APPENDIX B

Air Quality and Greenhouse Gas Analysis
SRA 2013

iLanco Environmental, LLC 2019

Air Quality Analysis

for the

Avalon Blvd. and Fries Street Segments Closure Project

Prepared By:

Scientific Resources Associated
1328 Kaimalino Lane
San Diego, CA 92109

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Glossary of Terms and Acronyms

AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	Best Available Control Measure
BACT	Best Available Control Technology
BMPs	Best Management Practices
CAA	Clean Air Act (Federal)
CAAQS	California Ambient Air Quality Standard
CCAA	California Clean Air Act
CO	Carbon Monoxide
EPA	United States Environmental Protection Agency
mg/m^3	Milligrams per Cubic Meter
$\mu g/m^3$	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standard
NOx	Oxides of Nitrogen
NO_2	Nitrogen Dioxide
O_3	Ozone
$PM_{2.5}$	Fine Particulate Matter (particulate matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}	Respirable Particulate Matter (particulate matter with an aerodynamic diameter of 10 microns or less
ppm	Parts per million
ROG	Reactive Organic Gases
SCAQMD	South Coast Air Quality Management District
SCAB	South Coast Air Basin
SIP	State Implementation Plan
SOx	Oxides of Sulfur
SO_2	Sulfur Dioxide
TACs	Toxic Air Contaminants
VOCs	Volatile Organic Compounds

1.0 Introduction

This report presents an assessment of potential air quality and greenhouse gas impacts associated with the Avalon and Fries Street Segments Closure Project. The project includes the closure of segments of Fries Avenue and Avalon Boulevard. The purpose of the project is to achieve the following objectives:

- Improve rail switching and staging flexibility in serving the West Basin area rail customers
- Reduce congestion on the West Basin Branch single main track, allowing simultaneous moves of unit container trains destined for the Yang Ming and Trapac container terminals.
- Comply with the CPUC General Order 135 rule, which limits crossing blockages due to stopped or switching train cars to 10 minutes.
- Maintain sufficient access and circulation (via private driveways or other means) to adjacent parcels.
- Provide safe and clear segment closure through the use of innovative street closure techniques such as cul-de-sacs and signage designed to slow/re-direct traffic.

The proposed Project includes the following elements:

- Vacate Fries Ave. and Avalon Blvd. between Water Street and "A" Street;
- Install chain link fencing, per City of LA standards **[**standard plan S-691-0 with fabric 2 inch mesh**];**
- Install signage and striping to effectively close access to the vacated portions of Fries Ave. and Avalon Blvd. and re-route traffic accordingly;
- Install a gate on the north side of the rail line along Fries over 13 feet from the existing rail and 26 feet from new rail, thereby meeting AREMA (railroad clearance) standards;
- Provide a southerly gate that is anticipated to be used infrequently and/or for emergency purposes only;
- Provide primary access to the Port Archives Building from the north gate (near A St.);
- Provide additional crossing protection including signing and striping, crossing arms, and lights, at an existing "At Grade" crossing at the completed private road into "Wallenius Wilhemsen Logistics" (WWL);
- Close Fries Street at A Street on the north side and Water Street on the south side. Road improvements include the construction of curb and gutter, sidewalk, fencing and two driveways with the majority of Fries Street to remain in place. Perform minor grading

and paving to join existing conditions at each location. Remove one mature tree on north Fries Street to construct closure. Maintain access to the Port Archive Building, as well as emergency vehicle access, as private with a secure gate;

- Construct a cul-de-sac on Avalon Boulevard with a minimum radius of 35 feet. Per the standard plan, a 50 feet radius is preferred, however; due to right-of-way constraints, only 35 feet can be accommodated. A radius of 35 feet was used on Fries for the “elbow” closure (See Figure 2-3);
- Construct a cul-de-sac on the north and south side of the track crossings to close off the street to vehicular and pedestrian traffic. The cul-de-sac is designed per City of Los Angeles standard plan and is large enough to accommodate emergency vehicle access;
- Remove a large Palm tree immediately north of the existing tracks;
- Remove and replace (in kind) a portion of the fencing along the DWP property line;
- Remove and/or relocate two DWP power poles, one streetlight, and one fire hydrant on Avalon Blvd. Also, perform minor grading and paving on Avalon Blvd.;
- Change the Harry Bridges/N. Access Road intersection configuration to provide dual left turn lanes in the westbound direction; and
- Provide dual right turn lanes southbound at the intersection of Viaduct/N. Access Road.

The following sections of the report provide a summary of existing conditions in the project area, a regulatory review, and a discussion of potential impacts to air quality and greenhouse gases from the Project.

2.0 Existing Conditions

The segments of Avalon and Fries Streets that are proposed for closure are currently used as access to the TraPac container terminal and other Port terminals. Due to operational changes associated with train assembly that have occurred since the 2007 TraPac Approved Project, it may not be possible to meet the requirement to comply with CPUC General Order 135, which limits grade crossing blockages due to stopped or switching train cars to 10 minutes. For this reason, the Port of Los Angeles proposes to close segments of two streets to public vehicular circulation:

- Fries Avenue between A Street and Pier A Street (closing two grade crossings and approximately 1,337 feet of street to the public); and
- Avalon Boulevard between south of Broad Avenue and south of the existing grade crossing (closing one grade crossing and approximately 438 feet of street to the public).
- The currently planned lane configuration at two new intersections along the South Wilmington Grade Separation will be modified slightly, resulting in a second westbound left-turn lane from Harry Bridges Boulevard onto the North Access Road and a second southbound right-turn lane from the North Access Road toward the relocated TraPac gate.

The project site is located in the Harbor District of the City of Los Angeles (LAHD), within the South Coast Air Basin (SCAB). The SCAB consists of the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties and all of Orange County. The SCAB covers an area of approximately 6,000 square miles and is bounded on the west by the Pacific Ocean; on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains; and on the south by the San Diego County line. The following section provides information about the existing air quality regulatory framework, climate and meteorology, air pollutants and sources, and sensitive receptors in the project area.

2.1 Regulatory Framework

2.1.1 Federal Regulations

Air quality is defined by ambient air concentrations of specific pollutants identified by the United States Environmental Protection Agency (EPA) to be of concern with respect to health and welfare of the general public. The EPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the EPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the EPA established both primary and secondary standards for seven pollutants (called "criteria" pollutants). The seven pollutants regulated under the NAAQS are as follows: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), respirable particulate matter (or particulate matter with an aerodynamic diameter of 10 microns or less, PM_{10}), fine particulate matter (or particulate matter with an aerodynamic diameter of 2.5 microns or less, $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. Areas that do not meet the NAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. The South Coast Air Basin (SCAB) is classified as an extreme nonattainment area for the 8-hour NAAQS for O_3, and a nonattainment area for the NAAQS for $PM_{2.5}$. The SCAB is also designated as a maintenance area for the NAAQS for CO and PM_{10}. The Los Angeles County portion of the SCAB has recently been classified as a maintenance area for the NAAQS for NO_2 and lead.

The following specific descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on EPA (EPA 2007a) and the California Air Resources Board (ARB) (ARB 2005).

Ozone. O_3 is considered a photochemical oxidant, which is a chemical that is formed when volatile organic compounds (VOCs) and oxides of nitrogen (NOx), both by-products of combustion, react in the presence of ultraviolet light. O_3 is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to O_3.

Carbon Monoxide. CO is a product of combustion, and the main source of CO in the SDAB is from motor vehicle exhaust. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease, and can also affect mental alertness and vision.

Nitrogen Dioxide. NO_2 is also a by-product of fuel combustion, and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO_2 is a respiratory irritant and may affect those with existing respiratory illness, including asthma. NO_2 can also increase the risk of respiratory illness.

Respirable Particulate Matter and Fine Particulate Matter. Respirable particulate matter, or PM_{10}, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or $PM_{2.5}$, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations and windblown dust. PM_{10} and $PM_{2.5}$ can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. $PM_{2.5}$ is considered to have the potential to lodge deeper in the lungs.

Sulfur dioxide. SO_2 is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO_2 are found near large industrial sources. SO_2 is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO_2 can cause respiratory illness and aggravate existing cardiovascular disease.

Lead. Pb in the atmosphere occurs as particulate matter. Pb has historically been emitted from vehicles combusting leaded gasoline, as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Pb has the potential to cause gastrointestinal, central nervous system, kidney and blood diseases upon prolonged exposure. Pb is also classified as a probable human carcinogen.

Volatile Organic Compounds. While the EPA has not set ambient air quality standards for volatile organic compounds (VOCs), VOCs are considered ozone precursors as they react in the atmosphere to form O_3. Accordingly, VOCs are regulated through limitations on VOC emissions from solvents, paints, processes, and other sources.

Hazardous Air Pollutants. Also referred to as toxic air contaminants (TACs), HAPs are pollutants that are known or suspected to result in adverse health effects upon exposure through inhalation or other exposure routes. HAPs from stationary sources are regulated through the federal National Emission Standards for Hazardous Air Pollutants (NESHAPS) program. HAPs from mobile sources such as vehicles and off-road equipment are regulated through emission standards implemented by the EPA and/or state regulatory agencies.

2.1.2 State and Local Regulations

California Clean Air Act. The California Clean Air Act was signed into law on September 30, 1988, and became effective on January 1, 1989. The Act requires that local air districts implement regulations to reduce emissions from mobile sources through the adoption and enforcement of transportation control measures. The California Clean Air Act required the SDAB to achieve a five percent annual reduction in ozone precursor emissions from 1987 until the standards are attained. If this reduction cannot be achieved, all feasible control measures must be implemented. Furthermore, the California Clean Air Act required local air districts to implement a Best Available Control Technology rule and to require emission offsets for nonattainment pollutants.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain air quality in the state. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the California Ambient Air Quality Standards (CAAQS). The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The ARB has established the more stringent CAAQS for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. The SCAB is also considered a nonattainment area for the CAAQS for O_3, $PM_{2.5}$, and PM_{10}. The area is considered unclassified or attainment for all other NAAQS and CAAQS for the other criteria pollutants.

The following specific descriptions of health effects for the additional California criteria air pollutants are based on the ARB (ARB 2007).

Sulfates. Sulfates are the fully oxidized ionic form of sulfur. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO_2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The ARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

Hydrogen Sulfide. H_2S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. Breathing H_2S at levels above the standard would result in exposure to a very disagreeable odor. In 1984, an ARB committee concluded that the ambient standard for H_2S is adequate to protect public health and to significantly reduce odor annoyance.

Vinyl Chloride. Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants and hazardous waste sites, due to microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer, in humans.

Visibility Reducing Particles. Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt. The CAAQS is intended to limit the frequency and severity of visibility impairment due to regional haze. A separate standard for visibility-reducing particles that is applicable only in the Lake Tahoe Air Basin is based on reduction in scenic quality.

Table 1 presents a summary of the ambient air quality standards adopted by the federal and California Clean Air Acts.

Table 1 **Ambient Air Quality Standards**							
POLLUTANT	**AVERAGE TIME**	**CALIFORNIA STANDARDS**		**NATIONAL STANDARDS**			
		Concentration	**Measurement Method**	**Primary**	**Secondary**	**Measurement Method**	
Ozone (O_3)	1 hour	0.09 ppm (180 μg/m^3)	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence	
	8 hour	0.070 ppm (137 μg/m^3)		0.075 ppm (147 μg/m^3)	0.075 ppm (147 μg/m^3)		
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m^3)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Spectroscopy (NDIR)	
	1 hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)			
Nitrogen Dioxide (NO_2)	Annual Average	0.030 ppm (56 μg/m^3)	Gas Phase Chemiluminescence	0.053 ppm (100 μg/m^3)	0.053 ppm (100 μg/m^3)	Gas Phase Chemiluminescence	
	1 hour	0.18 ppm (338 μg/m^3)		0.100 ppm (188 μg/m^3)	--		
Sulfur Dioxide (SO_2)	24 hours	0.04 ppm (105 μg/m^3)	Ultraviolet Fluorescence	--	--	Pararosaniline	
	3 hours	--		--	0.5 ppm (1300 μg/m^3)		
	1 hour	0.25 ppm (655 μg/m^3)		75 ppb (196 μg/m^3)	--		
Respirable Particulate Matter (PM_{10})	24 hours	50 μg/m^3	Gravimetric or Beta Attenuation	150 μg/m^3	150 μg/m^3	Inertial Separation and Gravimetric Analysis	
	Annual Arithmetic Mean	20 μg/m^3		--	--		
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 μg/m^3	Gravimetric or Beta Attenuation	12 μg/m^3	15 μg/m^3	Inertial Separation and Gravimetric Analysis	
	24 hours	--		35 μg/m^3	35 μg/m^3		
Sulfates	24 hours	25 μg/m^3	Ion Chromatography	--	--	--	
Lead (Pb)	30-day Average	1.5 μg/m^3	Atomic Absorption	--	--	Atomic Absorption	
	Calendar Quarter	--		1.5 μg/m^3	1.5 μg/m^3		
	3-month Rolling Average	--		0.15 μg/m^3	0.15 μg/m^3		
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 μg/m^3)	Ultraviolet Fluorescence	--	--	--	
Vinyl Chloride	24 hours	0.010 ppm (26 μg/m^3)	Gas Chromatography	--	--	--	

ppm= parts per million
μg/m^3 = micrograms per cubic meter
mg/m^3= milligrams per cubic meter
Source: California Air Resources Board 2013

The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The South Coast Air Quality Management District (SCAQMD) is the local agency responsible for the administration and enforcement of air quality regulations for the SCAB.

The SCAQMD and the Southern California Association of Governments (SCAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SCAB. The most recently adopted air quality plan in the SCAB is the 2012 Air Quality Management Plan (AQMP), which was adopted by the Board on December 7, 2012.

On November 20, 2006, the governing boards of the Ports of Los Angeles and Long Beach voted to approve the landmark San Pedro Bay Ports Clean Air Action Plan (CAAP) (POLA and POLB 2006), which sets forth the Port's comprehensive strategy to cut air pollution and reduce health risks. The CAAP includes programs designed to reduce air emissions from sources operating within the Ports. The most recent version of the CAAP was adopted in 2010 (POLA and POLB 2010). The sources associated with the proposed Project that would be subject to specific CAAP requirements would be construction sources. In the 2006 CAAP, the ports committed to develop Best Management Practices (BMPs) for port-related construction activity. To meet this commitment, the Port of Los Angeles adopted its "Sustainable Construction Guidelines for Reducing Air Emissions." These BMPs will be evaluated on a project-specific basis and applicable practices will be incorporated into construction project contracts. The BMPs to which the Project will be subject include the following:

- All on-road heavy-duty trucks must meet the requirements of the Clean Truck Program.
- Off-road construction equipment must meet Tier 2 standards in the period prior to 12/31/2011, Tier 3 standards in the period between 1/1/2012 to 12/31/2014, and shall meet Tier 4 standards after 1/1/2015.
- As applicable, off-road construction equipment shall be equipped with a CARB-verified Level 3 diesel emission control system.
- Construction equipment idling is limited to five minutes when not in use.

- Full compliance with SCAQMD Rule 403, Fugitive Dust, including an approved Control Plan is required.

Toxic Air Contaminants. In 1983, the California Legislature enacted a program to identify the health effects of Toxic Air Contaminants (TACs) and to reduce exposure to these contaminants to protect the public health (AB 1807: Health and Safety Code sections 39650-39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

The State of California has identified diesel particulate matter as a TAC. Diesel particulate matter is emitted from on- and off-road vehicles that utilize diesel as fuel. Following identification of diesel particulate matter as a TAC in 1998, the ARB has worked on developing strategies and regulations aimed at reducing the emissions and associated risk from diesel particulate matter. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter from Diesel-Fueled Engines and Vehicles* (State of California 2000). A stated goal of the plan is to reduce the cancer risk statewide arising from exposure to diesel particulate matter by 75 percent by 2010 and by 85 percent by 2020. The CAAP has also adopted a goal of reducing the population-rated cancer risk of ports-related diesel particulate matter emissions by 85% in highly-impacted communities located proximate to port sources and throughout the residential areas in the Port region.

As an ongoing process, the ARB reviews air contaminants and identifies those that are classified as TACs. The ARB also continues to establish new programs and regulations for the control of TACs, including diesel particulate matter, as appropriate.

2.2 Regional Climate and Meteorology

The climate of the SCAB is classified as Mediterranean, characterized by warm, rainless summers and mild, wet winters. The major influence on the regional climate is the Eastern Pacific High, a strong persistent area of high atmospheric pressure over the Pacific Ocean. The climate is also influenced by the topography of the SCAB and the moderating effects of the

Pacific Ocean. Seasonal variations in the position and strength of the High are a key factor in the weather changes in the area.

The Eastern Pacific High attains its greatest strength and most northerly position during the summer, when it is centered west of northern California. In this location, this high effectively shelters Southern California from the effects of polar storm systems. Large-scale atmospheric subsidence associated with the high produces an elevated temperature inversion along the West Coast. The base of this subsidence inversion is generally 1,000 to 2,500 feet above mean sea level during the summer. Vertical mixing is often limited to the base of the inversion and air pollutants are trapped in the lower atmosphere. The mountain ranges that surround the SCAB constrain the horizontal movement of air and also inhibit the dispersion of air pollutants out of the region. These two factors, combined with the air pollution sources from more than 15 million people, businesses, and industries, are responsible for the high pollutant conditions that can occur in the SCAB. In addition, high solar radiation during the warmer months promotes the formation of ozone (O_3), which has its highest concentration levels during the summer season.

The proximity of the Eastern Pacific High and a thermal low-pressure system in the desert interior to the east produce a sea breeze regime that prevails within the Project region for most of the year, particularly during the spring and summer months. Sea breezes at the Port typically increase during the morning hours from the southerly direction. They reach a peak in the afternoon as they blow from the southwest and then generally subside after sundown. During the warmest months of the year, however, sea breezes could persist well into the nighttime hours. Conversely, during the colder months of the year, northerly land breezes increase by sunset and into the evening hours. Sea breezes transport air pollutants away from the coast and toward the interior regions in the afternoon hours for most of the year.

During the fall and winter months, the Eastern Pacific High can combine with high pressure over the continent to produce light winds and extended inversion conditions in the region. These stagnant atmospheric conditions often result in elevated pollutant concentrations in the SCAB. Excessive buildup of high pressure in the desert interior can produce a "Santa Ana" condition, characterized by warm, dry, northeast winds in the basin and offshore regions. Santa Ana winds often help clear the SCAB of air pollutants. As winter approaches, the Eastern Pacific High begins to weaken and shift to the south, allowing storm systems to pass through the region. The number of days with precipitation varies substantially from year to year, which produces a wide range of variability in annual precipitation totals.

Locally, the Palos Verdes Hills have a major influence on wind flow in the San Pedro Bay (SCAQMD 1977). For example, during afternoon southwest sea breeze conditions, the Palos Verdes Hills often block this flow and create a zone of lighter winds in the inner harbor area of the Port. During strong sea breezes, this flow can bend around the north side of the Palos Verdes Hills and end up as a northwest breeze in the inner harbor area. This topographic feature also deflects northeasterly land breezes that flow from the coastal plains to a more northerly direction through the Port.

2.3 Criteria Pollutants and Ambient Air Monitoring

Air quality at a given location can be characterized by the concentration of various pollutants in the air. Units of concentration are generally expressed as parts per million by volume (ppmv) or micrograms per cubic meter ($\mu g/m^3$). The SCAQMD maintains a network of air quality monitoring stations throughout the SCAB, which measure ambient concentrations of criteria air pollutants.

The nearest SCAQMD air monitoring station to the Project site is the North Long Beach Monitoring Station, which is located at 3648 Long Beach Boulevard, approximately 4.5 miles northeast of the Project site. Data from this station are used to describe the air quality of the Project region, as it is the closest station and has the longest period of record of measured ambient air quality conditions. Table 2 provides a summary of air quality monitoring data collected in North Long Beach. The data indicate that exceedances of the NAAQS for O_3 and $PM_{2.5}$ standards have been recorded at the North Long Beach monitoring station, and exceedances of the CAAQS for O_3, $PM_{2.5}$, and PM_{10} have been recorded.

Table 2 Ambient Background Concentrations (ppm unless otherwise indicated)								
Pollutant	**Averaging Time**	**2008**	**2009**	**2010**	**2011**	**2012**	**National Ambient Air Quality Standard**	**California Ambient Air Quality Standard**
Ozone	8 hour	0.074	0.067	0.084	0.062	0.067	0.075	0.070
	1 hour	0.093	0.089	0.101	0.073	0.084	NA	0.09
PM_{10}	Annual	27.6 μg/m³	20.4 μg/m³	22.0 μg/m³	24.2 μg/m³	23.2 μg/m³	NA	20 μg/m³
	24 hour	61.0 μg/m³	62.0 μg/m³	44.0 μg/m³	43.0 μg/m³	45.0 μg/m³	150 μg/m³	50 μg/m³
$PM_{2.5}$	Annual	14.1 μg/m³	12.8 μg/m³	10.3 μg/m³	11.3 μg/m³	10.6 μg/m³	12 μg/m³	12 μg/m³
	24 hour	57.2 μg/m³	63.0 μg/m³	35 μg/m³	39.7 μg/m³	49.8 μg/m³	35 μg/m³	35 μg/m³
NO_2	Annual	0.021	0.0212	0.020	0.0177	0.0208	0.053	0.030
	1 hour	0.125	0.111	0.0928	0.1064	0.0772	0.100	0.188
CO	8 hour	2.49	2.17	2.08	2.56	2.17	9	9.0
	1 hour	3	3	3	NA	NA		
SO_2	24 hour	0.012	0.005	0.006	NA	NA	NA	0.04
	1 hour	0.09	0.02	0.040	0.0148	0.0222	0.075	0.25
Sulfates	24-hour	11.0 μg/m³	13.6 μg/m³	11.8 μg/m³	6.1 μg/m³	NA	NA	25 μg/m³

N/A = Not Available
[1]New CAAQS proposed by ARB
[2]Secondary NAAQS
Source: www.arb.ca.gov/aqd/aqd.htm, http://www.aqmd.gov/smog/historicaldata.htm

The POLA has been conducting its own air quality monitoring program since February 2005. The main objective of the program is to estimate ambient levels of DPM near the Port. The secondary objective of the program is to estimate ambient particulate matter levels within adjacent communities due to Port emissions. To achieve these objectives, the program measures ambient concentrations of PM_{10}, $PM_{2.5}$, and elemental carbon $PM_{2.5}$ (which indicates fossil fuel combustion sources) at four locations in the Port vicinity (POLA 2013). The station locations are:

- Wilmington Station – Located at the Saints Peter and Paul School. This station measures aged urban emissions during offshore flows and a combination of marine aerosols (salt spray from the ocean that typically consists of sodium chloride [table salt] and other salts and organic matter), aged urban emissions (man-made and naturally occurring airborn particulates that have been in the atmosphere long enough to have undergone some chemical reaction or accumulation with other airborne compounds or particles), and fresh emissions from Port operations during onshore flows. This station also provides information on the relative strengths of these source combinations. Meteorological data are also collected at this monitoring station.

- Coastal Boundary Station – Located at Berth 47 in the Port Outer Harbor. This station measures aged urban and Port emissions and marine aerosols during onshore flows and aged urban emissions and fresh Port emissions during offshore flows. Meteorological data are also collected at this monitoring station.
- Source-Dominated Station – Located at the Terminal Island Water Reclamation Plant. This site is surrounded by three terminals and has a potential to receive emissions from off-road equipment, on-road trucks, and rail. During onshore flows, this station measures marine aerosols and fresh emissions from several nearby diesel-fired sources (trucks, trains, and ships). During offshore flows, this station measures aged urban emissions and port emissions.
- San Pedro Station – Located at the Liberty Hill Plaza Building, adjacent to the Port administrative property on Palos Verdes Street. This location is near the western edge of the Port operational emission sources and adjacent to residential areas in San Pedro. During onshore flows, aged urban emissions, marine aerosols, and fresh Port emission shave the potential to affect this site. During nighttime offshore flows, this site measures aged urban emissions and Port emissions.

The Port has been collecting particulate data since 2005. In addition, in 2008 the Port began collecting and transmitting real-time data for ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, PM_{10} and $PM_{2.5}$, polycyclic aromatic hydrocarbons (PAHs), and ultrafine particles to a publicly-accessible, real-time air monitoring website.

2.4 Toxic Air Contaminants

TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). TACs include air pollutants that can produce adverse human health effects, including carcinogenic effects, after short-term (acute) or long-term (chronic) exposure. Examples of TAC sources within the SCAB include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources.

The SCAQMD estimates in the Multiple Air Toxics Exposure Study III (MATES-III) (SCAQMD 2008a) that about 84 percent of the background airborne cancer risk in the SCAB is due to PM emissions from diesel-powered on- and off-road motor vehicles. The highest modeled air toxics risk was near the Ports. In addition to the Ports, areas of elevated risk were found near Central Los Angeles and near transportation corridors and freeways. Compared to the MATES II study, the MATES III study found a decrease in carcinogenic risk, with the population-weighted risk down by 8 percent from the analysis in MATES II.

As discussed in Section 2.1, the Port of Los Angeles, in conjunction with the Port of Long Beach, developed the San Pedro Bays CAAP, which proposes to reduce the risks associated with diesel particulate matter emissions from the Ports by 85 percent from 2005 levels. Through 2012, the Port had achieved actual reductions of 79 percent for diesel particulate matter, 77 percent for $PM_{2.5}$, 79 percent for PM_{10}, 56 percent for NOx, and 88 percent for SOx, relative to 2005.

2.5 Secondary $PM_{2.5}$ Formation

Primary particles are emitted directly into the atmosphere by fossil fuel combustion sources, wind-blown soil and dust, and sea spray. Secondary $PM_{2.5}$ forms in the atmosphere by complex reactions of precursor emissions of gaseous pollutants such as NO_x, sulfurous oxides (SO_x), VOC, and ammonia (SCAQMD 2008c). Secondary $PM_{2.5}$ includes sulfates, nitrates, and complex carbon compounds. Project-generated emissions of NOx, SOx, and VOCs would contribute to secondary $PM_{2.5}$ formation some distance downwind of the emission sources. Since it is difficult to predict secondary $PM_{2.5}$ formation from an individual project, the air quality analysis in this Air Quality Analysis focuses on the effects of direct $PM_{2.5}$ emissions. This approach is consistent with the recommendations of the SCAQMD (SCAQMD 2008c).

2.6 Ultrafine Particles

Although USEPA and the State of California currently monitor and regulate PM_{10} and $PM_{2.5}$, research is being done on ultrafine particles (UFP), which are particles classified as less than 0.1 micron in diameter. UFPs are usually formed during combustion, independent of fuel type. When diesel fuel is used, UFPs can be formed directly from fuel combustion. With gasoline and natural gas, UFPs are formed mostly from the burning of lubricant oils. UFPs are emitted directl from the tailpipe as solid particles and semi-volatile particles that coagulate to form particles.

The research regarding UFPs suggests UFPs might be more dangerous to human health than the larger PM_{10} and $PM_{2.5}$ particles (termed fine particles) due to size and shape. Because of their smaller size, UFPs are able to travel more deeply into the lung and into the alveoli, and may be deposited in the deep lung regions more efficiently than fine particles. UFPs are insert; therefore, normal bodily defenses do not recognize the particle. UFPs may have the ability to travel across cell layers and enter into the bloodstream and/or individual cells. Recent studies have found that exposure to UFPs may pose a risk to cardiovascular health, and may be a risk factor for heart arrhythmias (University of California, Los Angeles 2010).

The University of Southern California (USC), in collaboration with CARB and the California Environmental Protection Agency (Cal/EPA) released a study in April 2011 investigating UFP concentrations within communities in Los Angeles, including the port area of San Pedro and Long Beach (USC 2011). The study found that UFP concentrations vary significantly near the Ports and therefore substantiated concerns about the applicability of using centrally-located UFP concentrations for estimating population exposures.

Additional UFP research primarily involved roadway exposure. The Port began collecting UFP data at its four air quality monitoring stations in 2007 and early 2008. The Port actively participates in the CARB testing and will comply with all future regulations regarding UFPs. It should be noted that measures adopted within the CAAP to reduce emissions will also reduce UFP emissions.

2.7 Atmospheric Deposition

The fallout of air pollutants to the surface of the Earth is known as atmospheric deposition. Atmospheric deposition occurs in both wet and dry forms. Wet deposition occurs in the form of precipitation or cloud water and is associated with the conversion in the atmosphere of directly emitted pollutants into secondary pollutants such as acids. Dry deposition occurs in the form of directly emitted pollutants or the conversion of gaseous pollutants into secondary PM. Atmospheric deposition can produce watershed acidification, aquatic toxic pollutant loading, deforestation, damage to building materials, and respiratory problems.

ARB and the California Water Resources Control Board are in the process of examining the need to regulate atmospheric deposition for the purpose of protecting both fresh and salt water bodies from pollution. Port emissions deposit into both local waterways and regional land areas. Through its Clean Air Action Plan (CAAP), the Port will reduce air pollutants from its future operations, which will help achieve the goal of reducing atmospheric deposition for purposes of water quality protection. The CAAP will reduce air pollutants that generate both acidic and toxic compounds, including emissions of NO_x, SO_x, and DPM.

2.8 Sensitive Receptors

The impact of air emissions on sensitive members of the population is a special concern. Sensitive receptor groups include children and infants, pregnant women, older adults, and the acutely and chronically ill. According to SCAQMD guidance, sensitive receptor locations include schools, hospitals, convalescent homes, day care centers, and other locations where children, chronically ill individuals, or other sensitive persons could be exposed. In addition, this analysis includes residents as sensitive receptors.

The nearest sensitive receptors to the Project site include residents in Wilmington, San Pedro, and on-board liveaboard vessels within public marinas at the Port. In addition, the area includes schools, day care centers, and hospitals in San Pedro, Wilmington and Harbor City.

2.9 Greenhouse Gases and Climate Change

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). GHGs are emitted by natural processes and human activities. Examples of GHGs that are produced both by natural processes and industry include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons [HFCs] and perfluorocarbons [PFCs]), as well as sulfur hexafluoride (SF_6).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural GHGs, the earth's surface would be about 61 degrees Fahrenheit (°F) colder (AEP 2007). However, emissions from fossil fuel combustion for activities such as electricity production and vehicular transportation have elevated the concentration of GHGs in the atmosphere above natural levels. According to the Intergovernmental Panel on Climate Change (IPCC), the atmospheric concentration of CO_2 in 2005 was 379 parts per million (ppm) versus pre-industrial levels of 280 ppm (IPCC 2007). Recent data collected indicates that global CO_2 levels in 2013 are approximately 393 ppm (ESRL 2013).

There appears to be a close relationship between the increased concentration of GHGs in the atmosphere and global temperatures. For example, the California Climate Change Center reports that, by the end of this century, average global surface temperatures could rise by 4.7 to 10.5°F due to increased GHG emissions. Scientific evidence indicates a trend of increasing global temperatures near the Earth's surface over the past century due to increased human-induced levels of GHGs.

GHGs differ from criteria pollutants in that GHG emissions do not cause direct adverse human health effects. Rather, the direct environmental effect of GHG emissions is the increase in global temperatures, which in turn has numerous indirect effects on the environment and humans. For example, some observed changes include shrinking glaciers, thawing permafrost, later freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, and earlier flowering of trees (IPCC 2001). Other, longer term environmental impacts of global warming may include SLR, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems, including the potential loss of species, and a significant reduction in winter snowpack. For example, estimates include a 30 to 90 percent reduction in snow pack in the Sierra Nevada mountain range. Current data suggest that in the next 25 years, in every season of the year, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. More specifically, the California Climate Change Center (2006) predicted that California could witness the following events:

- Temperature rises from 3 to 10.5°F
- 6 to 20 inches or more rise in sea level
- 2 to 4 times as many heat-wave days in major urban centers
- 2 to 6 times as many heat-related deaths in major urban centers
- 1 to 1.5 times more critically dry years
- Losses to mountaintop snow packs and water supply (e.g., according to the California Climate Change Center, Sierra snow pack could be reduced by as much as 20 to 40 percent by 2100)
- 25 to 85 percent increase in days conducive to ozone formation
- 3 to 20 percent increase in electricity demand
- 10 to 55 percent increase in the risk of wildfires

3.0 Thresholds of Significance

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

1. Conflict with or obstruct 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 non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone 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 State CEQA Guidelines provides guidance that a project would have a significant GHG impact if it would:

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

To date, the City of Los Angeles has not established a threshold to determine whether project-specific emissions of GHGs would have a significant impact on the environment. The SCAQMD has adopted an interim CEQA significance threshold of 10,000 metric tons per year of CO_2e for industrial projects where SCAQMD is the lead agency (SCAQMD 2008b). For the purpose of this IS/MND, this analysis used the SCAQMD GHG threshold identified above to evaluate proposed project GHG emissions under CEQA (SCAQMD 2011). Consistent with SCAQMD guidelines, construction emissions for the proposed project are amortized over the life of the project (defined as 30 years), added to operational annual emissions, and then compared to this threshold (SCAQMD 2008b). If estimated GHG emissions remain below this threshold, they would be expected to produce less than significant impacts to GHG levels.

The SCAQMD has developed CEQA Significance Thresholds for criteria pollutants, air toxics, and greenhouse gases (SCAQMD 2011). Table 3 presents the SCAQMD's thresholds.

Table 3
Air Quality Significance Thresholds

Pollutant	Construction	Operation
Criteria Pollutants Mass Daily Thresholds		
NO_x	100 lbs/day	55 lbs/day
ROG	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
TAC, AHM, and Odor Thresholds		
Toxic Air Contaminants (TACs)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 Metric tons/year CO_2e for industrial facilities	
Ambient Air Quality for Criteria Pollutants		
NO_2 1-hour NO_2 annual	0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour PM_{10} annual average	10.4 $\mu g/m^3$ (construction) and 2.5 $\mu g/m^3$ (operations) 1.0 $\mu g/m^3$	
$PM_{2.5}$ 24-hour	10.4 $\mu g/m^3$ (construction) and 2.5 $\mu g/m^3$ (operations)	
SO_2 24-hour SO_2 annual average	0.25 ppm (state) and 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 $\mu g/m^3$	
CO 1-hour average CO 8-hour average	20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day average Lead rolling 3-month average Lead quarterly average	1.5 $\mu g/m^3$ 0.15 $\mu g/m^3$ 1.5 $\mu g/m^3$	

$\mu g/m^3$ = microgram per cubic meter; pphm = parts per hundred million; mg/m^3 = milligram per cubic meter; ppm = parts per million; TAC = toxic air contaminant; GHG = greenhouse gases; CO_2e = CO_2-equivalent

With regard to evaluating whether a project would have a significant impact on sensitive receptors, air quality regulators typically define sensitive receptors as schools (Preschool-12th Grade), hospitals, resident care facilities, or day-care centers, residences, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. Any project which has the potential to directly impact a sensitive receptor located within 1 mile and results in a health risk greater than 10 in 1 million would be deemed to have a potentially significant impact. Impacts to sensitive receptors may also occur due to exposure to CO and particulate matter.

The impacts associated with construction and operation of the project were evaluated for significance based on these significance criteria.

4.0 Impacts

This section presents an evaluation of impacts associated with construction and operations for the Avalon and Fries Street Segments Closure Project. The analysis follows the CEQA significance thresholds and the thresholds established by the SCAQMD as discussed in Section 3.0.

4.1 Consistency with Applicable Air Quality Plan

Would the project conflict with or obstruct implementation of the applicable air quality plan?

The project is located within the South Coast Air Basin (SCAB), which includes Orange County and portions of Los Angeles, Riverside, and San Bernardino Counties. Due to the combined air pollution sources within the SCAB and meteorological and geographical effects that limit dispersion of air pollution, the SCAB can experience high air pollutant concentrations. The SCAB is currently classified as an extreme nonattainment area for the 8-hour national ambient air quality standard (NAAQS) for ozone (O_3), and a nonattainment area for the NAAQS for particulate matter less than 2.5 microns ($PM_{2.5}$). On June 12, 2013, the U.S. EPA redesignated the SCAB as a maintenance area for the NAAQS for particulate matter less than 10 microns (PM_{10}). The SCAB is also classified as a maintenance area for the NAAQS for carbon monoxide (CO). The SCAB is also classified as a nonattainment area for the California ambient air quality standards (CAAQS) for O_3, $PM_{2.5}$, and PM_{10}.

Within the SCAB, the SCAQMD is responsible for the development and implementation of air quality plans and programs. Air quality plans describe air pollution control strategies to be implemented within the SCAB designed to attain and maintain the NAAQS and CAAQS in accordance with the requirements of the federal and California Clean Air Acts. The SCAQMD and the Southern California Association of Governments (SCAG) prepared the Air Quality Management Plan (AQMP). The most recent AQMP was adopted on December 7, 2012. The 2012 AQMP proposes emission reduction strategies and provides a demonstration that the SCAB will attain the federal $PM_{2.5}$ standard in 2014 with implementation of all feasible control strategies. The AQMP also includes specific additional control measures to implement the ozone strategy within the 2007 AQMP that are designed to achieve attainment of the 8-hour NAAQS by 2023. The additional measures are also designed to demonstrate attainment of the revoked 1-hour O3 NAAQS, which is required by the U.S. EPA.

The LAHD provides input to SCAQMD and SCAG regarding its projected mobile source emissions. The Project would not result in changes to the projections provided by the LAHD for input to the AQMP as it would not result in any additional vehicle trips. Rather, the project is designed to reduce congestion and idling time. The project would therefore not conflict with the AQMP.

To summarize the proposed project would not conflict with or obstruct implementation of the AQMP.

4.2 Air Quality Impacts

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

4.2.1 Construction Impacts

The SCAQMD has developed both regional significance thresholds and Localized Significance Thresholds (LSTs) (SCAQMD 2008c), which are designed to assist CEQA lead agencies in analyzing localized air quality impacts from proposed projects. LSTs were developed based on a calculation of the maximum emissions from a project that would not cause or contribute to a violation of the most stringent applicable federal or state ambient air quality standard. Accordingly, the LSTs were derived based on the ambient concentration of pollutant versus distance to receptor for each source-receptor area within the SCAB. LSTs have been developed for NOx, CO, and particulate matter (PM_{10} and $PM_{2.5}$). The SCAQMD has developed LST look-up tables that apply to projects with an area of five acres or less. Based on the site size and locations where construction activities would take place, it is estimated that the disturbed construction area would be approximately 1 acre. The LST look-up tables are therefore appropriate to evaluate ambient air quality impacts from the proposed project construction activities. For each phase of construction, air emissions from proposed construction activities mainly would occur from mobile off-road construction equipment and fugitive dust within the project area. The LST look-up tables for a 1-acre project size with a receptor distance of 25 meters (82 feet) were used to evaluate potential ambient air quality impacts. Table 4 presents the LSTs for the source-receptor area for the project.

Table 4
SCAQMD Air Quality Localized Significance Thresholds

Localized Significance Threshold, lbs/day[a]					
		PM_{10}		$PM_{2.5}$	
NOx	**CO**	**Construction**	**Operation**	**Construction**	**Operation**
57	585	4	1	3	1

[a]Based on 5-acre site, 25-meter receptor distance

Construction emissions are short-term and temporary in duration. Construction emissions are associated with the following activities required for the closure of Avalon Blvd. and Fries Ave.:

- Vacate Fries Ave. and Avalon Blvd. between Water Street and "A" Street;
- Install chain link fencing, per City of LA standards **[**standard plan S-691-0 with fabric 2 inch mesh**];**
- Install signage and striping to effectively close access to the vacated portions of Fries Ave. and Avalon Blvd. and re-route traffic accordingly;
- Install a gate on the north side of the rail line along Fries over 13 feet from the existing rail and 26 feet from new rail, thereby meeting AREMA (railroad clearance) standards;
- Provide a southerly gate that is anticipated to be used infrequently and/or for emergency purposes only;
- Provide primary access to the Port Archives Building from the north gate (near A St.);
- Provide additional crossing protection including signing and striping, crossing arms, and lights, at an existing "At Grade" crossing at the completed private road into "Wallenius Wilhemsen Logistics" (WWL);
- Close Fries Street at A Street on the north side and Water Street on the south side. Road improvements include the construction of curb and gutter, sidewalk, fencing and two

driveways with the majority of Fries Street to remain in place. Perform minor grading and paving to join existing conditions at each location. Remove one mature tree on north Fries Street to construct closure. Maintain access to the Port Archive Building, as well as emergency vehicle access, as private with a secure gate;

- Construct a cul-de-sac on Avalon Boulevard with a minimum radius of 35 feet. Per the standard plan, a 50 feet radius is preferred, however; due to right-of-way constraints, only 35 feet can be accommodated. A radius of 35 feet was used on Fries for the "elbow" closure (See Figure 2-3);
- Construct a cul-de-sac on the north and south side of the track crossings to close off the street to vehicular and pedestrian traffic. The cul-de-sac is designed per City of Los Angeles standard plan and is large enough to accommodate emergency vehicle access;
- Remove a large Palm tree immediately north of the existing tracks;
- Remove and replace (in kind) a portion of the fencing along the DWP property line;
- Remove and/or relocate two DWP power poles, one streetlight, and one fire hydrant on Avalon Blvd. Also, perform minor grading and paving on Avalon Blvd.;
- Change the Harry Bridges/N. Access Road intersection configuration to provide dual left turn lanes in the westbound direction; and
- Provide dual right turn lanes southbound at the intersection of Viaduct/N. Access Road.

The main construction phases and their duration include the following:

1. Mobilization (concurrently with DWP Relocations) – 30 days
2. Demolition – 5 days
3. Civil Improvements – 30 days
4. DWP-PS and DWP-WS Relocations – 6 months

During this time period rail improvements associated with other Port activities would occur simultaneously with the Project. Rail improvement emissions have not been addressed in this analysis.

Construction activities, including demolition; construction of sidewalk, curb, and gutter; fencing; and landscaping would be conducted in a single construction phase commencing in 2015. Construction was assumed to be performed six days per week (Monday through Saturday) with no construction occurring on Sundays or national holidays. In general, construction would occur from 6:00 am to between 4:00 and 6:00 pm. Construction equipment was assumed to include concrete saws, heavy-duty trucks, excavators, backhoe/loaders, welders, pavers, and paving equipment. The project would follow the *Sustainable Construction Guidelines* prepared by the LAHD for reducing air emissions from all LAHD-sponsored construction projects (LAHD 2009). In addition, construction would be subject to the requirements of the CAAP. For the purpose of this analysis, it was assumed that all construction equipment would meet Tier 4 standards as required under the BMPs adopted in the CAAP.

Emissions associated with construction activities and vehicles were calculated using the CalEEMod Model, Version 2013.2.2. The model includes the latest emission factors for offroad equipment and on-road vehicles using the ARB's OFFROAD model and EMFAC2011 model. The CalEEMod Model outputs are provided in Attachment A. Table 5 provides a summary of the emissions associated with project construction. As shown in Table 5, the peak daily emissions generated by project construction would not exceed any of the LST thresholds, nor would they exceed the SCAQMD daily significance thresholds. Accordingly, the proposed project construction would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, and impacts would be less than significant. No mitigation is required.

Table 5 Daily Emissions from Construction of the Proposed Project						
	Peak Daily Emissions, lbs/day					
Construction Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Mobilization	0.4407	6.4662	12.1569	0.02045	0.5211	0.2003
Demolition	0.6985	11.6794	20.5771	0.03158	0.3735	0.1882
Civil Improvements	0.8878	19.7845	28.068	0.04215	0.7535	0.4587
DWP-PS and DWP-WS	0.8711	17.2681	24.5234	0.03911	0.8046	0.4688
Peak Daily Emissions[a]	**0.8877**	**19.7846**	**28.0680**	**0.0421**	**0.8046**	**0.4688**
Localized Significance Threshold	NA	57	585	NA	4	3
SCAQMD Daily Significance Threshold	75	100	550	150	150	55

[a]Peak daily emissions calculated within CalEEMod as the maximum daily emissions, considering simultaneous construction activities.

4.2.2 Operational Impacts

As part of other projects, the Port is proposing to upgrade and construct additional mainline rail tracks serving rail customers within the West basin are of the Port of Los Angeles. In addition, rail operational changes are also proposed to improve the efficiency in which TraPac and other Port rail customers are served. These changes in rail operations would result in greater train switching and staging delays across Fries Avenue and Avalon Boulevard than were anticipated in the 2007 Approved TraPac Project Final EIS/EIR (Port of Los Angeles 2007). To improve rail operational efficiency in serving Port terminal customers and reduce rail congestion along the West Basin Branch mainline track, the following mainline rail improvements have been proposed:

- Two additional mainline tracks and associated track connections are proposed to be constructed across Avalon Boulevard to improve rail switching and staging flexibility in serving the West Basin area rail customers.
- POLA and Pacific Harbor Line (PHL), the Port’s short line rail operator, plan to improve the operational efficiency of providing rail access to the new TraPac on-dock rail yard. The improved operating plan involves priority staging of arriving and departing trains along the direct lead track into the terminal, which crosses Fries Ave. and Avalon Blvd. at-grade, as opposed to the current plan of staging the trains along the west leg of the Pier

A Wye track. This will reduce congestion on the West Basin Branch single main track, allowing simultaneous moves of unit container trains destined for the Yang Ming and TraPac container terminals. In order to accomplish this and not violate the CPUC General Order 135 rule, Fries Ave., and Avalon Blvd. would need to be vacated between Water Street and "A" Street. Vehicular and truck access along the vacated streets would be re-routed to the newly constructed South Wilmington Grade Separation, located west of Fries Ave.

The South Wilmington Grade Separation will provide grade-separated vehicular access to all facilities south of Harry Bridges Boulevard from a heavily utilized rail line. Fries Avenue is an important north-south commercial street within the Port of Los Angeles complex. This grade separation project will eliminate the conflict between vehicular traffic and two existing at-grade railroad crossings. It will provide unimpeded grade-separated vehicular access to the South Wilmington area which is made up of many businesses and community areas, including TraPac Container Terminal, Wilmington Liquid Bulk, Pasha Terminal, Shell Oil Co., Borax Co., GATX, Union Oil, Banning's Landing Community Center and Wilmington Waterfront Park. Currently, slow moving trains block all access to South Wilmington, including emergency vehicle access from Fire and Police Departments. In addition, this grade separation will eliminate truck queues on surrounding streets and nearby freeway off-ramps.

The *Traffic Study for the Trapac Supplemental EIR* (Fehr & Peers 2013) evaluated potential impacts to traffic associated with the closure of Avalon Blvd. and Fries Street. The study analyzed existing conditions, Cumulative 2017 conditions and Cumulative 2038 conditions without the project, and Cumulative 2017 conditions and Cumulative 2038 conditions with the project. The study evaluated the impact of the project on three existing intersections and seven existing and future intersections in the study area for morning, midday, and afternoon conditions. Based on the analysis, the project would not result in significant impacts on traffic, and would reduce the delay at Harry Bridges Blvd. and Broad Avenue, Harry Bridges Blvd. and Fries Avenue, and the North Access Road and Harry Bridges Blvd. As stated in the study, the project would not generate new traffic on the surrounding streets, but would result in localized shifts of the traffic that is forecast to be present with or without the project. Accordingly, the project would not result in localized air pollutant impacts from CO (i.e., CO "hot spots"), nor would the project increase traffic and therefore increase operational emissions from traffic in the study area.

Because the project would alleviate train switching and delays and would also eliminate truck queues that could otherwise result due to blockages from rail operations, the project would reduce future emissions associated with train idling truck queuing. The Project itself would not affect trip generation rates for the projects in the vicinity, and therefore, the Project would not result in an increase in operational emissions. Accordingly, the proposed project operations would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, and impacts would be less than significant. No mitigation is required.

4.3 Cumulatively Considerable Impacts

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

As discussed in Section 2, NAAQS and CAAQS have been established for the following criteria pollutants: CO, O_3, SO_2, NO_2, PM_{10}, $PM_{2.5}$, and lead. Areas are classified under the federal Clean Air Act and the California Clean Air Act as attainment, non-attainment, or maintenance (previously non-attainment and currently attainment) for each criteria pollutant based on whether the NAAQS and/or CAAQS have been attained.

4.3.1 Construction Impacts

The proposed project site is located in the Los Angeles County portion of the SCAB. Los Angeles County is designated as a federal and state nonattainment area for O_3 and $PM_{2.5}$. The project area is also classified as a maintenance area for CO, PM_{10}, and NO_2, and an attainment area for SO_2 and lead. The SCAB is classified as a nonattainment area for the CAAQS for PM_{10}. The SCAQMD cumulative analysis focuses on whether a specific project would result in cumulatively considerable emissions. Per CEQA Guidelines Section 15064(h)(4), the existence of significance cumulative impacts caused by other projects alone will not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

As discussed in Section 4.2.1, construction of the proposed project would result in the temporary generation of emissions of ozone precursors VOCs and NOx, and emissions of CO, SOx, PM_{10}, and $PM_{2.5}$. Table 5 summarizes the construction emissions results for the construction activities, which are proposed for 2014. Based on the modeling conducted, construction of the proposed project would not result in emissions that exceed the daily emission thresholds. In addition, the proposed project would not result in emissions of CO, NOx, PM_{10}, or $PM_{2.5}$ that exceed the localized emission thresholds established by the SCAQMD. As discussed in Section 4.2.1, no mitigation is required.

Construction of the project will be subject to the best management practices (BMPs) established by the LAHD in the *Sustainable Construction Guidelines* (LAHD 2009), and the CAAP (POLA and POLB 2010). The BMPs included in these guidance documents are aimed at reducing emissions from on-road and off-road equipment and construction dust. According to these requirements, construction equipment will be required to meet Tier 4 emission standards. In addition, the *Sustainable Construction Guidelines* required that by January 1, 2012, all on-road heavy-duty diesel trucks with a gross vehicle weight of 19,500 pounds or greater used at POLA will comply with EPA 2007 on-road emission standards for PM_{10} and NOx (0.01 g/bhp-hr and at least 1.2 g/bhp-hr, respectively). According to the SCAQMD thresholds, the proposed project construction would not contribute to a cumulatively considerable air quality impact.

4.3.2 Operational Impacts

As discussed in Section 4.2.2, project operations would not increase with implementation of the proposed Project. Because the project would alleviate train switching and delays and would also eliminate truck queues that could otherwise result due to blockages from rail operations, the project would reduce future emissions associated with train idling and truck queuing. The Project itself would not affect trip generation rates for the projects in the vicinity, and therefore, the Project would not result in an increase in operational emissions. Accordingly, the proposed project operations would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, and impacts would be less than significant. No mitigation is required.

As discussed in the Traffic Study (Fehr & Peers 2013), the project would not generate new traffic on the surrounding streets, but would result in localized shifts of the traffic that is forecast to be present with or without the project, and therefore, the Project would not result in an increase in operational emissions. According to the SCAQMD thresholds, the proposed project construction would not contribute to a cumulatively considerable air quality impact.

4.4 Impacts to Sensitive Receptors

Would the project expose sensitive receptors to substantial pollutant concentrations?

For the purpose of a CEQA analysis, the SCAQMD considers a sensitive receptor to be a receptor such as a residence, hospital, school, or convalescent facility where sensitive receptors could be exposed to substantial pollutant concentrations. Commercial and industrial facilities are not included in the definition of sensitive receptors because employees do not remain onsite for a full 24 hours, and are not considered sensitive.

The nearest sensitive receptors to the project site are residential receptors located within the community of Wilmington north of C Street. These residential areas include properties zoned One-Family (R-1) and Restricted Density Multiple Dwelling (RD). The permitted uses include one and two-family dwellings, multiple dwellings, apartments, and park playgrounds or community centers.

Impacts to sensitive receptors are evaluated in terms of the greatest exposure to TACs. Diesel particulate matter is a TAC. Construction-related activities would result in short-term project generated emissions of diesel particulate matter from the exhaust of off-road heavy-duty diesel equipment and on-road heavy-duty trucks required for demolition activities, including pavement removal; paving, materials transport and handling; and other miscellaneous activities. According to SCAQMD methodology, health effects from carcinogenic TACs are usually described in terms of individual cancer risk, which is based on a 70-year lifetime exposure to TACs.

4.4.1 Construction Impacts

The proposed project construction period duration of 12 months would be much lower than the exposure duration of 70 years used to evaluate potential excess cancer risks. The maximum daily emission for diesel particulate matter is less than 1 lb/day during construction activities, as displayed in Table 5. Further, the proposed project would not exceed the SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$. The application of the *Sustainable Construction Guidelines* prepared by LAHD for reducing air emissions from all LAHD-sponsored construction projects (LAHD 2009). The *Sustainable Construction Guidelines* include the use of best management practices (BMPs) aimed at reducing vehicle emissions, construction dust, etc. According to these requirements, construction equipment will be required to meet Tier 4 emission standards. In addition, the *Sustainable Construction Guidelines* required that by January 1, 2012, all on-road heavy-duty diesel trucks with a gross vehicle weight of 19,500 pounds or greater used at POLA will comply with EPA 2007 on-road emission standards for PM_{10} and NOx (0.01 g/bhp-hr and at least 1.2 g/bhp-hr, respectively). According to the SCAQMD thresholds, the proposed project construction would not contribute to a cumulatively considerable air quality impact.

Because the use of off-road heavy-duty diesel equipment would be temporary and with implementation of BMPs required in the *Sustainable Construction Guidelines* and the CAAP, construction-related emissions of TACs would not expose sensitive receptors to substantial emissions of TACs. The impacts would be less than significant.

4.4.2 Operational Impacts

As discussed in the Traffic Study (Fehr & Peers 2013), the project would not generate new traffic on the surrounding streets, but would result in localized shifts of the traffic that is forecast to be present with or without the project, and therefore, the Project would not result in an increase in operational TAC emissions. As discussed in Section 4.2.2, because the project would alleviate train switching and delays and would also eliminate truck queues that could otherwise result due to blockages from rail operations, the project would reduce future TAC emissions associated with train idling and truck queuing. Accordingly, the proposed project operations would not expose sensitive receptors to substantial pollutant concentrations, and impacts would be less than significant. No mitigation is required.

4.5 Odors

Would the project create objectionable odors affecting a substantial number of people?

The SCAQMD identifies land uses associated with odor complaints, including agricultural operations, wastewater treatment plants, food processing plants, chemical plants, composting operations, refineries, landfills, dairies, and fiberglass molding plants.

4.5.1 Construction Impacts

Project construction could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. These compounds would be emitted in various amounts and at various locations during construction. Odors are highest near the source and would quickly dissipate offsite; any odors associated with construction would be temporary. As discussed in Section 4.4, the nearest sensitive receptors are the residences located to the north of the project site in the community of Wilmington.

Due to the temporary nature of construction odors and the anticipated dissipation of odors offsite. Odors from these sources would be localized and generally confined to the immediate area where construction equipment is operating. Impacts during construction would be less than significant.

4.5.2 Operational Impacts

As discussed in the Traffic Study (Fehr & Peers 2013), the project would not generate new traffic on the surrounding streets, but would result in localized shifts of the traffic that is forecast to be present with or without the project. The project is not an odor source as defined by the SCAQMD. Therefore, the Project would not result in a significant odor impact from operations. Impacts are less than significant and no mitigation is required.

4.6 Greenhouse Gas Emissions

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

As discussed in Section 3.0, the GHG emission threshold used for this analysis is the 10,000 metric ton threshold proposed by the SCAQMD.

4.6.1 Construction Impacts

GHG emissions associated with construction activities and vehicles were calculated using the CalEEMod Model, Version 2013.2.2. As discussed in Section 4.1.1, the CalEEMod model includes the latest emission factors for offroad equipment and on-road vehicles using the ARB's OFFROAD model and EMFAC2011 model. The CalEEMod Model outputs are provided in Attachment A. Table 6 provides a summary of the total GHG emissions associated with project construction. As shown in Table 6, the total GHG emissions are well below the SCAQMD's significance threshold. Furthermore, because the SCAQMD recommends amortizing construction emissions over a 30-year period to account for their contribution to operational impacts from GHGs, the impacts from construction would be negligible. Accordingly, the proposed project construction would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. No mitigation is required.

Table 6 Total GHG Emissions from Construction of the Proposed Project				
	Total Emissions, metric tons			
Construction Activity	**CO_2**	**CH_4**	**N_2O**	**CO_2e**
Mobilization	23.57	0.01	0.00	23.69
Demolition	8.69	0.00	0.00	8.73
Civil Improvements	49.24	0.01	0.00	49.51
DWP-PS and DWP-WS	265.99	0.07	0.00	267.44
Total GHG Emissions	**347.49**	**0.09**	**0.00**	**349.37**
SCAQMD Significance Threshold	10,000 metric tons/year			

4.6.2 Operational Impacts

As discussed in the Traffic Study (Fehr & Peers 2013), the project would not generate new traffic on the surrounding streets, but would result in localized shifts of the traffic that is forecast to be present with or without the project. Therefore, the Project would not result in an increase in operational GHG emissions. As discussed in Section 4.2.2, because the project would alleviate train switching and delays and would also eliminate truck queues that could otherwise result due to blockages from rail operations, the project would reduce future GHG emissions associated with train idling and truck queuing. Accordingly, the proposed project operation would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. No mitigation is required.

4.6 Consistency with Greenhouse Gas Plans, Policies, and Regulations

Would the project conflict with applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The applicable plans, policies, and regulations include the requirements of Assembly Bill (AB) 32, first signed by Governor Arnold Schwarzenegger in 2006; the Green LA Plan, which presents a citywide framework for confronting global climate change to create a cleaner, greener, sustainable Los Angeles; and the Port's Climate Action Plan.

4.6.1 Construction Impacts

Statewide GHG emissions must adhere to the requirements of Assembly Bill (AB) 32, first signed by Governor Arnold Schwarzenegger in 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions.

AB 32 directed the California Air Resources Board (ARB) to develop a Scoping Plan, which is the state's plan to achieve the GHG reductions required by AB 32. The Scoping Plan was approved by ARB on December 11, 2008, and was updated in August 2011. A draft update to the Scoping Plan was released on October 1, 2013.

The *Climate Change AB 32 Scoping Plan* includes measures that would indirectly address GHG emission levels associated with the proposed project construction and operations, such as the phasing-in of cleaner technologies for diesel engine fleets (including construction equipment) and the development of a Low Carbon Fuel Standard. Policies formulated under the mandate of AB 32 that are applicable to the proposed project, either directly or indirectly, are assumed to be implemented by the beginning of proposed construction. Therefore, it is assumed that the proposed project would not conflict with the *Scoping Plan*.

In May 2007, the City of Los Angeles Mayor's Office released the Green LA Plan, which is an action plan to lead the nation in fighting global warming. The Green LA Plan presents a citywide framework for confronting global climate change to create a cleaner, greener, sustainable Los Angeles. The Green LA Plan directs the Port to develop an individual Climate Action Plan, consistent with the goals of Green LA, to examine opportunities to reduce GHG emissions from Port operations. In accordance with this directive, the LAHD prepared a Harbor Department Climate Action Plan (December 2007) that details GHG emissions related to municipally-controlled Port activities (such as Port buildings and Port workforce operations) and outlines current and proposed actions to reduce GHGs from these operations. The Port is a founding member of The Climate Registry (TCR). The LAHD completed annual GHG emissions inventories for LAHD-controlled operations beginning in 2006, and they submitted annual GHG inventories for trucks, ships, and rail to TCR (formerly the California Climate Action Registry) beginning in 2008 for year 2006. The LAHD is developing a Sustainability Plan in accordance with the Mayor's Office Directive that will incorporate Port environmental programs and reports, including the Port's Climate Action Plan.

As shown in Table 6, construction and operation of the proposed project would not exceed the SCAQMD GHG threshold of 10,000 metric tons of CO_2e per year. The proposed project would not conflict with AB 32, Executive Directive No. 10, the City of Los Angeles Green LA Plan, or the Port's Climate Action Plan. Accordingly impacts would be less than significant. No mitigation is required.

4.6.2 Operational Impacts

Because the project would not result in an increase in operational GHG emissions, the project would not conflict with an applicable plan, policy, or regulation designed to reduce GHG emissions. No mitigation is required.

5.0 Conclusions

In conclusion, the Avalon Blvd. and Fries Street Segments Closure Project would result in air emissions during construction activities. The emissions of criteria pollutants, TACs, odor compounds, and GHGs would be temporary and would not result in a significant adverse air quality impacts.

Operation of the project would not generate new traffic on the surrounding streets, but would result in localized shifts of the traffic that is forecast to be present with or without the project. Therefore, the Project would not result in an increase in operational criteria pollutant, TAC, odor, or GHG emissions.

Impacts are less than significant and no mitigation is required.

6.0 References

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Appendix A

CalEEMod Model Outputs

Avalon and Fries Street Segments Closure Project

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.35	Acre	0.35	15,246.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 31

Climate Zone 11 **Operational Year** 2015

Utility Company

CO2 Intensity (lb/MWhr) 0 **CH4 Intensity (lb/MWhr)** 0 **N2O Intensity (lb/MWhr)** 0

1.3 User Entered Comments & Non-Default Data

Off-road Equipment - Construction equipment all to site during mobilization

Off-road Equipment - Estimated constructino equipment

Off-road Equipment - Estimated constructin equipment

Off-road Equipment - Estimated construction equipment

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	22869	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	100	0

tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	50	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	5.00	27.00
tblConstructionPhase	NumDays	5.00	158.00
tblConstructionPhase	NumDays	1.00	26.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	2/6/2015	2/7/2015
tblConstructionPhase	PhaseEndDate	9/11/2015	10/31/2015
tblConstructionPhase	PhaseStartDate	1/31/2015	2/1/2015
tblConstructionPhase	PhaseStartDate	3/12/2015	5/1/2015
tblGrading	AcresOfGrading	0.00	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	10.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	7.00	10.00

tblOffRoadEquipment	UsageHours	7.00	10.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	WorkerTripNumber	43.00	38.00

2.0 Emissions Summary

2.1 Overall Construction

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	tons/yr										MT/yr					
2015	0.5272	3.1605	2.6537	4.0300e-003	0.0463	0.2044	0.2507	0.0123	0.1941	0.2064	0.0000	347.4837	347.4837	0.0900	0.0000	349.3730
Total	**0.5272**	**3.1605**	**2.6537**	**4.0300e-003**	**0.0463**	**0.2044**	**0.2507**	**0.0123**	**0.1941**	**0.2064**	**0.0000**	**347.4837**	**347.4837**	**0.0900**	**0.0000**	**349.3730**

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	tons/yr										MT/yr					
2015	0.0875	1.7512	2.5426	4.0300e-003	0.0461	0.0347	0.0808	0.0122	0.0340	0.0462	0.0000	347.4834	347.4834	0.0900	0.0000	349.3726
Total	**0.0875**	**1.7512**	**2.5426**	**4.0300e-003**	**0.0461**	**0.0347**	**0.0808**	**0.0122**	**0.0340**	**0.0462**	**0.0000**	**347.4834**	**347.4834**	**0.0900**	**0.0000**	**349.3726**

	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	**83.40**	**44.59**	**4.19**	**0.00**	**0.48**	**83.03**	**67.78**	**0.24**	**82.51**	**77.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	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	tons/yr										MT/yr					
Area	0.0595	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Energy	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
Mobile	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	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0595**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**

2.2 Overall Operational

Mitigated Operational

	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	tons/yr										MT/yr					
Area	0.0595	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Energy	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
Mobile	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	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0595**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**

	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**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mobilization	Site Preparation	1/1/2015	1/30/2015	6	26	
2	Demolition	Demolition	2/1/2015	2/7/2015	6	6	
3	Civil Improvements	Paving	2/8/2015	3/11/2015	6	27	
4	DWP-PS and DWP-WS Relocations	Paving	5/1/2015	10/31/2015	6	158	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mobilization	Excavators	1	2.00	162	0.38
Mobilization	Graders	1	0.00	174	0.41
Mobilization	Off-Highway Trucks	2	2.00	400	0.38
Mobilization	Pavers	2	2.00	125	0.42
Mobilization	Paving Equipment	1	2.00	130	0.36
Mobilization	Plate Compactors	1	2.00	8	0.43
Mobilization	Rubber Tired Dozers	3	0.00	255	0.40
Mobilization	Tractors/Loaders/Backhoes	2	2.00	97	0.37
Mobilization	Welders	4	2.00	46	0.45
Demolition	Concrete/Industrial Saws	1	10.00	81	0.73
Demolition	Excavators	1	10.00	162	0.38
Demolition	Off-Highway Trucks	2	2.00	400	0.38
Demolition	Rubber Tired Dozers	2	0.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	2	10.00	97	0.37

Civil Improvements	Cement and Mortar Mixers	2	0.00	9	0.56
Civil Improvements	Pavers	2	10.00	125	0.42
Civil Improvements	Paving Equipment	1	10.00	130	0.36
Civil Improvements	Plate Compactors	1	10.00	8	0.43
Civil Improvements	Rollers	2	0.00	80	0.38
Civil Improvements	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Civil Improvements	Welders	4	10.00	46	0.45
DWP-PS and DWP-WS Relocations	Cement and Mortar Mixers	2	0.00	9	0.56
DWP-PS and DWP-WS Relocations	Excavators	1	10.00	162	0.38
DWP-PS and DWP-WS Relocations	Off-Highway Trucks	2	2.00	400	0.38
DWP-PS and DWP-WS Relocations	Pavers	1	0.00	125	0.42
DWP-PS and DWP-WS Relocations	Paving Equipment	2	0.00	130	0.36
DWP-PS and DWP-WS Relocations	Rollers	2	0.00	80	0.38
DWP-PS and DWP-WS Relocations	Tractors/Loaders/Backhoes	2	10.00	97	0.37
DWP-PS and DWP-WS Relocations	Welders	4	10.00	46	0.45

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
Mobilization	17	38.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	8	20.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Civil Improvements	14	35.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
DWP-PS and DWP-WS Relocations	16	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization - 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	tons/yr										MT/yr					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0227	0.1888	0.1166	2.0000e-004		9.9300e-003	9.9300e-003		9.3000e-003	9.3000e-003	0.0000	18.3065	18.3065	5.3800e-003	0.0000	18.4194
Total	**0.0227**	**0.1888**	**0.1166**	**2.0000e-004**	**2.7000e-004**	**9.9300e-003**	**0.0102**	**3.0000e-005**	**9.3000e-003**	**9.3300e-003**	**0.0000**	**18.3065**	**18.3065**	**5.3800e-003**	**0.0000**	**18.4194**

3.2 Mobilization - 2015

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	tons/yr										MT/yr					
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	0.0000	0.0000
Vendor	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	0.0000	0.0000
Worker	2.2000e-003	3.2200e-003	0.0335	7.0000e-005	5.4200e-003	5.0000e-005	5.4700e-003	1.4400e-003	4.0000e-005	1.4800e-003	0.0000	5.2596	5.2596	3.0000e-004	0.0000	5.2658
Total	**2.2000e-003**	**3.2200e-003**	**0.0335**	**7.0000e-005**	**5.4200e-003**	**5.0000e-005**	**5.4700e-003**	**1.4400e-003**	**4.0000e-005**	**1.4800e-003**	**0.0000**	**5.2596**	**5.2596**	**3.0000e-004**	**0.0000**	**5.2658**

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	tons/yr										MT/yr					
Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4000e-003	0.0809	0.1253	2.0000e-004		1.1000e-003	1.1000e-003		1.0800e-003	1.0800e-003	0.0000	18.3065	18.3065	5.3800e-003	0.0000	18.4194
Total	**3.4000e-003**	**0.0809**	**0.1253**	**2.0000e-004**	**1.0000e-004**	**1.1000e-003**	**1.2000e-003**	**1.0000e-005**	**1.0800e-003**	**1.0900e-003**	**0.0000**	**18.3065**	**18.3065**	**5.3800e-003**	**0.0000**	**18.4194**

3.2 Mobilization - 2015

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	tons/yr										MT/yr					
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	0.0000	0.0000
Vendor	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	0.0000	0.0000
Worker	2.2000e-003	3.2200e-003	0.0335	7.0000e-005	5.4200e-003	5.0000e-005	5.4700e-003	1.4400e-003	4.0000e-005	1.4800e-003	0.0000	5.2596	5.2596	3.0000e-004	0.0000	5.2658
Total	**2.2000e-003**	**3.2200e-003**	**0.0335**	**7.0000e-005**	**5.4200e-003**	**5.0000e-005**	**5.4700e-003**	**1.4400e-003**	**4.0000e-005**	**1.4800e-003**	**0.0000**	**5.2596**	**5.2596**	**3.0000e-004**	**0.0000**	**5.2658**

3.3 Demolition - 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	tons/yr										MT/yr					
Fugitive Dust					1.1000e-004	0.0000	1.1000e-004	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4800e-003	0.0809	0.0535	9.0000e-005		5.0700e-003	5.0700e-003		4.7800e-003	4.7800e-003	0.0000	8.0162	8.0162	2.0100e-003	0.0000	8.0583
Total	**8.4800e-003**	**0.0809**	**0.0535**	**9.0000e-005**	**1.1000e-004**	**5.0700e-003**	**5.1800e-003**	**2.0000e-005**	**4.7800e-003**	**4.8000e-003**	**0.0000**	**8.0162**	**8.0162**	**2.0100e-003**	**0.0000**	**8.0583**

3.3 Demolition - 2015

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	tons/yr										MT/yr					
Hauling	1.0000e-005	1.7000e-004	1.2000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0341	0.0341	0.0000	0.0000	0.0341
Vendor	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	0.0000	0.0000
Worker	2.7000e-004	3.9000e-004	4.0700e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	1.0000e-005	1.8000e-004	0.0000	0.6388	0.6388	4.0000e-005	0.0000	0.6396
Total	**2.8000e-004**	**5.6000e-004**	**4.1900e-003**	**1.0000e-005**	**6.7000e-004**	**1.0000e-005**	**6.7000e-004**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.6729**	**0.6729**	**4.0000e-005**	**0.0000**	**0.6737**

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	tons/yr										MT/yr					
Fugitive Dust					4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8000e-003	0.0345	0.0576	9.0000e-005		3.9000e-004	3.9000e-004		3.7000e-004	3.7000e-004	0.0000	8.0162	8.0162	2.0100e-003	0.0000	8.0583
Total	**1.8000e-003**	**0.0345**	**0.0576**	**9.0000e-005**	**4.0000e-005**	**3.9000e-004**	**4.3000e-004**	**1.0000e-005**	**3.7000e-004**	**3.8000e-004**	**0.0000**	**8.0162**	**8.0162**	**2.0100e-003**	**0.0000**	**8.0583**

3.3 Demolition - 2015

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	tons/yr										MT/yr					
Hauling	1.0000e-005	1.7000e-004	1.2000e-004	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0341	0.0341	0.0000	0.0000	0.0341
Vendor	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	0.0000	0.0000
Worker	2.7000e-004	3.9000e-004	4.0700e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	1.0000e-005	1.8000e-004	0.0000	0.6388	0.6388	4.0000e-005	0.0000	0.6396
Total	**2.8000e-004**	**5.6000e-004**	**4.1900e-003**	**1.0000e-005**	**6.7000e-004**	**1.0000e-005**	**6.7000e-004**	**1.7000e-004**	**1.0000e-005**	**1.8000e-004**	**0.0000**	**0.6729**	**0.6729**	**4.0000e-005**	**0.0000**	**0.6737**

3.4 Civil Improvements - 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	tons/yr										MT/yr					
Off-Road	0.0761	0.4883	0.3631	5.1000e-004		0.0319	0.0319		0.0302	0.0302	0.0000	44.2078	44.2078	0.0127	0.0000	44.4754
Paving	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0766**	**0.4883**	**0.3631**	**5.1000e-004**		**0.0319**	**0.0319**		**0.0302**	**0.0302**	**0.0000**	**44.2078**	**44.2078**	**0.0127**	**0.0000**	**44.4754**

3.4 Civil Improvements - 2015

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	tons/yr										MT/yr					
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	0.0000	0.0000
Vendor	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	0.0000	0.0000
Worker	2.1100e-003	3.0800e-003	0.0320	6.0000e-005	5.1800e-003	5.0000e-005	5.2300e-003	1.3800e-003	4.0000e-005	1.4200e-003	0.0000	5.0307	5.0307	2.8000e-004	0.0000	5.0366
Total	**2.1100e-003**	**3.0800e-003**	**0.0320**	**6.0000e-005**	**5.1800e-003**	**5.0000e-005**	**5.2300e-003**	**1.3800e-003**	**4.0000e-005**	**1.4200e-003**	**0.0000**	**5.0307**	**5.0307**	**2.8000e-004**	**0.0000**	**5.0366**

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	tons/yr										MT/yr					
Off-Road	9.2900e-003	0.2641	0.3476	5.1000e-004		4.8400e-003	4.8400e-003		4.7500e-003	4.7500e-003	0.0000	44.2077	44.2077	0.0127	0.0000	44.4754
Paving	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.7500e-003**	**0.2641**	**0.3476**	**5.1000e-004**		**4.8400e-003**	**4.8400e-003**		**4.7500e-003**	**4.7500e-003**	**0.0000**	**44.2077**	**44.2077**	**0.0127**	**0.0000**	**44.4754**

3.4 Civil Improvements - 2015

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	tons/yr										MT/yr					
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	0.0000	0.0000
Vendor	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	0.0000	0.0000
Worker	2.1100e-003	3.0800e-003	0.0320	6.0000e-005	5.1800e-003	5.0000e-005	5.2300e-003	1.3800e-003	4.0000e-005	1.4200e-003	0.0000	5.0307	5.0307	2.8000e-004	0.0000	5.0366
Total	**2.1100e-003**	**3.0800e-003**	**0.0320**	**6.0000e-005**	**5.1800e-003**	**5.0000e-005**	**5.2300e-003**	**1.3800e-003**	**4.0000e-005**	**1.4200e-003**	**0.0000**	**5.0307**	**5.0307**	**2.8000e-004**	**0.0000**	**5.0366**

3.5 DWP-PS and DWP-WS Relocations - 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	tons/yr										MT/yr					
Off-Road	0.4003	2.3751	1.8364	2.6700e-003		0.1571	0.1571		0.1495	0.1495	0.0000	232.3459	232.3459	0.0673	0.0000	233.7595
Paving	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4008**	**2.3751**	**1.8364**	**2.6700e-003**		**0.1571**	**0.1571**		**0.1495**	**0.1495**	**0.0000**	**232.3459**	**232.3459**	**0.0673**	**0.0000**	**233.7595**

3.5 DWP-PS and DWP-WS Relocations - 2015

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	tons/yr										MT/yr					
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	0.0000	0.0000
Vendor	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	0.0000	0.0000
Worker	0.0141	0.0206	0.2143	4.3000e-004	0.0347	3.1000e-004	0.0350	9.2100e-003	2.8000e-004	9.4900e-003	0.0000	33.6443	33.6443	1.9000e-003	0.0000	33.6842
Total	**0.0141**	**0.0206**	**0.2143**	**4.3000e-004**	**0.0347**	**3.1000e-004**	**0.0350**	**9.2100e-003**	**2.8000e-004**	**9.4900e-003**	**0.0000**	**33.6443**	**33.6443**	**1.9000e-003**	**0.0000**	**33.6842**

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	tons/yr										MT/yr					
Off-Road	0.0534	1.3441	1.7280	2.6700e-003		0.0279	0.0279		0.0274	0.0274	0.0000	232.3456	232.3456	0.0673	0.0000	233.7592
Paving	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0539**	**1.3441**	**1.7280**	**2.6700e-003**		**0.0279**	**0.0279**		**0.0274**	**0.0274**	**0.0000**	**232.3456**	**232.3456**	**0.0673**	**0.0000**	**233.7592**

3.5 DWP-PS and DWP-WS Relocations - 2015

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	tons/yr										MT/yr					
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	0.0000	0.0000
Vendor	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	0.0000	0.0000
Worker	0.0141	0.0206	0.2143	4.3000e-004	0.0347	3.1000e-004	0.0350	9.2100e-003	2.8000e-004	9.4900e-003	0.0000	33.6443	33.6443	1.9000e-003	0.0000	33.6842
Total	**0.0141**	**0.0206**	**0.2143**	**4.3000e-004**	**0.0347**	**3.1000e-004**	**0.0350**	**9.2100e-003**	**2.8000e-004**	**9.4900e-003**	**0.0000**	**33.6443**	**33.6443**	**1.9000e-003**	**0.0000**	**33.6842**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	tons/yr										MT/yr					
Mitigated	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	0.0000	0.0000
Unmitigated	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	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.515437	0.060435	0.179988	0.139880	0.041945	0.006639	0.015487	0.028746	0.001918	0.002517	0.004333	0.000596	0.002079

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	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
Total		**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**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	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
Total		**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**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	tons/yr										MT/yr					
Mitigated	0.0595	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Unmitigated	0.0595	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005

6.2 Area by SubCategory

Unmitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.4200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0551					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Total	**0.0595**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**

Mitigated

	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
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.4200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0551					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0000e-005	1.0000e-005	0.0000	0.0000	1.0000e-005
Total	**0.0595**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.0000**	**1.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Avalon and Fries Street Segments Closure Project

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.35	Acre	0.35	15,246.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 31

Climate Zone 11 **Operational Year** 2015

Utility Company

CO2 Intensity (lb/MWhr) 0 **CH4 Intensity (lb/MWhr)** 0 **N2O Intensity (lb/MWhr)** 0

1.3 User Entered Comments & Non-Default Data

Off-road Equipment - Construction equipment all to site during mobilization

Off-road Equipment - Estimated constructino equipment

Off-road Equipment - Estimated constructin equipment

Off-road Equipment - Estimated construction equipment

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	22869	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	100	0

tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	50	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	10.00	6.00
tblConstructionPhase	NumDays	5.00	27.00
tblConstructionPhase	NumDays	5.00	158.00
tblConstructionPhase	NumDays	1.00	26.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	2/6/2015	2/7/2015
tblConstructionPhase	PhaseEndDate	9/11/2015	10/31/2015
tblConstructionPhase	PhaseStartDate	1/31/2015	2/1/2015
tblConstructionPhase	PhaseStartDate	3/12/2015	5/1/2015
tblGrading	AcresOfGrading	0.00	0.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	10.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	10.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	10.00
tblOffRoadEquipment	UsageHours	7.00	10.00

tblOffRoadEquipment	UsageHours	7.00	10.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	WorkerTripNumber	43.00	38.00

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	5.8377	36.3898	29.2135	0.0421	0.4471	2.3642	2.7555	0.1186	2.2389	2.3426	0.0000	4,014.1592	4,014.1592	1.0639	0.0000	4,036.5002
Total	**5.8377**	**36.3898**	**29.2135**	**0.0421**	**0.4471**	**2.3642**	**2.7555**	**0.1186**	**2.2389**	**2.3426**	**0.0000**	**4,014.1592**	**4,014.1592**	**1.0639**	**0.0000**	**4,036.5002**

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	0.8877	19.7846	28.0680	0.0421	0.4471	0.3622	0.8046	0.1186	0.3549	0.4688	0.0000	4,014.1592	4,014.1592	1.0639	0.0000	4,036.5001
Total	**0.8877**	**19.7846**	**28.0680**	**0.0421**	**0.4471**	**0.3622**	**0.8046**	**0.1186**	**0.3549**	**0.4688**	**0.0000**	**4,014.1592**	**4,014.1592**	**1.0639**	**0.0000**	**4,036.5001**

	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	**84.79**	**45.63**	**3.92**	**0.00**	**0.00**	**84.68**	**70.80**	**0.00**	**84.15**	**79.99**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	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					
Area	0.3261	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		8.0000e-005	8.0000e-005	0.0000		8.0000e-005
Energy	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
Mobile	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
Total	**0.3261**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0000**	**8.0000e-005**

Mitigated Operational

	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					
Area	0.3261	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		8.0000e-005	8.0000e-005	0.0000		8.0000e-005
Energy	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
Mobile	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
Total	**0.3261**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**8.0000e-005**	**8.0000e-005**	**0.0000**	**0.0000**	**8.0000e-005**

	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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mobilization	Site Preparation	1/1/2015	1/30/2015	6	26	
2	Demolition	Demolition	2/1/2015	2/7/2015	6	6	
3	Civil Improvements	Paving	2/8/2015	3/11/2015	6	27	
4	DWP-PS and DWP-WS Relocations	Paving	5/1/2015	10/31/2015	6	158	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mobilization	Excavators	1	2.00	162	0.38
Mobilization	Graders	1	0.00	174	0.41
Mobilization	Off-Highway Trucks	2	2.00	400	0.38
Mobilization	Pavers	2	2.00	125	0.42
Mobilization	Paving Equipment	1	2.00	130	0.36
Mobilization	Plate Compactors	1	2.00	8	0.43
Mobilization	Rubber Tired Dozers	3	0.00	255	0.40

Mobilization	Tractors/Loaders/Backhoes	2	2.00	97	0.37
Mobilization	Welders	4	2.00	46	0.45
Demolition	Concrete/Industrial Saws	1	10.00	81	0.73
Demolition	Excavators	1	10.00	162	0.38
Demolition	Off-Highway Trucks	2	2.00	400	0.38
Demolition	Rubber Tired Dozers	2	0.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Civil Improvements	Cement and Mortar Mixers	2	0.00	9	0.56
Civil Improvements	Pavers	2	10.00	125	0.42
Civil Improvements	Paving Equipment	1	10.00	130	0.36
Civil Improvements	Plate Compactors	1	10.00	8	0.43
Civil Improvements	Rollers	2	0.00	80	0.38
Civil Improvements	Tractors/Loaders/Backhoes	2	10.00	97	0.37
Civil Improvements	Welders	4	10.00	46	0.45
DWP-PS and DWP-WS Relocations	Cement and Mortar Mixers	2	0.00	9	0.56
DWP-PS and DWP-WS Relocations	Excavators	1	10.00	162	0.38
DWP-PS and DWP-WS Relocations	Off-Highway Trucks	2	2.00	400	0.38
DWP-PS and DWP-WS Relocations	Pavers	1	0.00	125	0.42
DWP-PS and DWP-WS Relocations	Paving Equipment	2	0.00	130	0.36
DWP-PS and DWP-WS Relocations	Rollers	2	0.00	80	0.38
DWP-PS and DWP-WS Relocations	Tractors/Loaders/Backhoes	2	10.00	97	0.37
DWP-PS and DWP-WS Relocations	Welders	4	10.00	46	0.45

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
Mobilization	17	38.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	8	20.00	0.00	1.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Civil Improvements	14	35.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
DWP-PS and DWP-WS Relocations	16	40.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization - 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					0.0204	0.0000	0.0204	2.2000e-003	0.0000	2.2000e-003			0.0000			0.0000
Off-Road	1.7472	14.5191	8.9687	0.0154		0.7640	0.7640		0.7157	0.7157		1,552.2655	1,552.2655	0.4560		1,561.8419
Total	**1.7472**	**14.5191**	**8.9687**	**0.0154**	**0.0204**	**0.7640**	**0.7844**	**2.2000e-003**	**0.7157**	**0.7179**		**1,552.2655**	**1,552.2655**	**0.4560**		**1,561.8419**

3.2 Mobilization - 2015

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	0.0000	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
Worker	0.1795	0.2410	2.5177	5.0500e-003	0.4248	3.7400e-003	0.4285	0.1127	3.4300e-003	0.1161		439.1446	439.1446	0.0252		439.6735
Total	**0.1795**	**0.2410**	**2.5177**	**5.0500e-003**	**0.4248**	**3.7400e-003**	**0.4285**	**0.1127**	**3.4300e-003**	**0.1161**		**439.1446**	**439.1446**	**0.0252**		**439.6735**

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					7.9500e-003	0.0000	7.9500e-003	8.6000e-004	0.0000	8.6000e-004			0.0000			0.0000
Off-Road	0.2612	6.2252	9.6392	0.0154		0.0846	0.0846		0.0833	0.0833	0.0000	1,552.2655	1,552.2655	0.4560		1,561.8419
Total	**0.2612**	**6.2252**	**9.6392**	**0.0154**	**7.9500e-003**	**0.0846**	**0.0926**	**8.6000e-004**	**0.0833**	**0.0841**	**0.0000**	**1,552.2655**	**1,552.2655**	**0.4560**		**1,561.8419**

3.2 Mobilization - 2015

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	0.0000	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
Worker	0.1795	0.2410	2.5177	5.0500e-003	0.4248	3.7400e-003	0.4285	0.1127	3.4300e-003	0.1161		439.1446	439.1446	0.0252		439.6735
Total	**0.1795**	**0.2410**	**2.5177**	**5.0500e-003**	**0.4248**	**3.7400e-003**	**0.4285**	**0.1127**	**3.4300e-003**	**0.1161**		**439.1446**	**439.1446**	**0.0252**		**439.6735**

3.3 Demolition - 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					0.0357	0.0000	0.0357	5.4000e-003	0.0000	5.4000e-003			0.0000			0.0000
Off-Road	2.8274	26.9736	17.8472	0.0288		1.6885	1.6885		1.5922	1.5922		2,945.4350	2,945.4350	0.7377		2,960.9264
Total	**2.8274**	**26.9736**	**17.8472**	**0.0288**	**0.0357**	**1.6885**	**1.7242**	**5.4000e-003**	**1.5922**	**1.5976**		**2,945.4350**	**2,945.4350**	**0.7377**		**2,960.9264**

3.3 Demolition - 2015

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	3.4400e-003	0.0542	0.0398	1.2000e-004	2.9000e-003	9.0000e-004	3.8000e-003	7.9000e-004	8.2000e-004	1.6200e-003		12.5109	12.5109	1.0000e-004		12.5130
Vendor	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
Worker	0.0945	0.1268	1.3251	2.6600e-003	0.2236	1.9700e-003	0.2255	0.0593	1.8000e-003	0.0611		231.1287	231.1287	0.0133		231.4071
Total	**0.0979**	**0.1810**	**1.3649**	**2.7800e-003**	**0.2265**	**2.8700e-003**	**0.2293**	**0.0601**	**2.6200e-003**	**0.0627**		**243.6396**	**243.6396**	**0.0134**		**243.9201**

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					0.0139	0.0000	0.0139	2.1100e-003	0.0000	2.1100e-003			0.0000			0.0000
Off-Road	0.6006	11.4984	19.2122	0.0288		0.1303	0.1303		0.1234	0.1234	0.0000	2,945.4350	2,945.4350	0.7377		2,960.9264
Total	**0.6006**	**11.4984**	**19.2122**	**0.0288**	**0.0139**	**0.1303**	**0.1442**	**2.1100e-003**	**0.1234**	**0.1255**	**0.0000**	**2,945.4350**	**2,945.4350**	**0.7377**		**2,960.9264**

3.3 Demolition - 2015

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	3.4400e-003	0.0542	0.0398	1.2000e-004	2.9000e-003	9.0000e-004	3.8000e-003	7.9000e-004	8.2000e-004	1.6200e-003		12.5109	12.5109	1.0000e-004		12.5130
Vendor	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
Worker	0.0945	0.1268	1.3251	2.6600e-003	0.2236	1.9700e-003	0.2255	0.0593	1.8000e-003	0.0611		231.1287	231.1287	0.0133		231.4071
Total	**0.0979**	**0.1810**	**1.3649**	**2.7800e-003**	**0.2265**	**2.8700e-003**	**0.2293**	**0.0601**	**2.6200e-003**	**0.0627**		**243.6396**	**243.6396**	**0.0134**		**243.9201**

3.4 Civil Improvements - 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					
Off-Road	5.6384	36.1679	26.8946	0.0375		2.3608	2.3608		2.2357	2.2357		3,609.683 9	3,609.683 9	1.0407		3,631.537 7
Paving	0.0340					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.6723**	**36.1679**	**26.8946**	**0.0375**		**2.3608**	**2.3608**		**2.2357**	**2.2357**		**3,609.683 9**	**3,609.683 9**	**1.0407**		**3,631.537 7**

3.4 Civil Improvements - 2015

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	0.0000	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
Worker	0.1654	0.2219	2.3189	4.6500e-003	0.3912	3.4400e-003	0.3947	0.1038	3.1600e-003	0.1069		404.4753	404.4753	0.0232		404.9624
Total	**0.1654**	**0.2219**	**2.3189**	**4.6500e-003**	**0.3912**	**3.4400e-003**	**0.3947**	**0.1038**	**3.1600e-003**	**0.1069**		**404.4753**	**404.4753**	**0.0232**		**404.9624**

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	0.6884	19.5626	25.7491	0.0375		0.3588	0.3588		0.3518	0.3518	0.0000	3,609.6839	3,609.6839	1.0407		3,631.5377
Paving	0.0340					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.7224**	**19.5626**	**25.7491**	**0.0375**		**0.3588**	**0.3588**		**0.3518**	**0.3518**	**0.0000**	**3,609.6839**	**3,609.6839**	**1.0407**		**3,631.5377**

3.4 Civil Improvements - 2015

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	0.0000	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
Worker	0.1654	0.2219	2.3189	4.6500e-003	0.3912	3.4400e-003	0.3947	0.1038	3.1600e-003	0.1069		404.4753	404.4753	0.0232		404.9624
Total	**0.1654**	**0.2219**	**2.3189**	**4.6500e-003**	**0.3912**	**3.4400e-003**	**0.3947**	**0.1038**	**3.1600e-003**	**0.1069**		**404.4753**	**404.4753**	**0.0232**		**404.9624**

3.5 DWP-PS and DWP-WS Relocations - 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					
Off-Road	5.0676	30.0641	23.2461	0.0338		1.9885	1.9885		1.8922	1.8922		3,241.9934	3,241.9934	0.9393		3,261.7183
Paving	5.8000e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.0734**	**30.0641**	**23.2461**	**0.0338**		**1.9885**	**1.9885**		**1.8922**	**1.8922**		**3,241.9934**	**3,241.9934**	**0.9393**		**3,261.7183**

3.5 DWP-PS and DWP-WS Relocations - 2015

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	0.0000	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
Worker	0.1890	0.2537	2.6502	5.3100e-003	0.4471	3.9300e-003	0.4510	0.1186	3.6100e-003	0.1222		462.2575	462.2575	0.0265		462.8142
Total	**0.1890**	**0.2537**	**2.6502**	**5.3100e-003**	**0.4471**	**3.9300e-003**	**0.4510**	**0.1186**	**3.6100e-003**	**0.1222**		**462.2575**	**462.2575**	**0.0265**		**462.8142**

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	0.6763	17.0144	21.8732	0.0338		0.3536	0.3536		0.3466	0.3466	0.0000	3,241.9934	3,241.9934	0.9393		3,261.7183
Paving	5.8000e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6821**	**17.0144**	**21.8732**	**0.0338**		**0.3536**	**0.3536**		**0.3466**	**0.3466**	**0.0000**	**3,241.9934**	**3,241.9934**	**0.9393**		**3,261.7183**

3.5 DWP-PS and DWP-WS Relocations - 2015

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	0.0000	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
Worker	0.1890	0.2537	2.6502	5.3100e-003	0.4471	3.9300e-003	0.4510	0.1186	3.6100e-003	0.1222		462.2575	462.2575	0.0265		462.8142
Total	**0.1890**	**0.2537**	**2.6502**	**5.3100e-003**	**0.4471**	**3.9300e-003**	**0.4510**	**0.1186**	**3.6100e-003**	**0.1222**		**462.2575**	**462.2575**	**0.0265**		**462.8142**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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					
Mitigated	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
Unmitigated	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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.515437	0.060435	0.179988	0.139880	0.041945	0.006639	0.015487	0.028746	0.001918	0.002517	0.004333	0.000596	0.002079

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	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					
NaturalGas Mitigated	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
NaturalGas Unmitigated	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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	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
Total		**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**

Mitigated

	NaturalGas Use	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
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	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
Total		**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**

6.0 Area Detail

6.1 Mitigation Measures Area

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					
Mitigated	0.3261	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		8.0000e-005	8.0000e-005	0.0000		8.0000e-005
Unmitigated	0.3261	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		8.0000e-005	8.0000e-005	0.0000		8.0000e-005

6.2 Area by SubCategory

Unmitigated

SubCategory	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					
Architectural Coating	0.0242					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3019					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		8.0000e-005	8.0000e-005	0.0000		8.0000e-005
Total	**0.3261**	**0.0000**	**4.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**8.0000e-005**	**8.0000e-005**	**0.0000**		**8.0000e-005**

6.2 Area by SubCategory

Mitigated

	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
SubCategory	lb/day										lb/day					
Consumer Products	0.3019					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		8.0000e-005	8.0000e-005	0.0000		8.0000e-005
Architectural Coating	0.0242					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.3261**	**0.0000**	**4.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**8.0000e-005**	**8.0000e-005**	**0.0000**		**8.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Fries/Avalon/A Street: Emissions and Fuel Consumption

Table 1

Street Segment Closure Linear Feet (feet)

Street Segment	**Current Project Scope**	**2014 Scope**
Fries Ave.	1,337	1,337
Avalon Blvd.	920	437
A Street	280	0
Total	2,537	1,774

Source:

2019.06.28 WW Street Closure Lengths-Figure_Change.pdf . Prepared by POLA Engineering Division on 6/28/19. Received via e-mail 7/12/19.

Table 2

Daily Emissions from Construction of Current Project

	Peak Daily Emissions, lbs/day					
Construction Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Mobilization	0.63	9.25	17.39	0.03	0.75	0.29
Demolition	1.00	16.70	29.43	0.05	0.53	0.27
Civil Improvements	1.27	28.29	40.14	0.06	1.08	0.66
DWP-PS and DWP-WS	0.87	17.27	24.52	0.04	0.80	0.47
Peak Daily Emissions	**1.27**	**28.29**	**40.14**	**0.06**	**1.08**	**0.66**
Localized Significance Threshold	NA	57	585	NA	4	3
SCAQMD Daily Significance Threshold	75	100	550	150	150	55

Notes:

Current project reflects:

2014 Fries Ave. construction would not change.

2014 Avalon Blvd. construction would increase per Table 1.

A Stree construction is new to the Current project, per Table 1.

DWP-PS and DWP-WS components would not change from 2014, per POLA direction.

Emission reduction due to Tier 4 construction equipment was not evaluated because CalEEMod was not re-run. Since POLA requires Tier 4 construction equipment, calculated emissions are conservative because they reflect the construction equipment fleet mix evaluated in 2014.

Table 3

Total GHG Emissions from Construction of Current Project

	Total Emissions, metric tons			
Construction Activity	**CO2**	**CH4**	**N2O**	**CO2e**
Mobilization	34	0	0	34
Demolition	12	0	0	12
Civil Improvements	70	0	0	71
DWP-PS and DWP-WS	266	0	0	267
Total GHG Emissions	**383**	**0**	**0**	**385**
SCAQMD Daily Significance Threshold	10,000 metric tons/year			

Notes:

Current project relects:

2014 Fries Ave. construction would not change.

2014 Avalon Blvd. construction would increase per Table 1.

A Stree construction is new to the Current project, per Table 1.

DWP-PS and DWP-WS components would not change from 2014, per POLA direction.

Table 4

Construction Fuel Consumption Calculations

Phase	**Source**	**Construction Emissions (MT CO2/yr)**	**Fuel**	**CO2 Emission Factor (kg CO2/MMBtu)**	**High Heat Value MMBtu/gal**	**Fuel Use (gal/yr)**
Mobilization	Off-Road	26.34	Diesel	73.96	0.138	2,581
Mobilization	On-Road	0.00	Diesel	73.96	0.138	-
Mobilization	Workers	7.53	Gasoline	70.22	0.125	858
Mobilization	*Subtotal*	*26.34*	*Diesel*	*73.96*	*0.138*	*2,581*
Mobilization	*Subtotal*	*7.53*	*Gasoline*	*70.22*	*0.125*	*858*
Demolition	Off-Road	11.52	Diesel	73.96	0.138	1,129
Demolition	On-Road	0.05	Diesel	73.96	0.138	5
Demolition	Workers	0.91	Gasoline	70.22	0.125	104
Demolition	*Subtotal*	*11.57*	*Diesel*	*73.96*	*0.138*	*1,134*
Demolition	*Subtotal*	*0.91*	*Gasoline*	*70.22*	*0.125*	*104*
Civil Improvements	Off-Road	63.60	Diesel	73.96	0.138	6,232
Civil Improvements	On-Road	0.00	Diesel	73.96	0.138	-
Civil Improvements	Workers	7.20	Gasoline	70.22	0.125	821
Civil Improvements	*Subtotal*	*63.60*	*Diesel*	*73.96*	*0.138*	*6,232*
Civil Improvements	*Subtotal*	*7.20*	*Gasoline*	*70.22*	*0.125*	*821*
DWP-PS and DWP-WS Relocations	Off-Road	233.76	Diesel	73.96	0.138	22,903
DWP-PS and DWP-WS Relocations	On-Road	0.00	Diesel	73.96	0.138	-
DWP-PS and DWP-WS Relocations	Workers	33.68	Gasoline	70.22	0.125	3,838
DWP-PS and DWP-WS Relocations	*Subtotal*	*233.76*	*Diesel*	*73.96*	*0.138*	*22,903*
DWP-PS and DWP-WS Relocations	*Subtotal*	*33.68*	*Gasoline*	*70.22*	*0.125*	*3,838*
Project	Off-Road	335.23	Diesel	73.96	0.138	32,845
Project	On-Road	0.05	Diesel	73.96	0.138	5
Project	Workers	49.33	Gasoline	70.22	0.125	5,620
Project	**Total**	**335.28**	**Diesel**	**73.96**	**0.138**	**32,850**
Project	**Total**	**49.33**	**Gasoline**	**70.22**	**0.125**	**5,620**

Notes:

Fuel consumption calculated from quantified CO2 emissions and from EPA emission factors (40 CFR 98 Subpart C)

Current project relects:

2014 Fries Ave. construction would not change.

2014 Avalon Blvd. construction would increase per Table 1.
A Stree construction is new to the Current project, per Table 1.
DWP-PS and DWP-WS components would not change from 2014, per POLA direction.

QA/QC

0.699

Daily Emissions from Construction of Fries and Avalon (2014)

	Peak Daily Emissions, lbs/day						
Construction Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	
Mobilization	0.4407	6.4662	12.1569	0.02045	0.5211	0.2003	0.699
Demolition	0.6985	11.6794	20.5771	0.03158	0.3735	0.1882	0.699
Civil Improvements	0.8878	19.7845	28.068	0.04215	0.7535	0.4587	0.699
DWP-PS and DWP-WS	0.8711	17.2681	24.5234	0.03911	0.8046	0.4688	1.000
Peak Daily Emissions	**0.8877**	**19.7846**	**28.068**	**0.0421**	**0.8046**	**0.4688**	0.698
Localized Significance Threshold	NA	57	585	NA	4	3	
SCAQMD Daily Significance Threshold	75	100	550	150	150	55	

Source:

Avalon and Fries Street Closure AQ Technical Report 112713.pdf. Table 5.

Total GHG Emissions from Construction of Fries and Avalon (2014)

	Total Emissions, metric tons				
Construction Activity	**CO2**	**CH4**	**N2O**	**CO2e**	
Mobilization	23.57	0.01	0.00	23.69	0.699
Demolition	8.69	0.00	0.00	8.73	0.699
Civil Improvements	49.24	0.01	0.00	49.51	0.699
DWP-PS and DWP-WS	265.99	0.07	0.00	267.44	1.000
Total GHG Emissions	**347.49**	**0.09**	**0.00**	**349.37**	0.908
SCAQMD Daily Significance Threshold	10,000 metric tons/year				

Source:

Avalon and Fries Street Closure AQ Technical Report 112713.pdf. Table 6.

Construction Fuel Consumption Calculations

Phase	Source	Construction Emissions (MT CO2/yr)	Fuel	CO2 Emission Factor (kg CO2/MMBtu)	High Heat Value (MMBtu/gal)	Fuel Use (gal/yr)	
Mobilization	Off-Road	18.42	Diesel	73.96	0.138	1,805	0.699
Mobilization	On-Road	-	Diesel	73.96	0.138	-	#DIV/0!
Mobilization	Workers	5.27	Gasoline	70.22	0.125	600	0.699
Mobilization	*Subtotal*	*18.42*	*Diesel*	*73.96*	*0.138*	*1,805*	0.699
Mobilization	*Subtotal*	*5.27*	*Gasoline*	*70.22*	*0.125*	*600*	0.699
Demolition	Off-Road	8.06	Diesel	73.96	0.138	790	0.699
Demolition	On-Road	0.03	Diesel	73.96	0.138	3	0.699
Demolition	Workers	0.64	Gasoline	70.22	0.125	73	0.699
Demolition	*Subtotal*	*8.09*	*Diesel*	*73.96*	*0.138*	*793*	0.699
Demolition	*Subtotal*	*0.64*	*Gasoline*	*70.22*	*0.125*	*73*	0.699
Civil Improvements	Off-Road	44.48	Diesel	73.96	0.138	4,358	0.699
Civil Improvements	On-Road		Diesel	73.96	0.138	-	#DIV/0!
Civil Improvements	Workers	5.04	Gasoline	70.22	0.125	574	0.699
Civil Improvements	*Subtotal*	*44.48*	*Diesel*	*73.96*	*0.138*	*4,358*	0.699
Civil Improvements	*Subtotal*	*5.04*	*Gasoline*	*70.22*	*0.125*	*574*	0.699
DWP-PS and DWP-WS Relocations	Off-Road	233.76	Diesel	73.96	0.138	22,903	1.000
DWP-PS and DWP-WS Relocations	On-Road		Diesel	73.96	0.138	-	#DIV/0!
DWP-PS and DWP-WS Relocations	Workers	33.68	Gasoline	70.22	0.125	3,838	1.000
DWP-PS and DWP-WS Relocations	*Subtotal*	*233.76*	*Diesel*	*73.96*	*0.138*	*22,903*	1.000
DWP-PS and DWP-WS Relocations	*Subtotal*	*33.68*	*Gasoline*	*70.22*	*0.125*	*3,838*	1.000
Project	Off-Road	304.71	Diesel	73.96	0.138	29,855	0.909
Project	On-Road	0.03	Diesel	73.96	0.138	3	0.699
Project	Workers	44.63	Gasoline	70.22	0.125	5,084	0.905
Project	**Total**	**304.75**	**Diesel**	**73.96**	**0.138**	**29,858**	0.909
Project	**Total**	**44.63**	**Gasoline**	**70.22**	**0.125**	**5,084**	0.905

Notes:

Fuel consumption calculated from quantified CO2 emissions and from EPA emission factors (40 CFR 98 Subpart C)

Source:

Construction Emissions: *AvalonFriesNov2018 - CalEEMod Excel output.xlsx*