects contributing to adverse traffic impacts may result in the formation of a CO hotspot. Additional analysis of CO hotspot impacts would be conducted if a project would result in a significant impact or contribute to an adverse traffic impact at a signalized intersection that would potentially subject sensitive receptors to CO hotspots.

Project maintenance activities will be temporary and would not be a source of daily, long-term mobile-source emissions. Accordingly, project maintenance activities would not generate traffic that would contribute to potential adverse traffic impacts that may result in the formation of CO hotspots. In addition, because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SCAB is steadily decreasing. Background CO levels in the area, as shown in Table 6, Ambient Air Quality Data, are less than 20% of the 1- and 8-hour CAAQS and would be expected to improve further due to reductions in motor vehicle emissions. Based on these considerations, project maintenance would result in a less-than-significant impact to air quality with regard to potential CO hotspots.

7.6 Odors

Less-Than-Significant Impact. Odors are a form of air pollution that is most obvious to the general public and can present problems for both the source and surrounding community. Although offensive odors seldom cause physical harm, they can be annoying and cause concern. Construction and maintenance of the project would not create objectionable odors affecting a substantial number of people.

Potential sources that may emit odors during construction and maintenance activities include diesel equipment and gasoline fumes. Odors from these sources would be localized and generally confined to the project site. Potential project-generated odors would be temporary as Phase 1 construction will occur over 11 months, Phase 2 construction will occur over 6 months, and maintenance activities will occur on an as-needed basis and is expected to be required no more than two times per year. Residences located within the project vicinity are not anticipated to be affected by construction odors. Additionally, the release of potential odor-causing compounds would tend to be during the workday, when many residents would not be home. Construction activity will not occur in one location for an extended period of time as the channel and laterals will generally be constructed in a linear sequence. Maintenance activities will be distributed throughout the drainage system and will also not occur in a single location for an extended period of time. Additionally, the project will utilize typical construction and maintenance techniques in compliance with SCAQMD rules. As such, project construction and maintenance would not cause an odor nuisance therefore odor impacts would be less than significant.

The project will not result in the creation of a land use that is commonly associated with odors. Once the project is constructed, no routine daily operational activities that will generate objectionable odors will occur. Accordingly, no operational odor impacts are anticipated to occur.

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8 GREENHOUSE GASES

8.1 Environmental Setting

The Greenhouse Effect and Greenhouse Gases

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer). Gases that trap heat in the atmosphere are often called GHGs. The greenhouse effect traps heat in the troposphere through a threefold process: (1) short-wave radiation emitted by the Sun is absorbed by the Earth; (2) the Earth emits a portion of this energy in the form of long-wave radiation; and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit this long-wave radiation into space and back toward the Earth. This "trapping" of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted to the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely byproducts of fossil-fuel combustion, whereas CH_4 results mostly from off-gassing associated with agricultural practices and landfills. Man-made GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), which are associated with certain industrial products and processes (CAT 2006).

The greenhouse effect is a natural process that contributes to regulating the Earth's temperature. Without it, the temperature of the Earth would be about 0°F (−18°C) instead of its current 57°F (14°C). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect.

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP). The GWP varies between GHGs; for example, the GWP of CH_4 is 21, and the GWP of N_2O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG gas emissions are typically measured in terms of pounds or tons of CO_2 equivalent (CO_2E).[2]

[2] The CO_2 equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP, such that metric tons of CO_2E = (metric tons of a GHG) × (GWP of the GHG). For example, the GWP for CH_4 is 21. This means that emissions of 1 metric ton of CH_4 are equivalent to emissions of 21 metric tons of CO_2.

Contributions to Greenhouse Gas Emissions

In 2012, the United States produced 6,525.6 million metric tons (MMT) of CO_2E (EPA 2014c). The primary GHG emitted by human activities in the United States was CO_2, representing approximately 83% of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 82% of the CO_2 emissions.

According to the 2012 GHG inventory data compiled by California Air Resources Board (CARB) for the California Greenhouse Gas Inventory for 2000–2012, California emitted 459 MMT CO_2E of GHGs, including emissions resulting from out-of-state electrical generation (CARB 2014c). The primary contributors to GHG emissions in California are transportation, industry, electric power production from both in-state and out-of-state sources, agriculture, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2012 are presented in Table 14, Greenhouse Gas Sources in California.

Table 14
Greenhouse Gas Sources in California (2012)

Source Category	Annual GHG Emissions (MMT CO_2E)	% of Total[a]
Transportation	167.38	36%
Electricity generation	95.09 [b]	21%
Residential uses	28.09	6%
Commercial uses	14.20	3%
Industrial uses	89.16	19%
Recycling and waste	8.49	2%
High GWP substances	18.41	4%
Agriculture	37.86	8%
Totals	**458.68**	**100%**

Source: CARB 2014c.
a Percentage of total has been rounded.
b Includes emissions associated with imported electricity, which account for 44.07 MMT CO_2E annually.

Potential Effects of Human Activity on Climate Change

Globally, climate change has the potential to impact numerous environmental resources though uncertain impacts related to future air temperatures and precipitation patterns. In California, climate change impacts have the potential to affect sea level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply (CCCC 2006). The primary effect of global climate change has been a rise in average global tropospheric temperature of 0.2°C per decade, determined from meteorological measurements worldwide between 1990 and 2005. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. A warming of about 0.2°C (0.36°F) per decade is projected, and there are identifiable signs that global warming could be taking place, including substantial ice loss in the Arctic (IPCC 2007).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. Climate change is already affecting California: average temperatures have increased, leading to more extreme hot days and fewer cold nights; shifts in the water cycle have been observed, with less winter precipitation falling as snow, and both snowmelt and rainwater running off earlier in the year; sea levels have risen; and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010a). Climate change modeling using emission rates from the year 2000 shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California would include, but would not be limited to, the following:

- The loss of sea ice and mountain snowpack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007)
- A rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps and the Greenland and Antarctic ice sheets (IPCC 2007)
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns; and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and intensity of tropical cyclones (IPCC 2007)
- A decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 30% to as much as 90% over the next 100 years (CAT 2006)
- An increase in the number of days conducive to O_3 formation by 25% to 85% (depending on the future temperature scenario) in high-O_3 areas of Los Angeles and the San Joaquin Valley by the end of the twenty-first century (CAT 2006).
- A high potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level (CAT 2006).

8.2 Regulatory Setting

This section provides a brief foundation for these regulatory efforts and discusses the key federal and state regulatory efforts that could apply to the project. The state has adopted legislative and regulatory measures that apply to electricity (e.g., Renewable Portfolio Standard under Senate Bill X1 2) and measures focused on specific sources of GHGs, however, they do not apply to the project. The description of key measures and motor-vehicle-related measures discussed below focuses on those that are of a general nature (e.g., AB 32) or that could apply, to some extent, although generally in a minor way.

Federal

Massachusetts v. EPA. On April 2, 2007, in *Massachusetts v. EPA*, the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- The administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is referred to as the "endangerment finding."
- The administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is referred to as the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act. On December 19, 2007, President George W. Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022
2. Set a target of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks

3. Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

EPA and NHTSA Joint Final Rule for Vehicle Standards. On April 1, 2010, the EPA and NHTSA announced a joint final rule to establish a national program consisting of new standards for light-duty vehicles model years 2012 through 2016. The joint rule is intended to reduce GHG emissions and improve fuel economy. The EPA approved the first-ever national GHG emissions standards under the Clean Air Act, and NHTSA approved Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act (75 FR 25324–25728). The final rule became effective on July 6, 2010 (75 FR 25324–25728).

The EPA's GHG standards require new passenger cars, light-duty trucks, and medium-duty passenger vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 mpg if the automotive industry were to meet this CO_2 level through fuel economy improvements alone. The CAFE standards for passenger cars and light trucks will be phased in between 2012 and 2016, with the final standards equivalent to 37.8 mpg for passenger cars and 28.8 mpg for light trucks, resulting in an estimated combined average of 34.1 mpg. The rules will simultaneously reduce GHG emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers (EPA 2013).

In August 2012, the EPA and NHTSA approved a second round of GHG and CAFE standards for model years 2017 and beyond (77 FR 62624–63200). These standards will reduce motor vehicle GHG emissions to 163 grams of CO_2 per mile, which is equivalent to 54.5 mpg if this level were achieved solely through improvements in fuel efficiency, for cars and light-duty trucks by model year 2025. A portion of these improvements, however, will likely be made through reductions in air conditioning leakage and through use of alternative refrigerants, which would not contribute to fuel economy. The regulations also include targeted incentives to encourage early adoption and introduction into the marketplace of advanced technologies to dramatically improve vehicle performance, including the following:

- Incentives for electric vehicles, plug-in hybrid electric vehicles, and fuel-cell vehicles
- Incentives for hybrid technologies for large pickup trucks and for other technologies that achieve high fuel economy levels on large pickup trucks
- Incentives for natural gas vehicles
- Credits for technologies with potential to achieve real-world GHG reductions and fuel economy improvements that are not captured by the standard test procedures.

State

Assembly Bill 1493. In response to the transportation sector accounting for more than half of California's CO_2 emissions, Assembly Bill (AB) 1493 (Pavley) was enacted on July 22, 2002. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles whose primary use is noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

Executive Order S-3-05. In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The executive order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, GHG emissions should be reduced to 1990 levels by 2020, and GHG emissions should be reduced to 80% below 1990 levels by 2050. The CalEPA secretary is required to coordinate efforts of various agencies to collectively and efficiently reduce GHGs. The Climate Action Team (CAT) is responsible for implementing global warming emissions reduction programs. Representatives from several state agencies compose the CAT. Under the executive order, the CalEPA secretary is directed to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The CAT fulfilled its initial report requirements through the 2006 *Climate Action Team Report to Governor Schwarzenegger and the Legislature* (CAT 2006).

The 2009 *Climate Action Team Biennial Report* (CAT 2010a), published in April 2010, expands on the policy outlined in the 2006 assessment. The 2009 report provides new information and scientific findings regarding the development of new climate and sea level projections using new information and tools that have recently become available and evaluates climate change within the context of broader social changes, such as land use changes and demographics. The 2009 report also identifies the need for additional research in several different aspects that affect climate change in order to support effective climate change strategies. The aspects of climate change determined to require future research include vehicle and fuel technologies, land use and smart growth, electricity and natural gas, energy efficiency, renewable energy and reduced carbon energy sources, low GHG technologies for other sectors, carbon sequestration, terrestrial sequestration, geologic sequestration, economic impacts and considerations, social science, and environmental justice.

Subsequently, the 2010 *Climate Action Team Report to Governor Schwarzenegger and the California Legislature* (CAT 2010b) reviews past Climate Action Milestones including voluntary reporting programs, GHG standards for passenger vehicles, the Low Carbon Fuel Standard (LCFS), a statewide renewable energy standard, and the cap-and-trade program. Additionally, the 2010 report includes a cataloguing of recent research and ongoing projects; mitigation and adaptation strategies identified by sector (e.g., agriculture, biodiversity, electricity, and natural gas); actions that can be taken at the regional, national, and international levels to mitigate the adverse effects of climate change; and today's outlook on future conditions.

Assembly Bill 32. In furtherance of the goals established in Executive Order S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. The GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020.

CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMT CO_2E. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for the large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit CO_2 in excess of specified thresholds.

On December 11, 2008, CARB approved the *Climate Change Proposed Scoping Plan: A Framework for Change* (Scoping Plan; CARB 2008) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and CAT early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program.

The key elements of the Scoping Plan include the following:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewables energy mix of 33%
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the LCFS
- Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

Executive Order S-1-07. Issued on January 18, 2007, Executive Order S-1-07 sets a declining LCFS for GHG emissions measured in CO_2E grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources, such as algae, wood, and agricultural waste. In addition, the LCFS would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The LCFS is anticipated to lead to the replacement of 20% of the fuel used in motor vehicles with alternative fuels by 2020.

Senate Bill 375. In August 2008, the legislature passed, and on September 30, 2008, Governor Schwarzenegger signed SB 375 (Steinberg), which addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. Regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, as determined by CARB, are required to consider the emission reductions associated with vehicle emission standards (see SB 1493), the composition of fuels (see Executive Order S-1-07), and other

CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations will be responsible for preparing a Sustainable Communities Strategy (SCS) within their Regional Transportation Plan (RTP). The goal of the SCS is to establish a development plan for the region, which, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If an SCS is unable to achieve the GHG reduction target, a metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for "transit priority projects," as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects are consistent with the SCS or alternative planning strategy. On September 23, 2010, CARB adopted the SB 375 targets for the regional metropolitan planning organizations (MPOs). The targets for the SCAGs are an 8% reduction in emissions per capita by 2020 and a 13% reduction by 2035. Achieving these goals through adoption of a Sustainable Communities Strategy will be the responsibility of the MPOs. SCAG's 2012-2035 RTP/SCS Plan is expected to result in reductions in per capita transportation emissions of 9% by 2020 and 16% reduction by 2035 (SCAG 2013).

8.3 Thresholds of Significance for GHG Emissions

OPR Guidance

The OPR's Technical Advisory titled *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review* states that "public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact" (OPR 2008). Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice" (OPR 2008).

Cumulative Nature of Climate Change

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project in the SCAB, such as this project, would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change.

While the project would result in emissions of GHGs during construction and maintenance, no guidance exists to indicate what level of GHG emissions would be considered substantial enough to result in a significant adverse impact on global climate. However, it is generally believed that an individual project is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory as scientific uncertainty regarding the significance a project's individual and cumulative effects on global climate change remains.

Thus, GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA 2008). This approach is consistent with that recommended by the CNRA, which noted in its Public Notice for the proposed CEQA amendments that the evidence before it indicates that in most cases, the impact of GHG emissions should be considered in the context of a cumulative impact, rather than a project-level impact (CNRA 2009a). Similarly, the *Final Statement of Reasons for Regulatory Action on the CEQA Amendments* confirms that an EIR or other environmental document must analyze the incremental contribution of a project to GHG levels and determine whether those emissions are cumulatively considerable (CNRA 2009b). Accordingly, further discussion of the project's GHG emissions and their impact on global climate are addressed below.

CEQA Guidelines

The CNRA adopted amendments to the CEQA Guidelines on December 30, 2009, which became effective on March 18, 2010 (14 CCR 15000 et seq.). With respect to GHG emissions, the amended CEQA Guidelines state in Section 15064.4(a) that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15000 et seq.). Section 15064.4(b) provides that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). Similarly, the revisions to Appendix G, Environmental Checklist Form, which is often used as a basis for lead agencies' selection of significance thresholds, do not prescribe specific thresholds. Rather, the CEQA Guidelines establish two new CEQA thresholds related to GHGs and these will therefore be used to discuss significance of project impacts:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Accordingly, the CEQA Guidelines do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA (14 CCR 15000 et seq.).

Status of CARB's Preliminary Draft Staff Proposed Thresholds

In October 2008, CARB presented a Preliminary Draft Staff Proposal with a threshold of 7,000 MT CO_2E per year for operational emissions (excluding transportation-related emissions) from industrial projects (CARB 2008). The threshold of 7,000 MT CO_2E per year was based on a concept of "capturing" 90% of all projects subject to a CEQA review. The Preliminary Draft Staff Proposal also considered the use of performance standards for construction of industrial projects to determine the significance of potential impacts. For a project to be considered to have a less-than-significant impact, it must achieve the performance standards and have GHG emissions less than the numerical threshold, which was to be determined. To date, CARB has not adopted this threshold or proposed alternative thresholds.

Status of Proposed SCAQMD Thresholds

The SCAQMD has not adopted recommended numeric CEQA significance thresholds for GHG emissions for lead agencies to use in assessing GHG impacts of residential and commercial development projects. In October 2008, SCAQMD presented to the Governing Board the *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold* (SCAQMD 2008b). The guidance document was not adopted or approved by the Governing Board. This document, which builds on the previous guidance prepared by CAPCOA (discussed previously), explored various approaches for establishing a significance threshold for GHG emissions. Among the concepts discussed, the document considered a "de minimis," or screening, threshold to "identify small projects that would not likely contribute to significant cumulative GHG impacts" (SCAQMD 2008b). As further explained in this document, "Projects with GHG emissions less than the screening level are considered to be small projects, that is, they would not likely be considered cumulatively considerable" (SCAQMD 2008b). The SCAQMD formed a GHG CEQA Significance Threshold Working Group to work with SCAQMD staff on developing GHG CEQA significance thresholds until statewide significance thresholds or guidelines are established. The SCAQMD proposed three tiers of compliance that may lead to a determination that impacts are less than significant, including the following:

1. Projects with GHGs within budgets set out in approved regional plans to be developed under the SB 375 process
2. Projects with GHG emissions that are below designated quantitative thresholds:
   a. Industrial projects with an incremental GHG emissions increase that falls below (or is mitigated to be less than) 10,000 MT CO_2E per year
   b. Commercial and residential projects with an incremental GHG emissions increase that falls below (or is mitigated to be less than) 3,000 MT CO_2E per year, provided that such projects also meet energy efficiency and water conservation performance targets that have yet to be developed
3. Projects that purchase GHG offsets that, either alone or in combination with one of the three tiers mentioned above, achieve the target significance screening level.

From December 2008 to September 2010, the SCAQMD hosted working group meetings and revised the draft threshold proposal several times, although it did not officially provide these proposals in a subsequent document. The most recent working group meeting on September 28, 2010 (SCAQMD 2010), proposed two options lead agencies can select from to screen thresholds of significance for GHG emissions in residential and commercial projects, and proposes to expand the industrial threshold to other lead agency industrial projects. Option 1 proposes a threshold of 3,000 MT CO_2E per year for all residential and commercial projects and Option 2 proposes a threshold value by land use type where the numeric threshold is 3,500 MT CO_2E per year for residential projects, 1,400 MT CO_2E per year for commercial projects, and 3,000 MT CO_2E per year for mixed-use projects (SCAQMD 2010). The

SCAQMD has not considered thresholds for institutional projects such as this project. Further, the SCAQMD has not formally adopted these thresholds mentioned above. Therefore, the City has concluded that there are no numeric emission-based thresholds by which the City could evaluate whether the project emissions would exceed a threshold of significance as indicated in Section 15064.4(b)(2) of the CEQA Guidelines.

CAPCOA CEQA and Climate Change Evaluated Thresholds

CAPCOA published a white paper in January 2008 evaluating and addressing GHG emissions from projects subject to CEQA. The CAPCOA CEQA & Climate Change "white paper" is intended as a resource and not a guidance document. The white paper studied non-zero quantitative thresholds, which were based on capture of 90 percent or more of likely future discretionary developments. The objective of the CAPCOA white paper was to set the emission threshold low enough to capture a substantial fraction of future residential and non-residential development that will be constructed to accommodate future statewide population and job growth, while setting the emission threshold high enough to exclude small development projects that would contribute a relatively small fraction of the cumulative statewide GHG emissions. A significance threshold of 900 MT CO_2E per year, which was the lowest non-zero threshold evaluated, was based on an analysis that included data from four diverse cities (Los Angeles, Pleasanton, Dublin, and Livermore). This threshold would apply to industrial, residential, and commercial projects, but it is noted that any adoption of such a threshold would require further investigation. The CAPCOA document also looked at other possible thresholds, including zero thresholds, CARB GHG reporting thresholds, and efficiency-based thresholds, among others. For purposes of this assessment, a threshold of 900 MT CO_2E is used to evaluate the significance of the project's GHG emissions during construction. As stated in Section 1.3 (Project Description) and Section 7.3 (Air Quality - Maintenance Emissions), the project would involve minor activity for maintenance of the project. Accordingly, GHG emissions from maintenance activities were not evaluated quantitatively in this assessment.

8.4 Construction Emissions

Construction of the project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road hauling and vendor trucks, and worker vehicles. The SCAQMD has not proposed or adopted relevant quantitative GHG thresholds for construction-generated emissions. Nonetheless, GHG emissions generated during construction of the project are included in this assessment for disclosure purposes.

CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 1.3 (Project Description). The GHG emissions are expressed in units of metric tons of carbon dioxide equivalent (MT CO_2E).[3] On-site sources of GHG emissions include off-road equipment and off-site sources including hauling and vendor trucks and worker vehicles. Table 15, Phase 1 – North Norco Channel Estimated Annual Construction Greenhouse Gas Emissions, presents construction emissions for Phase 1 of the project in 2015 and 2016, and Table 16, Phase 2 - Norco Line N-2, Line NC, and Lateral NC-1, presents construction emissions for Phase 2 of the project in 2016 and 2017 from on-site and off-site emission sources.

Table 15
Phase 1 – North Norco Channel
Estimated Annual Construction Greenhouse Gas Emissions

Year	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
2015 – Utility Trenching	4	0.00	0.00	4
2015 – Construction	179	0.03	0.00	180
2016	180	0.03	0.00	180
Total	**363**	**0.06**	**0.00**	**364**

Notes: See Appendix B for complete results.
MT CO_2 – metric tons carbon dioxide; MT CH_4 – metric tons methane
MT N_2O – metric tons nitrous oxide; MT CO_2E – metric tons carbon dioxide equivalent

Table 16
Phase 2 - Norco Line N-2, Line NC, and Lateral NC-1
Estimated Annual Construction Greenhouse Gas Emissions

Year	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
2016 – Utility Trenching	6	0.00	0.00	6
2016 – Construction	65	0.01	0.00	65
2017	116	0.02	0.00	117
Total	**187**	**0.03**	**0.00**	**188**

Notes: See Appendix B for complete results.
MT CO2 – metric tons carbon dioxide; MT CH4 – metric tons methane
MT N2O – metric tons nitrous oxide; MT CO2E – metric tons carbon dioxide equivalent

3 The CO_2 equivalent for a gas is derived by multiplying the mass of the gas by the associated global warming potential (GWP), such that $MTCO_2E$ = (metric tons of a GHG) x (GWP of the GHG). For example, the GWP for CH_4 is 21. This means that emissions of 1 metric ton of methane are equivalent to emissions of 21 metric tons of CO_2.

As shown in Tables 15 and 16, the estimated total GHG emissions during construction of both Phase 1 and Phase 2 would be approximately 184 MT CO_2E in 2015, 251 MT CO_2E in 2016, and 117 MT CO_2E in 2017, for a total of 552 MT CO_2E during project construction.

Project-generated annual GHG emissions are anticipated to be well below the annual threshold value of 900 MT CO_2E evaluated by CAPCOA. While the CAPCOA threshold has not been adopted by CARB, SCAQMD, or other air quality agencies, it is the lowest non-zero GHG significance threshold that has been evaluated in California. Project-generated annual construction GHG emissions would also be below the 7,000 MT CO_2E per year threshold considered by CARB for operation of industrial projects and the draft 10,000 MT CO_2E per year threshold proposed by SCAQMD for industrial projects. As of the date that this report was prepared, the State of California, the SCAQMD, and the District have yet to adopt screening criteria and/or numeric significance thresholds for GHG emissions.

As with project-generated construction air quality pollutant emissions, GHG emissions generated during construction of the project would be short-term in nature, lasting only for the duration of the construction period, and they would not represent a long-term source of GHG emissions. The projects contribution would not be cumulatively considerable in regards to climate change.

8.5 Maintenance Emissions

Typical maintenance of the channel and laterals is anticipated to include periodic weed control, sediment and debris removal, trees and branches removal, and repair of failed or failing concrete lining, where applicable. These anticipated maintenance activities will typically require use of hand tools and small pieces of equipment. As these activities would be less intensive than the construction scenario analyzed (Section 8.4 and Appendix B), which requires use of heavy equipment, maintenance activities are expected to result in less annual GHG emissions. In the event that repair of the channel, laterals, and associated infrastructure is required, repair activities will be similar to the project's construction activities, but will only occur on a localized portion of the drainage system. As such, repair activities would likely result in less GHG emissions compared to the analyzed construction scenario that assumes more intensive construction over larger portions of the project area.

Maintenance will typically occur as needed and is expected to occur no more than two times per year and potential repair activities will be temporary. Maintenance and potential repair of the drainage system would not result in a substantial source of long-term GHG operational emissions. In addition, the project will not require additional employees to maintain the channel and laterals; therefore, there will be no additional routine vehicular traffic or associated mobile source emissions. Accordingly, GHG emissions generated by project maintenance activities would be less than significant.

8.6 Conflict with an Applicable Plan, Policy or Regulation

The Climate Change Scoping Plan, approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Moreover, the Final Statement of Reasons for the amendments to the CEQA Guidelines reiterates the statement in the Initial Statement of Reasons that "[t]he Scoping Plan may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009b). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., LCFS), among others. While state regulatory measures will ultimately reduce GHG emissions associated with the project through their effect on these sources, no statewide plan, policy, or regulation would be specifically applicable to reductions in GHG emissions from the project.

Furthermore, neither the District, the City of Norco, nor the SCAQMD have adopted any GHG-reduction measures that would apply to the GHG emissions associated with the project. At this time, no mandatory GHG regulations or finalized agency guidelines would apply to implementation of this project, and no conflict would occur. Therefore, this cumulative impact would be less than significant.

9 SUMMARY AND CONCLUSIONS

The air quality impact analysis evaluates the potential for significant adverse impacts to the ambient air quality due to construction and maintenance emissions resulting from implementation of the project with respect to the SCAQMD numeric thresholds. This impact analysis also evaluates project-generated GHG emissions and the project's cumulative contribution to climate change impacts. Construction of the project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, fugitive dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling excavated earth materials. The analysis concludes that the estimated daily construction emissions would not exceed the SCAQMD's significance thresholds for criteria pollutants. At this time, the SCAQMD and District have yet to adopt screening criteria and/or numeric significance thresholds for GHG emissions for construction or operation. Project-generated annual construction GHG emissions are anticipated to be well below the annual threshold value of 900 MT CO_2E evaluated by CAPCOA and were determined to result in a cumulative impact in terms of climate change that is less than significant. Project-generated annual construction GHG emissions would also be below the 7,000 MT CO_2E per year threshold considered by CARB for operation of industrial projects and the draft 10,000 MT CO_2E per year threshold proposed by SCAQMD for industrial projects.

Maintenance activities will typically occur as needed and is expected to occur no more than two times per year. In addition, the project will not require additional employees to maintain the drainage system; therefore, no additional routine vehicular traffic or associated mobile source emissions would result. Based on the proposed maintenance activities, the project would not generate GHG emissions that would have a significant impact on the environment. At this time, no mandatory GHG regulations or finalized agency guidelines would apply to implementation of this project, and no conflict would occur; therefore, the project would result in cumulative climate change impact that would be less than significant.

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APPENDIX A

CalEEMod Output
Daily Winter and Summer Emissions

RCFCD North Norco Channel Project - North Norco Channel

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	445.00	User Defined Unit	10.20	445,000.00	0
Other Asphalt Surfaces	0.30	Acre	0.30	13,068.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.4 **Precipitation Freq (Days)** 28

Climate Zone 10 **Operational Year** 2016

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 630.89 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Land Use - 5,912 linear feet. 10.2 acres.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	2.5580	33.0338	18.7129	0.0481	1.0766	1.1287	2.2053	0.2672	1.0383	1.3055	0.0000	4,913.7403	4,913.7403	0.7472	0.0000	4,929.4319
2016	2.3904	30.3415	18.0980	0.0481	3.8602	1.1441	4.8890	0.9504	1.0811	1.8969	0.0000	4,852.1545	4,852.1545	0.7441	0.0000	4,867.7802
Total	**4.9484**	**63.3754**	**36.8109**	**0.0962**	**4.9368**	**2.2728**	**7.0942**	**1.2176**	**2.1194**	**3.2024**	**0.0000**	**9,765.8949**	**9,765.8949**	**1.4913**	**0.0000**	**9,797.2121**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	2.5580	33.0338	18.7129	0.0481	0.9832	1.1287	2.1118	0.2564	1.0383	1.2947	0.0000	4,913.7403	4,913.7403	0.7472	0.0000	4,929.4319
2016	2.3904	30.3415	18.0980	0.0481	3.7668	1.1441	4.7955	0.9396	1.0811	1.8861	0.0000	4,852.1545	4,852.1545	0.7441	0.0000	4,867.7802
Total	**4.9484**	**63.3754**	**36.8109**	**0.0962**	**4.7499**	**2.2728**	**6.9074**	**1.1960**	**2.1194**	**3.1807**	**0.0000**	**9,765.8949**	**9,765.8949**	**1.4913**	**0.0000**	**9,797.2121**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**3.78**	**0.00**	**2.63**	**1.78**	**0.00**	**0.68**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/1/2015	9/14/2015	5	10	
2	Grading	Grading	9/15/2015	1/14/2016	5	88	
3	Project Construction	Building Construction	1/15/2016	7/14/2016	5	130	
4	Paving	Paving	7/15/2016	7/28/2016	5	10	

Acres of Grading (Grading Phase): 10.4

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Rubber Tired Loaders	2	8.00	199	0.36
Project Construction	Cranes	1	7.00	226	0.29
Project Construction	Pumps	1	8.00	84	0.74
Project Construction	Rubber Tired Loaders	1	8.00	199	0.36
Project Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Signal Boards	2	8.00	6	0.82
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	30.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	30.00	10.00	2,415.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Project Construction	4	40.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	30.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7208	6.8643	4.8512	6.2300e-003		0.5373	0.5373		0.4943	0.4943		654.9753	654.9753	0.1955		659.0816
Total	**0.7208**	**6.8643**	**4.8512**	**6.2300e-003**	**0.0000**	**0.5373**	**0.5373**	**0.0000**	**0.4943**	**0.4943**		**654.9753**	**654.9753**	**0.1955**		**659.0816**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0561	0.5877	0.6380	1.2600e-003	0.0378	0.0117	0.0494	0.0108	0.0108	0.0215		127.1570	127.1570	9.5000e-004		127.1770
Worker	0.1222	0.1615	1.6357	3.6700e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		315.7304	315.7304	0.0157		316.0604
Total	**0.1783**	**0.7492**	**2.2737**	**4.9300e-003**	**0.3731**	**0.0139**	**0.3870**	**0.0997**	**0.0128**	**0.1125**		**442.8874**	**442.8874**	**0.0167**		**443.2374**

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7208	6.8643	4.8512	6.2300e-003		0.5373	0.5373		0.4943	0.4943	0.0000	654.9753	654.9753	0.1955		659.0816
Total	**0.7208**	**6.8643**	**4.8512**	**6.2300e-003**	**0.0000**	**0.5373**	**0.5373**	**0.0000**	**0.4943**	**0.4943**	**0.0000**	**654.9753**	**654.9753**	**0.1955**		**659.0816**

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0561	0.5877	0.6380	1.2600e-003	0.0378	0.0117	0.0494	0.0108	0.0108	0.0215		127.1570	127.1570	9.5000e-004		127.1770
Worker	0.1222	0.1615	1.6357	3.6700e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		315.7304	315.7304	0.0157		316.0604
Total	**0.1783**	**0.7492**	**2.2737**	**4.9300e-003**	**0.3731**	**0.0139**	**0.3870**	**0.0997**	**0.0128**	**0.1125**		**442.8874**	**442.8874**	**0.0167**		**443.2374**

3.3 Grading - 2015

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.1531	0.0000	0.1531	0.0177	0.0000	0.0177			0.0000			0.0000
Off-Road	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680		2,397.1462	2,397.1462	0.7157		2,412.1748
Total	**1.8580**	**23.2980**	**10.6180**	**0.0228**	**0.1531**	**0.9435**	**1.0966**	**0.0177**	**0.8680**	**0.8857**		**2,397.1462**	**2,397.1462**	**0.7157**		**2,412.1748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4844	8.5949	5.3959	0.0195	0.5252	0.1635	0.6887	0.1425	0.1504	0.2929		1,988.9354	1,988.9354	0.0143		1,989.2351
Vendor	0.0935	0.9794	1.0634	2.0900e-003	0.0629	0.0195	0.0824	0.0180	0.0179	0.0359		211.9283	211.9283	1.5900e-003		211.9616
Worker	0.1222	0.1615	1.6357	3.6700e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		315.7304	315.7304	0.0157		316.0604
Total	**0.7001**	**9.7358**	**8.0949**	**0.0253**	**0.9235**	**0.1852**	**1.1086**	**0.2494**	**0.1703**	**0.4198**		**2,516.5941**	**2,516.5941**	**0.0316**		**2,517.2571**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0597	0.0000	0.0597	6.9200e-003	0.0000	6.9200e-003			0.0000			0.0000
Off-Road	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680	0.0000	2,397.1462	2,397.1462	0.7157		2,412.1748
Total	**1.8580**	**23.2980**	**10.6180**	**0.0228**	**0.0597**	**0.9435**	**1.0032**	**6.9200e-003**	**0.8680**	**0.8749**	**0.0000**	**2,397.1462**	**2,397.1462**	**0.7157**		**2,412.1748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4844	8.5949	5.3959	0.0195	0.5252	0.1635	0.6887	0.1425	0.1504	0.2929		1,988.9354	1,988.9354	0.0143		1,989.2351
Vendor	0.0935	0.9794	1.0634	2.0900e-003	0.0629	0.0195	0.0824	0.0180	0.0179	0.0359		211.9283	211.9283	1.5900e-003		211.9616
Worker	0.1222	0.1615	1.6357	3.6700e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		315.7304	315.7304	0.0157		316.0604
Total	**0.7001**	**9.7358**	**8.0949**	**0.0253**	**0.9235**	**0.1852**	**1.1086**	**0.2494**	**0.1703**	**0.4198**		**2,516.5941**	**2,516.5941**	**0.0316**		**2,517.2571**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1531	0.0000	0.1531	0.0177	0.0000	0.0177			0.0000			0.0000
Off-Road	1.7701	21.7877	10.5264	0.0228		0.8769	0.8769		0.8067	0.8067		2,372.5838	2,372.5838	0.7157		2,387.6126
Total	**1.7701**	**21.7877**	**10.5264**	**0.0228**	**0.1531**	**0.8769**	**1.0300**	**0.0177**	**0.8067**	**0.8245**		**2,372.5838**	**2,372.5838**	**0.7157**		**2,387.6126**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4277	7.5491	5.1065	0.0195	3.3088	0.1334	3.4422	0.8258	0.1227	0.9485		1,965.9230	1,965.9230	0.0126		1,966.1885
Vendor	0.0829	0.8602	0.9991	2.0900e-003	0.0629	0.0164	0.0794	0.0180	0.0151	0.0331		209.4517	209.4517	1.4200e-003		209.4815
Worker	0.1097	0.1446	1.4659	3.6700e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		304.1961	304.1961	0.0144		304.4976
Total	**0.6203**	**8.5539**	**7.5715**	**0.0253**	**3.7070**	**0.1519**	**3.8589**	**0.9327**	**0.1397**	**1.0724**		**2,479.5707**	**2,479.5707**	**0.0284**		**2,480.1676**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0597	0.0000	0.0597	6.9200e-003	0.0000	6.9200e-003			0.0000			0.0000
Off-Road	1.7701	21.7877	10.5264	0.0228		0.8769	0.8769		0.8067	0.8067	0.0000	2,372.5838	2,372.5838	0.7157		2,387.6126
Total	**1.7701**	**21.7877**	**10.5264**	**0.0228**	**0.0597**	**0.8769**	**0.9366**	**6.9200e-003**	**0.8067**	**0.8137**	**0.0000**	**2,372.5838**	**2,372.5838**	**0.7157**		**2,387.6126**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4277	7.5491	5.1065	0.0195	3.3088	0.1334	3.4422	0.8258	0.1227	0.9485		1,965.9230	1,965.9230	0.0126		1,966.1885
Vendor	0.0829	0.8602	0.9991	2.0900e-003	0.0629	0.0164	0.0794	0.0180	0.0151	0.0331		209.4517	209.4517	1.4200e-003		209.4815
Worker	0.1097	0.1446	1.4659	3.6700e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		304.1961	304.1961	0.0144		304.4976
Total	**0.6203**	**8.5539**	**7.5715**	**0.0253**	**3.7070**	**0.1519**	**3.8589**	**0.9327**	**0.1397**	**1.0724**		**2,479.5707**	**2,479.5707**	**0.0284**		**2,480.1676**

3.4 Project Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0937	21.6856	10.4199	0.0204		1.1348	1.1348		1.0725	1.0725		2,055.5814	2,055.5814	0.4924		2,065.9219
Total	**2.0937**	**21.6856**	**10.4199**	**0.0204**		**1.1348**	**1.1348**		**1.0725**	**1.0725**		**2,055.5814**	**2,055.5814**	**0.4924**		**2,065.9219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0332	0.3441	0.3997	8.4000e-004	0.0252	6.5700e-003	0.0317	7.1900e-003	6.0400e-003	0.0132		83.7807	83.7807	5.7000e-004		83.7926
Worker	0.1462	0.1928	1.9546	4.9000e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		405.5948	405.5948	0.0191		405.9968
Total	**0.1794**	**0.5369**	**2.3542**	**5.7400e-003**	**0.4723**	**9.3700e-003**	**0.4816**	**0.1258**	**8.6100e-003**	**0.1344**		**489.3754**	**489.3754**	**0.0197**		**489.7894**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0937	21.6856	10.4199	0.0204		1.1348	1.1348		1.0725	1.0725	0.0000	2,055.5814	2,055.5814	0.4924		2,065.9219
Total	**2.0937**	**21.6856**	**10.4199**	**0.0204**		**1.1348**	**1.1348**		**1.0725**	**1.0725**	**0.0000**	**2,055.5814**	**2,055.5814**	**0.4924**		**2,065.9219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0332	0.3441	0.3997	8.4000e-004	0.0252	6.5700e-003	0.0317	7.1900e-003	6.0400e-003	0.0132		83.7807	83.7807	5.7000e-004		83.7926
Worker	0.1462	0.1928	1.9546	4.9000e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		405.5948	405.5948	0.0191		405.9968
Total	**0.1794**	**0.5369**	**2.3542**	**5.7400e-003**	**0.4723**	**9.3700e-003**	**0.4816**	**0.1258**	**8.6100e-003**	**0.1344**		**489.3754**	**489.3754**	**0.0197**		**489.7894**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1933	11.5997	7.8803	0.0116		0.7320	0.7320		0.6757	0.6757		1,163.8088	1,163.8088	0.3315		1,170.7711
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2719**	**11.5997**	**7.8803**	**0.0116**		**0.7320**	**0.7320**		**0.6757**	**0.6757**		**1,163.8088**	**1,163.8088**	**0.3315**		**1,170.7711**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0332	0.3441	0.3997	8.4000e-004	0.0252	6.5700e-003	0.0317	7.1900e-003	6.0400e-003	0.0132		83.7807	83.7807	5.7000e-004		83.7926
Worker	0.1097	0.1446	1.4659	3.6700e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		304.1961	304.1961	0.0144		304.4976
Total	**0.1428**	**0.4887**	**1.8656**	**4.5100e-003**	**0.3605**	**8.6700e-003**	**0.3692**	**0.0961**	**7.9700e-003**	**0.1041**		**387.9767**	**387.9767**	**0.0149**		**388.2902**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1933	11.5997	7.8803	0.0116		0.7320	0.7320		0.6757	0.6757	0.0000	1,163.8088	1,163.8088	0.3315		1,170.7711
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2719**	**11.5997**	**7.8803**	**0.0116**		**0.7320**	**0.7320**		**0.6757**	**0.6757**	**0.0000**	**1,163.8088**	**1,163.8088**	**0.3315**		**1,170.7711**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0332	0.3441	0.3997	8.4000e-004	0.0252	6.5700e-003	0.0317	7.1900e-003	6.0400e-003	0.0132		83.7807	83.7807	5.7000e-004		83.7926
Worker	0.1097	0.1446	1.4659	3.6700e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		304.1961	304.1961	0.0144		304.4976
Total	**0.1428**	**0.4887**	**1.8656**	**4.5100e-003**	**0.3605**	**8.6700e-003**	**0.3692**	**0.0961**	**7.9700e-003**	**0.1041**		**387.9767**	**387.9767**	**0.0149**		**388.2902**

RCFCD North Norco Channel Project - North Norco Channel

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	445.00	User Defined Unit	10.20	445,000.00	0
Other Asphalt Surfaces	0.30	Acre	0.30	13,068.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - 5,912 linear feet. 10.2 acres.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	2.5391	32.6819	18.3988	0.0485	1.0766	1.1280	2.2045	0.2672	1.0377	1.3049	0.0000	4,950.1993	4,950.1993	0.7470	0.0000	4,965.8856
2016	2.3738	30.0345	17.7489	0.0485	3.8602	1.1441	4.8885	0.9504	1.0810	1.8965	0.0000	4,887.5107	4,887.5107	0.7438	0.0000	4,903.1313
Total	**4.9129**	**62.7165**	**36.1476**	**0.0971**	**4.9368**	**2.2720**	**7.0931**	**1.2176**	**2.1187**	**3.2013**	**0.0000**	**9,837.7100**	**9,837.7100**	**1.4908**	**0.0000**	**9,869.0169**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	2.5391	32.6819	18.3988	0.0485	0.9832	1.1280	2.1111	0.2564	1.0377	1.2940	0.0000	4,950.1993	4,950.1993	0.7470	0.0000	4,965.8856
2016	2.3738	30.0345	17.7489	0.0485	3.7668	1.1441	4.7951	0.9396	1.0810	1.8857	0.0000	4,887.5107	4,887.5107	0.7438	0.0000	4,903.1313
Total	**4.9129**	**62.7165**	**36.1476**	**0.0971**	**4.7499**	**2.2720**	**6.9062**	**1.1960**	**2.1187**	**3.1797**	**0.0000**	**9,837.7100**	**9,837.7100**	**1.4908**	**0.0000**	**9,869.0169**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**3.78**	**0.00**	**2.63**	**1.78**	**0.00**	**0.68**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	9/1/2015	9/14/2015	5	10	
2	Grading	Grading	9/15/2015	1/14/2016	5	88	
3	Project Construction	Building Construction	1/15/2016	7/14/2016	5	130	
4	Paving	Paving	7/15/2016	7/28/2016	5	10	

Acres of Grading (Grading Phase): 10.4

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Rubber Tired Loaders	2	8.00	199	0.36
Project Construction	Cranes	1	7.00	226	0.29
Project Construction	Pumps	1	8.00	84	0.74
Project Construction	Rubber Tired Loaders	1	8.00	199	0.36
Project Construction	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Pavers	1	8.00	125	0.42
Paving	Rollers	1	8.00	80	0.38
Paving	Signal Boards	2	8.00	6	0.82
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	30.00	6.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	30.00	10.00	2,415.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Project Construction	4	40.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	30.00	4.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7208	6.8643	4.8512	6.2300e-003		0.5373	0.5373		0.4943	0.4943		654.9753	654.9753	0.1955		659.0816
Total	**0.7208**	**6.8643**	**4.8512**	**6.2300e-003**	**0.0000**	**0.5373**	**0.5373**	**0.0000**	**0.4943**	**0.4943**		**654.9753**	**654.9753**	**0.1955**		**659.0816**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0527	0.5727	0.5665	1.2600e-003	0.0378	0.0116	0.0493	0.0108	0.0106	0.0214		128.2612	128.2612	9.2000e-004		128.2806
Worker	0.1278	0.1515	1.8933	4.0200e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		345.4594	345.4594	0.0157		345.7894
Total	**0.1804**	**0.7242**	**2.4599**	**5.2800e-003**	**0.3731**	**0.0138**	**0.3868**	**0.0997**	**0.0126**	**0.1124**		**473.7206**	**473.7206**	**0.0166**		**474.0700**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.7208	6.8643	4.8512	6.2300e-003		0.5373	0.5373		0.4943	0.4943	0.0000	654.9753	654.9753	0.1955		659.0816
Total	**0.7208**	**6.8643**	**4.8512**	**6.2300e-003**	**0.0000**	**0.5373**	**0.5373**	**0.0000**	**0.4943**	**0.4943**	**0.0000**	**654.9753**	**654.9753**	**0.1955**		**659.0816**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0527	0.5727	0.5665	1.2600e-003	0.0378	0.0116	0.0493	0.0108	0.0106	0.0214		128.2612	128.2612	9.2000e-004		128.2806
Worker	0.1278	0.1515	1.8933	4.0200e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		345.4594	345.4594	0.0157		345.7894
Total	**0.1804**	**0.7242**	**2.4599**	**5.2800e-003**	**0.3731**	**0.0138**	**0.3868**	**0.0997**	**0.0126**	**0.1124**		**473.7206**	**473.7206**	**0.0166**		**474.0700**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1531	0.0000	0.1531	0.0177	0.0000	0.0177			0.0000			0.0000
Off-Road	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680		2,397.1462	2,397.1462	0.7157		2,412.1748
Total	**1.8580**	**23.2980**	**10.6180**	**0.0228**	**0.1531**	**0.9435**	**1.0966**	**0.0177**	**0.8680**	**0.8857**		**2,397.1462**	**2,397.1462**	**0.7157**		**2,412.1748**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4656	8.2779	4.9432	0.0196	0.5252	0.1630	0.6882	0.1425	0.1499	0.2925		1,993.8251	1,993.8251	0.0141		1,994.1204
Vendor	0.0878	0.9545	0.9442	2.1100e-003	0.0629	0.0193	0.0822	0.0180	0.0177	0.0357		213.7686	213.7686	1.5400e-003		213.8009
Worker	0.1278	0.1515	1.8933	4.0200e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		345.4594	345.4594	0.0157		345.7894
Total	**0.6811**	**9.3840**	**7.7808**	**0.0257**	**0.9235**	**0.1845**	**1.1079**	**0.2494**	**0.1697**	**0.4191**		**2,553.0531**	**2,553.0531**	**0.0313**		**2,553.7108**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0597	0.0000	0.0597	6.9200e-003	0.0000	6.9200e-003			0.0000			0.0000
Off-Road	1.8580	23.2980	10.6180	0.0228		0.9435	0.9435		0.8680	0.8680	0.0000	2,397.1462	2,397.1462	0.7157		2,412.1748
Total	**1.8580**	**23.2980**	**10.6180**	**0.0228**	**0.0597**	**0.9435**	**1.0032**	**6.9200e-003**	**0.8680**	**0.8749**	**0.0000**	**2,397.1462**	**2,397.1462**	**0.7157**		**2,412.1748**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4656	8.2779	4.9432	0.0196	0.5252	0.1630	0.6882	0.1425	0.1499	0.2925		1,993.8251	1,993.8251	0.0141		1,994.1204
Vendor	0.0878	0.9545	0.9442	2.1100e-003	0.0629	0.0193	0.0822	0.0180	0.0177	0.0357		213.7686	213.7686	1.5400e-003		213.8009
Worker	0.1278	0.1515	1.8933	4.0200e-003	0.3353	2.1900e-003	0.3375	0.0889	2.0000e-003	0.0909		345.4594	345.4594	0.0157		345.7894
Total	**0.6811**	**9.3840**	**7.7808**	**0.0257**	**0.9235**	**0.1845**	**1.1079**	**0.2494**	**0.1697**	**0.4191**		**2,553.0531**	**2,553.0531**	**0.0313**		**2,553.7108**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1531	0.0000	0.1531	0.0177	0.0000	0.0177			0.0000			0.0000
Off-Road	1.7701	21.7877	10.5264	0.0228		0.8769	0.8769		0.8067	0.8067		2,372.5838	2,372.5838	0.7157		2,387.6126
Total	**1.7701**	**21.7877**	**10.5264**	**0.0228**	**0.1531**	**0.8769**	**1.0300**	**0.0177**	**0.8067**	**0.8245**		**2,372.5838**	**2,372.5838**	**0.7157**		**2,387.6126**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4110	7.2720	4.6424	0.0195	3.3088	0.1331	3.4419	0.8258	0.1224	0.9482		1,970.7722	1,970.7722	0.0125		1,971.0337
Vendor	0.0778	0.8392	0.8787	2.1000e-003	0.0629	0.0163	0.0792	0.0180	0.0150	0.0330		211.2802	211.2802	1.3700e-003		211.3091
Worker	0.1150	0.1357	1.7013	4.0200e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		332.8745	332.8745	0.0144		333.1760
Total	**0.6037**	**8.2469**	**7.2225**	**0.0257**	**3.7070**	**0.1515**	**3.8585**	**0.9327**	**0.1393**	**1.0720**		**2,514.9269**	**2,514.9269**	**0.0282**		**2,515.5187**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0597	0.0000	0.0597	6.9200e-003	0.0000	6.9200e-003			0.0000			0.0000
Off-Road	1.7701	21.7877	10.5264	0.0228		0.8769	0.8769		0.8067	0.8067	0.0000	2,372.5838	2,372.5838	0.7157		2,387.6126
Total	**1.7701**	**21.7877**	**10.5264**	**0.0228**	**0.0597**	**0.8769**	**0.9366**	**6.9200e-003**	**0.8067**	**0.8137**	**0.0000**	**2,372.5838**	**2,372.5838**	**0.7157**		**2,387.6126**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.4110	7.2720	4.6424	0.0195	3.3088	0.1331	3.4419	0.8258	0.1224	0.9482		1,970.7722	1,970.7722	0.0125		1,971.0337
Vendor	0.0778	0.8392	0.8787	2.1000e-003	0.0629	0.0163	0.0792	0.0180	0.0150	0.0330		211.2802	211.2802	1.3700e-003		211.3091
Worker	0.1150	0.1357	1.7013	4.0200e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		332.8745	332.8745	0.0144		333.1760
Total	**0.6037**	**8.2469**	**7.2225**	**0.0257**	**3.7070**	**0.1515**	**3.8585**	**0.9327**	**0.1393**	**1.0720**		**2,514.9269**	**2,514.9269**	**0.0282**		**2,515.5187**

3.4 Project Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0937	21.6856	10.4199	0.0204		1.1348	1.1348		1.0725	1.0725		2,055.5814	2,055.5814	0.4924		2,065.9219
Total	**2.0937**	**21.6856**	**10.4199**	**0.0204**		**1.1348**	**1.1348**		**1.0725**	**1.0725**		**2,055.5814**	**2,055.5814**	**0.4924**		**2,065.9219**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0311	0.3357	0.3515	8.4000e-004	0.0252	6.5200e-003	0.0317	7.1900e-003	5.9900e-003	0.0132		84.5121	84.5121	5.5000e-004		84.5236
Worker	0.1533	0.1810	2.2684	5.3700e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		443.8327	443.8327	0.0191		444.2347
Total	**0.1844**	**0.5166**	**2.6199**	**6.2100e-003**	**0.4723**	**9.3200e-003**	**0.4816**	**0.1258**	**8.5600e-003**	**0.1343**		**528.3447**	**528.3447**	**0.0197**		**528.7583**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0937	21.6856	10.4199	0.0204		1.1348	1.1348		1.0725	1.0725	0.0000	2,055.5814	2,055.5814	0.4924		2,065.9219
Total	**2.0937**	**21.6856**	**10.4199**	**0.0204**		**1.1348**	**1.1348**		**1.0725**	**1.0725**	**0.0000**	**2,055.5814**	**2,055.5814**	**0.4924**		**2,065.9219**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0311	0.3357	0.3515	8.4000e-004	0.0252	6.5200e-003	0.0317	7.1900e-003	5.9900e-003	0.0132		84.5121	84.5121	5.5000e-004		84.5236
Worker	0.1533	0.1810	2.2684	5.3700e-003	0.4471	2.8000e-003	0.4499	0.1186	2.5700e-003	0.1211		443.8327	443.8327	0.0191		444.2347
Total	**0.1844**	**0.5166**	**2.6199**	**6.2100e-003**	**0.4723**	**9.3200e-003**	**0.4816**	**0.1258**	**8.5600e-003**	**0.1343**		**528.3447**	**528.3447**	**0.0197**		**528.7583**

3.5 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1933	11.5997	7.8803	0.0116		0.7320	0.7320		0.6757	0.6757		1,163.8088	1,163.8088	0.3315		1,170.7711
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2719**	**11.5997**	**7.8803**	**0.0116**		**0.7320**	**0.7320**		**0.6757**	**0.6757**		**1,163.8088**	**1,163.8088**	**0.3315**		**1,170.7711**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0311	0.3357	0.3515	8.4000e-004	0.0252	6.5200e-003	0.0317	7.1900e-003	5.9900e-003	0.0132		84.5121	84.5121	5.5000e-004		84.5236
Worker	0.1150	0.1357	1.7013	4.0200e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		332.8745	332.8745	0.0144		333.1760
Total	**0.1461**	**0.4714**	**2.0528**	**4.8600e-003**	**0.3605**	**8.6200e-003**	**0.3691**	**0.0961**	**7.9200e-003**	**0.1040**		**417.3866**	**417.3866**	**0.0149**		**417.6996**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1933	11.5997	7.8803	0.0116		0.7320	0.7320		0.6757	0.6757	0.0000	1,163.8088	1,163.8088	0.3315		1,170.7711
Paving	0.0786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2719**	**11.5997**	**7.8803**	**0.0116**		**0.7320**	**0.7320**		**0.6757**	**0.6757**	**0.0000**	**1,163.8088**	**1,163.8088**	**0.3315**		**1,170.7711**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0311	0.3357	0.3515	8.4000e-004	0.0252	6.5200e-003	0.0317	7.1900e-003	5.9900e-003	0.0132		84.5121	84.5121	5.5000e-004		84.5236
Worker	0.1150	0.1357	1.7013	4.0200e-003	0.3353	2.1000e-003	0.3374	0.0889	1.9300e-003	0.0909		332.8745	332.8745	0.0144		333.1760
Total	**0.1461**	**0.4714**	**2.0528**	**4.8600e-003**	**0.3605**	**8.6200e-003**	**0.3691**	**0.0961**	**7.9200e-003**	**0.1040**		**417.3866**	**417.3866**	**0.0149**		**417.6996**

RCFCD North Norco Channel Project - Phase 1 Utility Relocation

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	307.00	User Defined Unit	0.10	307.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Estimated total utility length: 307 feet

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	0.4126	3.8315	3.0592	4.4300e-003	0.0699	0.2756	0.3455	0.0191	0.2536	0.2726	0.0000	453.0287	453.0287	0.1001	0.0000	455.1308
Total	**0.4126**	**3.8315**	**3.0592**	**4.4300e-003**	**0.0699**	**0.2756**	**0.3455**	**0.0191**	**0.2536**	**0.2726**	**0.0000**	**453.0287**	**453.0287**	**0.1001**	**0.0000**	**455.1308**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	0.4126	3.8315	3.0592	4.4300e-003	0.0699	0.2756	0.3455	0.0191	0.2536	0.2726	0.0000	453.0287	453.0287	0.1001	0.0000	455.1308
Total	**0.4126**	**3.8315**	**3.0592**	**4.4300e-003**	**0.0699**	**0.2756**	**0.3455**	**0.0191**	**0.2536**	**0.2726**	**0.0000**	**453.0287**	**453.0287**	**0.1001**	**0.0000**	**455.1308**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**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**