



**APPENDIX B**  
**Air Quality and Greenhouse Gas**  
**Emissions Technical Memorandum**



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Director of Water Resources  
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**Subject: Air Quality and Greenhouse Gas Emissions Technical Memorandum  
San Pasqual Undergrounding Project, San Diego County, California**

Dear Ms. Morrow and Mr. Smith:

This letter report provides an air quality and greenhouse gas (GHG) emissions analysis for the San Pasqual Undergrounding Project (proposed action). This report is prepared in compliance with the California Environmental Quality Act (CEQA), San Diego Air Pollution Control District's (SDAPCD) guidance, and San Diego County's guidance.

## **PROPOSED ACTION AND NO ACTION ALTERNATIVE DESCRIPTION**

### **Proposed Alternative**

The proposed is an integral component of the San Luis Rey Indian Water Rights Settlement Agreement (January 30, 2015) including the United States (acting through the Secretary of the Interior and the Attorney General of the United States); the La Jolla, Rincon, San Pasqual, Pauma, and Pala Bands of Mission Indians; the San Luis Rey Indian Water Authority (SLRIWA); City of Escondido (Escondido), and Vista Irrigation District (VID). The Settlement is authorized by the Act of November 30, 1988, Public Law 100-675, as amended.

The proposed project would remove, relocate, and restore about 2.5 miles of the Escondido Canal that crosses the San Pasqual Reservation. The proposed pipeline would run generally from north to south within the existing Escondido canal right of way (ROW) and along existing roads, primarily North Canal Road, South Canal Road, North Lake Wohlford Road, and Paradise Mountain Road, to the extent feasible. The proposed pipeline would begin at the desilting basin northeast of North Canal Road and continue in a southwesterly direction and connect to the existing underground pipeline at a location south of Paradise Mountain Road. The proposed pipeline would include a 100-foot construction corridor (50 feet on each side of pipeline alignment) for the entire 2.5-mile length.

A desilting basin and access road would be constructed at the intersection of the proposed alignment and the existing canal to remove sediment from the canal water prior to discharge into the new underground pipeline.

The proposed action includes reclamation of the land occupied by the replaced canal by means of demolition, debris removal, grading, as well as any associated mitigation of environmental impacts that may be required.

## **No Action Alternative**

The No Action Alternative must be evaluated in the National Environmental Policy Act (NEPA) Environmental Assessment as required under Section 1502.14 of the regulations for implementing NEPA. Similarly, a No Project Alternative must be evaluated in the CEQA Initial Study/Mitigated Negative Declaration (IS/MND) as required under the CEQA Guidelines Section 15126.6, part (e). This alternative represents the environmental baseline for the proposed action. Under the No Action Alternative, the proposed action would not be implemented, and the proposed infrastructure improvements would not be constructed and no additional Supplemental Water or Local Water would be provided to the Tribes by Escondido and VID, which would not align with the Settlement Agreement. None of the potential environmental impacts resulting from construction of the proposed project would occur.

## **REGULATORY SETTING**

### **Criteria Air Pollutants**

Air pollutants are regulated at the national, state, and air basin level; each agency has a different level of regulatory responsibility. The U.S. Environmental Protection Agency (EPA) regulates at the national level. The California Air Resources Board (CARB) regulates at the state level. The SDAPCD regulates at the air basin level. The proposed project is located within the San Diego Air Basin (SDAB).

The Clean Air Act (CAA) of 1970 required the EPA to establish National Ambient Air Quality Standards (NAAQS), also known as federal standards. There are federal standards for the following six air pollutants, which were identified from provisions of the CAA of 1970: ozone, nitrogen dioxide (NO<sub>2</sub>), lead, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), carbon monoxide (CO), and sulfur dioxide (SO<sub>2</sub>).

The six air pollutants identified above are also known as ‘criteria pollutants’. The federal standards were set to protect public health, including that of sensitive individuals; thus, the standards continue to change as more medical research is available regarding the health effects of the criteria pollutants. Further description of the criteria air pollutants is provided below.

States retain the option to adopt more stringent standards or to include other specific pollutants. The 1990 CAA Amendments require that each state have an air pollution control plan called the State Implementation Plan (SIP). The SIP includes strategies and control measures to attain the NAAQS by certain deadlines established by the CAA. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The EPA reviews the SIPs to determine whether the plans would conform to the 1990 CAA Amendments and achieve the air quality goals.

The EPA designates air basins (or portions thereof) as being in “attainment,” “nonattainment,” or “unclassified” for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation. As shown in Table 1, the EPA classifies the SDAB as in attainment for NO<sub>2</sub>, SO<sub>2</sub>, lead, PM<sub>10</sub>, and PM<sub>2.5</sub> with respect to federal air quality standards. The SDAB is currently in moderate maintenance for CO and marginal nonattainment for the federal 8-hour ozone standard. The *Eight Hour Ozone Attainment Plan for San Diego County* was prepared by the SDAPCD in 2007, which identifies control measures to reduce emissions of ozone precursors and complies with federal SIP requirements (SDAPCD 2007).

The state of California has established standards for criteria pollutants that are generally stricter than federal standards. The CARB administers the California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the California CAA. The 10 state air pollutants are the six federal standards listed above, as well as visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The SDAB is currently in nonattainment status for the ozone, PM<sub>10</sub>, and PM<sub>2.5</sub> CAAQS.

**Table 1 San Diego Air Basin Attainment Status**

Pollutant	State Status	Federal Status
Carbon Monoxide (CO)	Attainment	<b>Maintenance (Moderate)</b>
Nitrogen Dioxide (NO <sub>2</sub> )	Attainment	Attainment/Unclassified
Ozone (O <sub>3</sub> ) (1-hour)	<b>Non-attainment</b>	No Federal standard
Ozone (O <sub>3</sub> ) (8-hour)	<b>Non-attainment</b>	<b>Non-attainment (Marginal)</b>
Lead (Pb)	Attainment	Attainment/Unclassified
Sulfur Dioxide (SO <sub>2</sub> )	Attainment	Attainment/Unclassified
Respirable Particulate Matter (PM <sub>10</sub> )	<b>Non-attainment</b>	Attainment/Unclassified
Fine Particulate Matter (PM <sub>2.5</sub> )	<b>Non-attainment</b>	Attainment/Unclassified
Nitrogen Dioxide (NO <sub>2</sub> )	Attainment	Attainment/Unclassified
Ozone (O <sub>3</sub> ) (1-hour)	Attainment	Attainment/Unclassified

Sources: EPA 2015a, CARB 2013.

### General Conformity

The General Conformity Rule of the Federal CAA (42 USC 7401) implements Section 176(c) of the CAA, and establishes minimum thresholds for ozone, CO, and other regulated pollutants for nonattainment and maintenance areas. The precursors of ozone include reactive organic gases that are also known as volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>). The regulations apply to a proposed federal action that would cause emissions of criteria air pollutants or ozone precursors above a de minimis level to occur in locations designated as nonattainment or maintenance areas for the emitted pollutants. The purpose of the General Conformity Rule is to:

- Ensure that federal activities do not cause or contribute to new violations of the national ambient air quality standards;
- Ensure that actions do not cause additional or worsen existing violation of, or contribute to new violations of, the national ambient air quality standards; and
- Ensure that attainment of the national ambient air quality standards is not delayed.

A federal agency must make a determination that a federal action conforms to the applicable implementation plan before the action is taken. A conformity determination is required for each pollutant where a total of direct emissions (such as generator emissions) and indirect emissions (such as mobile vehicle emissions) in a nonattainment or maintenance area caused by a federal action is greater than the de minimis thresholds. The SDAB is in nonattainment or maintenance for ozone and CO. As such, the proposed action is subject to the General Conformity Rule.

## **Greenhouse Gas Emissions**

### ***Assembly Bill 32, the California Global Warming Solutions Act of 2006***

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, requires California to reduce statewide GHG emissions to 1990 levels by 2020. AB 32 directs the CARB to develop and implement regulations that reduce statewide GHG emissions. The Climate Change Scoping Plan (Scoping Plan) was approved by CARB in December 2008, and it outlines the state's plan to achieve the GHG reductions required in AB 32. The Scoping Plan contains the primary strategies California will implement to achieve a reduction of 169 million metric tons of carbon dioxide equivalent (MT CO<sub>2</sub>e), or reduce the state's projected 2020 emission levels by approximately 28 percent.

In the Scoping Plan, CARB encourages local governments to adopt a reduction goal for municipal operation emissions and move toward establishing similar goals for community emissions that parallel the state's commitment to reduce GHGs. Although, the specific role local governments will play in meeting the state's AB 32 goals is still being defined, they will nonetheless be key players in implementing GHG reduction strategies. The first adopted version of CARB's Scoping Plan recommended that local governments achieve a 15-percent reduction below 2005 levels by 2020, which aligns with the state's goal of not exceeding 1990 emissions levels by 2020. However, the First Update to the Climate Change Scoping Plan (2013 Update) does not contain a recommended reduction level or percent for local government's municipal operations. The CARB is moving forward with a second update to the Scoping Plan.

### ***Executive Order S-3-05***

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

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

The first California Climate Action Team (CCAT) Report to the Governor in 2006 contained recommendations and strategies to help ensure the targets in Executive Order S-3-05 are met (CCAT 2006). The latest CCAT Biennial Report was released in December 2010 (CCAT 2010).

### ***Executive Order B-30-15***

On April 29, 2015, California Governor Jerry Brown announced Executive Order B-30-15, which contains the following GHG emissions target:

- By 2030, California shall reduce GHG emissions to 40 percent below 1990 levels.

The emission reduction target of 40 percent below 1990 levels by 2030 is an interim-year goal to provide substantial progress toward the ultimate goal of reducing emissions by 80 percent below 1990 levels by 2050.

## **AIR AND GREENHOUSE GAS POLLUTANT DESCRIPTIONS**

### **Criteria Air Pollutants**

Presented below is a description of each of the criteria air pollutants and their known health effects. This section only provides descriptions for criteria air pollutants with the potential to be emitted by the proposed project.

Carbon Monoxide is an odorless, colorless, and toxic gas. Exposure can result in headaches, dizziness, disorientation, nausea, fatigue, or death. The major sources of carbon monoxide in the SDAB are on-road vehicles, aircraft, and off-road vehicles and equipment.

Sulfur Dioxide is a colorless, pungent gas. Long-term exposure to high levels of SO<sub>2</sub> can cause irritation of existing cardiovascular disease, respiratory illness, and changes in the defenses of the lungs. When people with asthma are exposed to high levels of SO<sub>2</sub> for short periods of time during moderate activity, effects may include wheezing, chest tightness, or shortness of breath.

Particulate Matter consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Course particulate matter (PM<sub>10</sub>) includes that portion of the particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter (PM<sub>2.5</sub>) has an aerodynamic diameter of 2.5 microns or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. Both PM<sub>10</sub> and PM<sub>2.5</sub> may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems.

Nitrogen Oxides is a general term pertaining to compounds, including nitric oxide, nitrogen dioxide, and other oxides of nitrogen. NO<sub>x</sub> are produced from burning fuels, including gasoline, diesel, and coal. NO<sub>x</sub> react with VOCs to form smog. NO<sub>x</sub> are also major components of acid rain.

Ozone is formed when ozone precursor pollutants, such as VOCs and NO<sub>x</sub> react with sunlight. Along with ozone, VOC emissions are also transformed into organic aerosols in the atmosphere, which contribute to higher PM<sub>10</sub> levels and lower visibility. Higher concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, kidneys, and central nervous system (EPA 1999). NO<sub>x</sub> acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Lead is also a criteria pollutant. However, the proposed project does not include any components that would result in emissions of lead, such as industrial processes; therefore, lead is not discussed further in this analysis.

### **Greenhouse Gases**

Climate change refers to any substantial change in measures of climate (such as temperature, precipitation, or wind) lasting for decades or longer. GHGs are gases that trap heat in the atmosphere, analogous to the way a greenhouse retains heat. The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat-trapping effects of GHGs, the earth's temperature would be about 34 degrees Celsius cooler (CCAT 2007). California Health and Safety Code Section 38505(g) defines GHGs to include the following compounds: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

CO<sub>2</sub> enters the atmosphere through the burning of fossil fuels, solid waste, trees and wood products, and other chemical reactions such as through the manufacturing of cement. Globally, the largest source of CO<sub>2</sub> emissions is the combustion of fossil fuels in power plants, automobiles, industrial facilities, and other similar sources (EPA 2015b). CH<sub>4</sub> is emitted from a variety of both natural and human-related sources, including fossil fuel production, animal husbandry, rice cultivation, biomass burning, and waste management. N<sub>2</sub>O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste (EPA 2016). HFCs, PFCs, and SF<sub>6</sub> are synthetic, powerful GHGs that are emitted

from a variety of industrial processes and the production of chlorodifluoromethane (HCFC-22). The proposed project would not include any industrial processes and HCFC-22 has been mostly phased out of use in the U.S. under the Montreal Protocol (UNEP 2012); therefore, HFCs, PFCs, and SF<sub>6</sub> are not included in this analysis.

Individual GHGs have varying heat-trapping properties and atmospheric lifetimes. Each GHG is compared to CO<sub>2</sub> with respect to its ability to trap infrared radiation, its atmospheric lifetime, and its chemical structure. The CO<sub>2</sub> equivalent (CO<sub>2</sub>e) is a consistent methodology for comparing GHG emissions, since it normalizes various GHG emissions to a consistent measure. For example, CH<sub>4</sub> is a GHG that is 25 times more potent than CO<sub>2</sub>; therefore, one metric ton of CH<sub>4</sub> is equivalent to 25 metric tons (MT) CO<sub>2</sub>e. Table 2 identifies the CO<sub>2</sub>e and atmospheric lifetimes of basic GHGs.

**Table 2 Carbon Dioxide Equivalents and Atmospheric Lifetimes of Basic GHGs**

GHG	Formula	Carbon Dioxide Equivalent (CO <sub>2</sub> e)	Atmospheric lifetime (years)
Carbon dioxide	CO <sub>2</sub>	1	50-200
Methane	CH <sub>4</sub>	25	12
Nitrous oxide	N <sub>2</sub> O	298	120

Source: EPA 2015b

## STANDARDS OF SIGNIFICANCE

### Criteria Air Pollutants

The SDAPCD does not provide quantitative thresholds for determining the significance of construction or mobile source-related projects. However, the SDAPCD does specify Air Quality Impact Analysis (AQIA) trigger levels for new or modified stationary sources (SDAPCD 1998). If these incremental levels are exceeded, an AQIA must be performed. Although these trigger levels do not generally apply to general land development projects, for comparative purposes, these levels may be used to evaluate the increased emissions from such projects. For CEQA purposes, the screening level thresholds can be used to demonstrate that a project's total emissions would not result in a significant impact to regional air quality. Because the AQIA screening thresholds do not include VOC or PM<sub>2.5</sub>, the screening level for VOC and PM<sub>2.5</sub> used in this analysis are from the South Coast Air Quality Management District (SCAQMD), which generally has stricter emissions thresholds than SDAPCD. These thresholds, listed in Table 3, are used in this analysis to determine whether the proposed action has the potential to violate regional air quality standards or result in a cumulatively considerable increase of criteria pollutants for which the project area is designated nonattainment. The thresholds are applicable to both construction and operational emissions unless otherwise noted.

The General Conformity Rule specifies de minimis thresholds, which are based on the severity of an area's nonattainment with the federal standards. If a project is less than the de minimis thresholds, additional analysis is not required. The SDAB is in marginal nonattainment for ozone and moderate maintenance for CO. As such, the proposed action is subject to the General Conformity Rule, and the applicable de minimis thresholds for CO, VOC, and NO<sub>x</sub> are provided in Table 4.

**Table 3 Air Pollutant Thresholds**

Pollutant	Pounds Per Hour	Pounds Per Day	Tons Per Year
Carbon monoxide (CO)	100	550	100
Nitrogen Oxides (NO <sub>x</sub> )	25	250	40
Respirable Particulate Matter (PM <sub>10</sub> )	--	100	15
Fine Particulate Matter (PM <sub>2.5</sub> )	--	55 <sup>(1)</sup>	10.0 <sup>(2)</sup>
Oxides of Sulfur (SO <sub>x</sub> )	25	250	40
Lead (Pb)	--	3.2	0.6
Volatile Organic Compounds (VOC)	--	75 <sup>(1,3)</sup>	13.7 <sup>(4)</sup>

<sup>(1)</sup> Based on threshold from SCAQMD.

<sup>(2)</sup> Converted from PM<sub>2.5</sub> Pounds per Day threshold

<sup>(3)</sup> There are separate thresholds for construction and operation: 75 lbs/day for Construction and 55 lbs/day for Operation

<sup>(4)</sup> Converted from VOC Pounds per Day threshold: 13.7 tons/year for Construction and 10.0 tons/year for Operation

Sources: SDAPCD 1998, SCAQMD 2015

**Table 4 Applicable De Minimis Thresholds**

Criteria Pollutant	Tons Per Year
<b>Ozone (NO<sub>x</sub>)</b> <i>Marginal and moderate nonattainment inside an ozone transport region</i>	100
<b>Ozone (VOC)</b> <i>Marginal and moderate nonattainment inside an ozone transport region</i>	50
<b>Carbon Monoxide (CO)</b> <i>All nonattainment &amp; maintenance</i>	100

Source: 40 CFR Ch. I (7-1-05 Edition) §93.15

### Greenhouse Gas Emissions

The CEQA Guidelines do not identify a quantitative threshold of significance for GHG emissions. Instead, the CEQA Guidelines leave the determination of the significance of GHG emissions up to the lead agency and authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts (CEQA Guidelines §§15064.4(a), 15064.7(c).)

Specifically, CEQA Guidelines §15064.7(c) states, "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

There are no quantitative GHG thresholds of significance adopted by the state of California or SDAPCD. Therefore, this analysis uses the threshold of significance adopted by the County of San Diego in June 2012 to determine whether the GHG emissions from the proposed project may have a significant impact on the environment. The County's Guidelines for Determining Significance for Climate Change are based on regional data and therefore may be used by lead agencies in the region other than the County of San

Diego. The purpose of these guidelines is to ensure that new development in the county achieves its fair share of emission reductions needed to meet the statewide AB 32 mandate.

The County’s guidelines establish a screening level threshold of 2,500 MT CO<sub>2</sub>e per year. This screening level applies separately to both construction and operation. Actions that would emit less than 2,500 MT CO<sub>2</sub>e per year are considered to have insignificant emissions and would not affect the region’s ability to meet reduction goals (County of San Diego 2013). Therefore, actions that result in emissions that are below this screening level threshold would not result in significant GHG emissions and no further analysis is required.

**CONSTRUCTION IMPACTS**

Construction activities from the proposed project would result in temporary increases in air pollutant emissions. These emissions would be generated primarily from construction equipment exhaust, earth disturbance, construction worker vehicle trips, and heavy duty truck trips. Air pollutant and GHG emissions were estimated using the construction data provided in the San Pasqual Undergrounding Project Feasibility Project (Black & Veatch 2016), and the emission factors included in the CalEEMod model (Version 2013.2.2) (SCAQMD 2013) and the Sacramento Metropolitan Air Quality Management District’s (SMAQMD) Road Construction Model (Version 7.1.5.1), which take into account the hours of operation, load factor, and the emission factors for each piece of equipment. Applicant-provided construction equipment parameters and schedule were utilized. For detailed model assumptions and output, please see Attachment A.

**Criteria Air Pollutants**

The criteria air pollutant emissions from construction of the proposed project are summarized in Table 5. As shown in Table 5, construction emissions would not exceed the significance thresholds during any individual construction phase. All construction emissions are below the recommended federal and regional significance thresholds. Therefore, the proposed project would not result in a significant regional air quality impacts during the construction phases.

**Table 5 Estimated Construction Maximum Air Pollutant Emissions**

Construction Activity	Maximum Daily Emissions (pounds/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
Access Road	8.0	84.0	44.0	-	6.6	4.2
Pipeline	2.3	24.0	19.4	0.0	4.2	2.7
Desilting Basin	2.2	23.3	18.6	0.0	4.1	2.7
<b>Total Maximum Daily Emission</b>	12.5	131.3	82.0	0.0	14.9	9.6
<b>SDAPCD Threshold</b>	<b>75</b>	<b>250</b>	<b>550</b>	<b>250</b>	<b>100</b>	<b>55</b>
Impact?	No	No	No	No	No	No

Source: CalEEMod Version 2013.2.2. SMAQMD 2016. See Attachment A for model output.

### Greenhouse Gas Emissions

The GHG emissions that would result from construction of the proposed project are summarized in Table 6. Construction of the proposed project would result in total GHG emissions of 519.3 MT CO<sub>2</sub>e over 9 months (36 weeks). Thus, annual GHG emissions would not exceed the 2,500 MT CO<sub>2</sub>e threshold during construction. Therefore, a significant GHG emissions impact would not occur from construction of the proposed project.

**Table 6 Estimated Construction GHG Emissions**

Construction Activity	GHG Emissions (MT CO <sub>2</sub> e)
Access Road	115.3
Pipeline	211.0
Desilting Basin	192.9
<b>Total</b>	<b>519.3</b>
<b>County GHG Threshold</b>	<b>2,500</b>
Impact?	No

Source: CalEEMod Version 2013.2.2. SMAQMD 2016. See Attachment A for model output.

### OPERATION IMPACTS

#### Criteria Air Pollutants

Once constructed, the proposed project would not include any new stationary sources of criteria pollutants. However, the proposed project would generate new vehicular trips to, from, and along access roads to facilitate maintenance. New vehicular trips would emit criteria pollutants, however, these trips would be few and infrequent, resulting in minimal emissions. As such, operational emissions would be below the significance thresholds as well as the applicable General Conformity de minimis thresholds. Therefore, additional conformity analysis is not required; the proposed action would conform to the applicable implementation plan for the SDAB.

#### Greenhouse Gas Emissions

As discussed above, the proposed project would generate new vehicle trips during the operation phase of the project. These trips would be few and infrequent, resulting in minimal emissions that would not exceed the significance thresholds for GHG emissions.

### CUMULATIVE IMPACTS

#### Criteria Air Pollutants

The geographic context for the analysis of cumulative impacts relative to criteria air pollutants is the SDAB. The County of San Diego is presently designated as being a non-attainment area for the federal ozone standard; specifically, the County is classified as a marginal nonattainment area for the federal 2008 8-hr ozone standard. The County is also a non-attainment area for the CAAQS for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>. Consequently, the pollutants of concern are PM<sub>10</sub>, PM<sub>2.5</sub>, and ozone precursors (VOC and NO<sub>x</sub>). If a proposed project exceeds the regional thresholds for PM<sub>10</sub>, or PM<sub>2.5</sub>, then it would contribute to a cumulatively considerable impact for those pollutants. If a project exceeds the regional threshold for VOC and NO<sub>x</sub>, then it follows that the project would contribute to a cumulatively considerable impact for ozone.

As shown in Table 5, the proposed project’s construction-generated emissions would not exceed the applicable SDAPCD’s regional thresholds of significance. As shown in the prior section, the proposed project’s operational emissions would also not exceed the SDAPCD’s regional thresholds of significance. Therefore, construction and operation of the proposed project would not result in a significant cumulative criteria pollutant impact.

Additionally, it is assumed that an action that conforms to the applicable planning document for the lead agency and does not have emissions exceeding the significance thresholds would not result in a cumulatively considerable net increase to ozone. It is assumed that SDAPCD’s Regional Attainment Strategy accounts for growth identified in planning documents that were adopted prior to development of the Regional Attainment Strategy. In other words, it is reasonable to conclude that if an action is consistent with the applicable general plan land use designation (or similar planning document), and if the general plan (or other plan) was adopted prior to the Regional Attainment Strategy, then the growth generated by the action would be consistent with the growth assumed within the Regional Attainment Strategy. As such, the proposed project would not result in construction of new residences (a source of population increase) or result in new operational jobs. The construction of a new pipeline to replace an existing canal, access road, and desilting basin would not be growth inducing or result in an overall increase in operational vehicle miles traveled or operational emissions in the proposed project area or SDAB. Therefore, the proposed project would not result in a significant cumulative impact for criteria pollutants during operation.

**General Conformity**

As detailed in Table 7, the proposed project would generate less than the de minimis threshold for general conformity. Therefore, additional analysis is not required. For the purposes of this analysis, all emissions were assumed to occur within the 2017 calendar year.

**Table 7 Estimated Construction Annual Air Pollutant Emissions**

Construction Activity	Annual Emissions (Tons)		
	VOC	NO <sub>x</sub>	CO
Access Road	0.1	1.0	0.6
Pipeline	0.2	2.3	1.9
Desilting Basin	0.2	2.3	1.8
<b>Total Maximum Daily Emission</b>	0.5	5.6	4.6
<b>De Minimis Threshold</b>	<b>50</b>	<b>100</b>	<b>100</b>
Exceed Threshold?	No	No	No

Source: SCAQMD CalEEMod Version 2013.2.2. SMAQMD 2016. See Attachment A for model output.

**Greenhouse Gas Emissions**

Individual actions of any size are generally of insufficient magnitude by themselves to influence climate change or result in a substantial contribution to the global GHG inventory. Thus, GHG impacts are recognized as exclusively cumulative impacts; therefore, there are no non-cumulative GHG emission impacts from a climate change perspective from construction of the proposed project (CAPCOA 2008). Accordingly, the discussion of GHG emissions from construction and operation of the proposed project addresses the action’s cumulative impact related to GHG emissions. The proposed project would not result in cumulatively considerable GHG emissions.

## SUMMARY

The proposed action would not generate criteria pollutant or GHG emissions during construction or operation that would exceed the applicable significance thresholds. Therefore, no mitigation measures are required.

If you have any questions regarding this analysis, please do not hesitate to call at (916) 325-1429 or email at [chryss.meier@atkinsglobal.com](mailto:chryss.meier@atkinsglobal.com).

Sincerely,



Chryss Meier  
Senior Scientist

Attachment A: CalEEMod Air Quality Model Output

## REFERENCES

- Black & Veatch 2016. San Pasqual Undergrounding Project Feasibility Report. March.
- California Air Pollution Control Offices Association (CAPCOA). 2013. California Emissions Estimator Model (CalEEMod) version 2013.2.2.
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**APPENDIX A**  
**CalEEMod Air Quality Model Output**

## San Pasqual Undergrounding Project San Diego County, Summer

### 1.0 Project Characteristics

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#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

#### 1.2 Other Project Characteristics

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	40
<b>Climate Zone</b>	13			<b>Operational Year</b>	2017
<b>Utility Company</b>	San Diego Gas & Electric				
<b>CO2 Intensity (lb/MWhr)</b>	720.49	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Construction-only analysis

Construction Phase - Schedule provided by BV

Off-road Equipment - Equipment and hours provided by BV

Off-road Equipment - Equipment and hours provided by BV

Grading - Provided by BV

Trips and VMT - Vendor trips increased for pipeline construction. Haul trip length assumed to be 0.5 mile to account for on-site balancing.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	195.00
tblConstructionPhase	NumDays	0.00	195.00
tblConstructionPhase	PhaseEndDate	6/29/2018	9/29/2017
tblConstructionPhase	PhaseStartDate	9/30/2017	1/1/2017
tblGrading	AcresOfGrading	0.00	0.70
tblGrading	MaterialExported	0.00	2,731.00
tblGrading	MaterialImported	0.00	3,643.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	VendorTripNumber	0.00	10.00

## 2.0 Emissions Summary

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### 2.1 Overall Construction (Maximum Daily Emission)

#### 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					
2017	4.5460	47.2692	38.0148	0.0453	5.7402	2.5126	8.2528	3.0649	2.3116	5.3764	0.0000	4,554.8116	4,554.8116	1.2626	0.0000	4,581.3264
<b>Total</b>	<b>4.5460</b>	<b>47.2692</b>	<b>38.0148</b>	<b>0.0453</b>	<b>5.7402</b>	<b>2.5126</b>	<b>8.2528</b>	<b>3.0649</b>	<b>2.3116</b>	<b>5.3764</b>	<b>0.0000</b>	<b>4,554.8116</b>	<b>4,554.8116</b>	<b>1.2626</b>	<b>0.0000</b>	<b>4,581.3264</b>

### 2.2 Overall Operational

#### Not Applicable

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pipeline Construction	Site Preparation	1/1/2017	9/29/2017	5	195	Pipeline Construction
2	Desilting Basin	Grading	1/1/2017	9/29/2017	5	195	Desilting Basin

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pipeline Construction	Excavators	1	8.00	162	0.38
Pipeline Construction	Rubber Tired Dozers	1	8.00	255	0.40
Pipeline Construction	Rollers	1	8.00	80	0.38
Desilting Basin	Concrete/Industrial Saws	0	8.00	81	0.73
Desilting Basin	Excavators	1	8.00	162	0.38
Desilting Basin	Rollers	1	8.00	80	0.38
Pipeline Construction	Graders	0	8.00	174	0.41
Desilting Basin	Rubber Tired Dozers	1	8.00	255	0.40
Desilting Basin	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pipeline Construction	4	10.00	10.00	0.00	16.80	6.60	0.50	LD_Mix	HDT_Mix	HHDT
Desilting Basin	4	10.00	0.00	455.00	16.80	6.60	0.50	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

### 3.2 Pipeline Construction - 2017

#### 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					2.7099	0.0000	2.7099	1.4896	0.0000	1.4896			0.0000			0.0000
Off-Road	2.1803	23.1548	17.7463	0.0199		1.2496	1.2496		1.1496	1.1496	0.0000	2,037.6993	2,037.6993	0.6244		2,050.816
<b>Total</b>	<b>2.1803</b>	<b>23.1548</b>	<b>17.7463</b>	<b>0.0199</b>	<b>2.7099</b>	<b>1.2496</b>	<b>3.9595</b>	<b>1.4896</b>	<b>1.1496</b>	<b>2.6392</b>	<b>0.0000</b>	<b>2,037.6993</b>	<b>2,037.6993</b>	<b>0.6244</b>		<b>2,050.816</b>

#### 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	0.0924	0.7853	1.0241	2.1700e-003	0.0600	0.0113	0.0713	0.0171	0.0104	0.0275		213.7638	213.7638	1.6100e-003		213.7976
Worker	0.0369	0.0555	0.5985	1.6000e-003	0.1277	8.9000e-004	0.1286	0.0339	8.2000e-004	0.0347		128.6303	128.6303	6.0800e-003		128.7580
<b>Total</b>	<b>0.1293</b>	<b>0.8408</b>	<b>1.6226</b>	<b>3.7700e-003</b>	<b>0.1878</b>	<b>0.0122</b>	<b>0.2000</b>	<b>0.0510</b>	<b>0.0112</b>	<b>0.0622</b>		<b>342.3941</b>	<b>342.3941</b>	<b>7.6900e-003</b>		<b>342.5555</b>

### 3.3 Desilting Basin - 2017

#### 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					2.7137	0.0000	2.7137	1.4901	0.0000	1.4901			0.0000				0.0000
Off-Road	2.1803	23.1548	17.7463	0.0199		1.2496	1.2496		1.1496	1.1496	0.0000	2,037.6993	2,037.6993	0.6244			2,050.8106
<b>Total</b>	<b>2.1803</b>	<b>23.1548</b>	<b>17.7463</b>	<b>0.0199</b>	<b>2.7137</b>	<b>1.2496</b>	<b>3.9633</b>	<b>1.4901</b>	<b>1.1496</b>	<b>2.6397</b>	<b>0.0000</b>	<b>2,037.6993</b>	<b>2,037.6993</b>	<b>0.6244</b>			<b>2,050.8106</b>

#### 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	0.0192	0.0633	0.3010	9.0000e-005	1.0600e-003	2.9000e-004	1.3600e-003	3.0000e-004	2.7000e-004	5.7000e-004		8.3886	8.3886	1.5000e-004			8.3917
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	0.0369	0.0555	0.5985	1.6000e-003	0.1277	8.9000e-004	0.1286	0.0339	8.2000e-004	0.0347		128.6303	128.6303	6.0800e-003			128.7580
<b>Total</b>	<b>0.0561</b>	<b>0.1188</b>	<b>0.8995</b>	<b>1.6900e-003</b>	<b>0.1288</b>	<b>1.1800e-003</b>	<b>0.1300</b>	<b>0.0342</b>	<b>1.0900e-003</b>	<b>0.0353</b>		<b>137.0189</b>	<b>137.0189</b>	<b>6.2300e-003</b>			<b>137.1496</b>

## San Pasqual Undergrounding Project San Diego County, Annual

### 1.0 Project Characteristics

#### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.00	0.00	0

#### 1.2 Other Project Characteristics

<b>Urbanization</b>	Rural	<b>Wind Speed (m/s)</b>	2.6	<b>Precipitation Freq (Days)</b>	40
<b>Climate Zone</b>	13			<b>Operational Year</b>	2017
<b>Utility Company</b>	San Diego Gas & Electric				
<b>CO2 Intensity (lb/MW hr)</b>	720.49	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

#### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Construction-only analysis

Construction Phase - Schedule provided by BV

Off-road Equipment - Equipment and hours provided by BV

Off-road Equipment - Equipment and hours provided by BV

Grading - Provided by BV

Trips and VMT - Vendor trips increased for pipeline construction. Haul trip length assumed to be 0.5 mile to account for on-site balancing.

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	195.00
tblConstructionPhase	NumDays	0.00	195.00
tblConstructionPhase	PhaseEndDate	6/29/2018	9/29/2017
tblConstructionPhase	PhaseStartDate	9/30/2017	1/1/2017
tblGrading	AcresOfGrading	0.00	0.70
tblGrading	MaterialExported	0.00	2,731.00
tblGrading	MaterialImported	0.00	3,643.00
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	HaulingTripLength	20.00	0.50
tblTripsAndVMT	VendorTripNumber	0.00	10.00

**2.0 Emissions Summary**

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**2.1 Overall Construction**

**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					
2017	0.4442	4.6123	3.7331	4.4000e-003	0.5590	0.2450	0.8039	0.2987	0.2254	0.5240	0.0000	401.6114	401.6114	0.1117	0.0000	403.9567
<b>Total</b>	<b>0.4442</b>	<b>4.6123</b>	<b>3.7331</b>	<b>4.4000e-003</b>	<b>0.5590</b>	<b>0.2450</b>	<b>0.8039</b>	<b>0.2987</b>	<b>0.2254</b>	<b>0.5240</b>	<b>0.0000</b>	<b>401.6114</b>	<b>401.6114</b>	<b>0.1117</b>	<b>0.0000</b>	<b>403.9567</b>

**2.2 Overall Operational**

**Not Applicable**

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pipeline Construction	Site Preparation	1/1/2017	9/29/2017	5	195	Pipeline Construction
2	Desilting Basin	Grading	1/1/2017	9/29/2017	5	195	Desilting Basin

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
Pipeline Construction	Excavators	1	8.00	162	0.38
Pipeline Construction	Rubber Tired Dozers	1	8.00	255	0.40
Pipeline Construction	Rollers	1	8.00	80	0.38
Desilting Basin	Concrete/Industrial Saws	0	8.00	81	0.73
Desilting Basin	Excavators	1	8.00	162	0.38
Desilting Basin	Rollers	1	8.00	80	0.38
Pipeline Construction	Graders	0	8.00	174	0.41
Desilting Basin	Rubber Tired Dozers	1	8.00	255	0.40
Desilting Basin	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Pipeline Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37

#### Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pipeline Construction	4	10.00	10.00	0.00	16.80	6.60	0.50	LD_Mix	HDT_Mix	HHDT

Desilting Basin	4	10.00	0.00	455.00	16.80	6.60	0.50	LD_Mix	HDT_Mix	HHDT
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### 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

### 3.2 Pipeline Construction - 2017

#### 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					0.2642	0.0000	0.2642	0.1452	0.0000	0.1452	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2126	2.2576	1.7303	1.9400e-003		0.1218	0.1218		0.1121	0.1121	0.0000	180.2353	180.2353	0.0552	0.0000	181.3950
<b>Total</b>	<b>0.2126</b>	<b>2.2576</b>	<b>1.7303</b>	<b>1.9400e-003</b>	<b>0.2642</b>	<b>0.1218</b>	<b>0.3861</b>	<b>0.1452</b>	<b>0.1121</b>	<b>0.2573</b>	<b>0.0000</b>	<b>180.2353</b>	<b>180.2353</b>	<b>0.0552</b>	<b>0.0000</b>	<b>181.3950</b>

#### 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	9.8400e-003	0.0789	0.1242	2.1000e-004	5.7400e-003	1.1100e-003	6.8400e-003	1.6400e-003	1.0200e-003	2.6600e-003	0.0000	18.8405	18.8405	1.4000e-004	0.0000	18.8435
Worker	3.5100e-003	5.9800e-003	0.0551	1.5000e-004	0.0122	9.0000e-005	0.0122	3.2300e-003	8.0000e-005	3.3100e-003	0.0000	10.7867	10.7867	5.4000e-004	0.0000	10.7980

<b>Total</b>	<b>0.0134</b>	<b>0.0848</b>	<b>0.1793</b>	<b>3.6000e-004</b>	<b>0.0179</b>	<b>1.2000e-003</b>	<b>0.0191</b>	<b>4.8700e-003</b>	<b>1.1000e-003</b>	<b>5.9700e-003</b>	<b>0.0000</b>	<b>29.6272</b>	<b>29.6272</b>	<b>6.8000e-004</b>	<b>0.0000</b>	<b>29.6415</b>
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### 3.3 Desilting Basin - 2017

#### 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					0.2646	0.0000	0.2646	0.1453	0.0000	0.1453	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2126	2.2576	1.7303	1.9400e-003		0.1218	0.1218		0.1121	0.1121	0.0000	180.2353	180.2353	0.0552	0.0000	181.3950
<b>Total</b>	<b>0.2126</b>	<b>2.2576</b>	<b>1.7303</b>	<b>1.9400e-003</b>	<b>0.2646</b>	<b>0.1218</b>	<b>0.3864</b>	<b>0.1453</b>	<b>0.1121</b>	<b>0.2574</b>	<b>0.0000</b>	<b>180.2353</b>	<b>180.2353</b>	<b>0.0552</b>	<b>0.0000</b>	<b>181.3950</b>

#### 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	2.1500e-003	6.2700e-003	0.0382	1.0000e-005	1.0000e-004	3.0000e-005	1.3000e-004	3.0000e-005	3.0000e-005	6.0000e-005	0.0000	0.7269	0.7269	1.0000e-005	0.0000	0.7272
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	3.5100e-003	5.9800e-003	0.0551	1.5000e-004	0.0122	9.0000e-005	0.0122	3.2300e-003	8.0000e-005	3.3100e-003	0.0000	10.7867	10.7867	5.4000e-004	0.0000	10.7980
<b>Total</b>	<b>5.6600e-003</b>	<b>0.0123</b>	<b>0.0933</b>	<b>1.6000e-004</b>	<b>0.0123</b>	<b>1.2000e-004</b>	<b>0.0124</b>	<b>3.2600e-003</b>	<b>1.1000e-004</b>	<b>3.3700e-003</b>	<b>0.0000</b>	<b>11.5136</b>	<b>11.5136</b>	<b>5.5000e-004</b>	<b>0.0000</b>	<b>11.5251</b>

## Road Construction Emissions Model, Version 7.1.5.1

Emission Estimates for -> SPUP - Access Road				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	CO2 (lbs/day)
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	1.5	9.2	15.1	3.2	0.7	2.5	1.1	0.6	0.5	1,849.5
Grading/Excavation	8.0	44.0	84.0	6.6	4.1	2.5	4.2	3.7	0.5	9,321.4
Drainage/Utilities/Sub-Grade	6.7	35.7	64.2	5.9	3.4	2.5	3.6	3.1	0.5	7,200.9
Paving	2.8	16.1	23.4	1.6	1.6	-	1.4	1.4	-	2,970.4
Maximum (pounds/day)	8.0	44.0	84.0	6.6	4.1	2.5	4.2	3.7	0.5	9,321.4
Total (tons/construction project)	0.1	0.6	1.0	0.1	0.1	0.0	0.1	0.0	0.0	115.3

Notes: Project Start Year -> 2017  
 Project Length (months) -> 2  
 Total Project Area (acres) -> 2  
 Maximum Area Disturbed/Day (acres) -> 0  
 Total Soil Imported/Exported (yd<sup>3</sup>/day)-> 10

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for -> SPUP - Access Road				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust	CO2 (kgs/day)
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM10 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	0.7	4.2	6.9	1.4	0.3	1.1	0.5	0.3	0.2	840.7
Grading/Excavation	3.6	20.0	38.2	3.0	1.8	1.1	1.9	1.7	0.2	4,237.0
Drainage/Utilities/Sub-Grade	3.0	16.2	29.2	2.7	1.6	1.1	1.6	1.4	0.2	3,273.1
Paving	1.3	7.3	10.6	0.7	0.7	-	0.6	0.6	-	1,350.2
Maximum (kilograms/day)	3.6	20.0	38.2	3.0	1.8	1.1	1.9	1.7	0.2	4,237.0
Total (megagrams/construction project)	0.1	0.5	0.9	0.1	0.0	0.0	0.0	0.0	0.0	104.5

Notes: Project Start Year -> 2017  
 Project Length (months) -> 2  
 Total Project Area (hectares) -> 1  
 Maximum Area Disturbed/Day (hectares) -> 0  
 Total Soil Imported/Exported (meters<sup>3</sup>/day)-> 8

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.