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October 17, 2019

Mr. Jeff Kashak
County of San Diego
Department of Public Works
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Reference: Air Quality Analysis for the Ashwood Street Corridor Improvements Project
(RECON Number 8661)

Dear Mr. Kashak:

This letter describes the potential short-term local and regional air quality impacts resulting from construction of the Ashwood Street Corridor Improvements Project (project) located within the unincorporated community of Lakeside in eastern San Diego County, California. As discussed in this report, the project would not result in any significant air quality impacts during construction. Once construction is complete, there would be no operational source of emissions. Therefore, operational impacts would be less than significant.

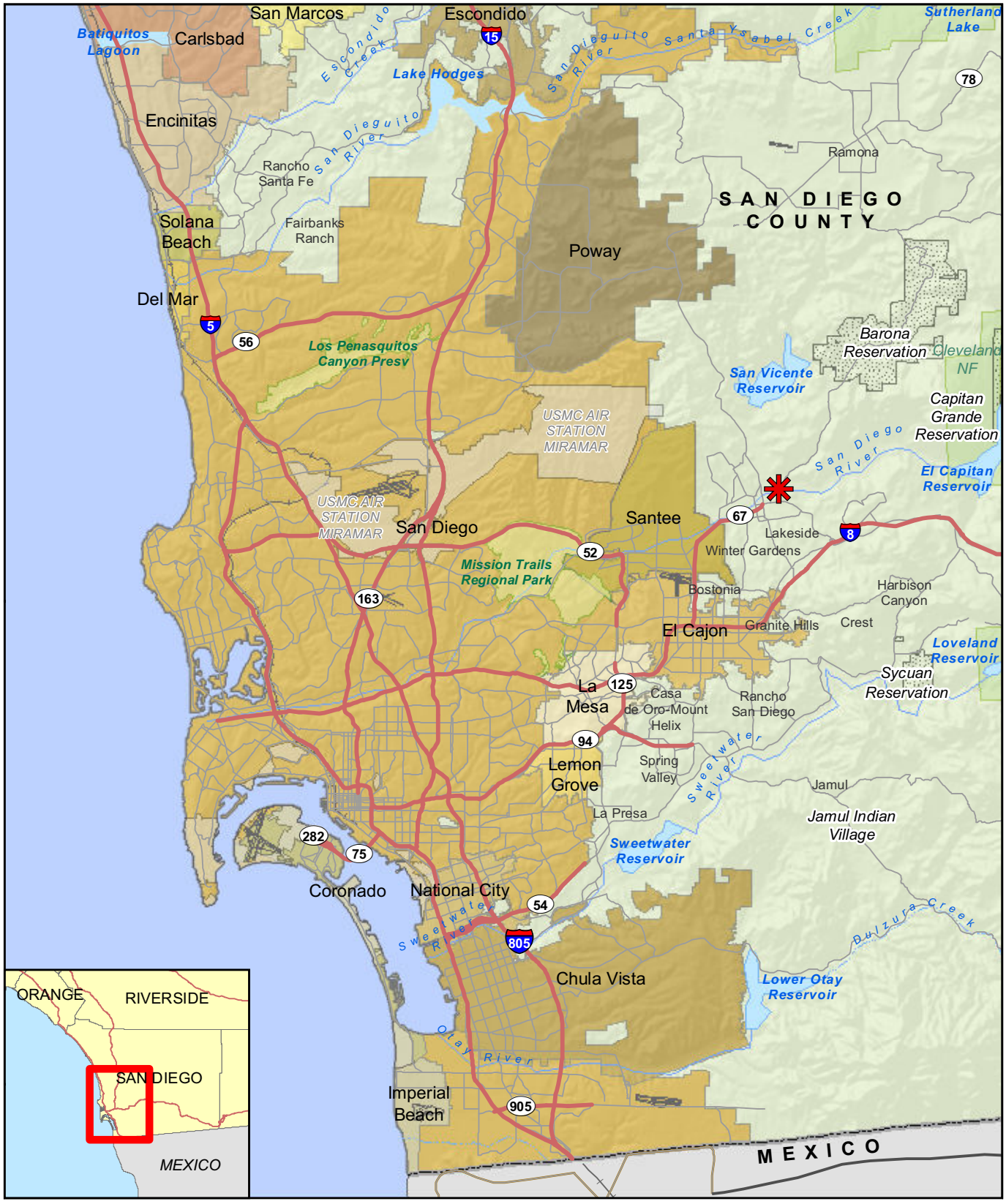
1.0 Introduction

1.1 Purpose of the Report

The purpose of this analysis is to characterize existing air quality conditions at the project site and in the region, identify applicable rules and regulations, and analyze air quality impacts from construction and operation of the project. This report was prepared in accordance with the County of San Diego (County) Guidelines for Determining Significance and Report Format Content and Requirements.

1.2 Project Location and Description

The County Department of Public Works proposes to improve an approximately 1.3-mile segment of Ashwood Street within the unincorporated community of Lakeside in San Diego County (Figures 1 and 2). Specifically, improvements would occur on Ashwood Street between Mapleview Street and approximately 1,400 feet north of the intersection with Willow Road (where Ashwood Street transitions into Wildcat Canyon Road). The goals of the project are to improve traffic movement and sight distance at various locations including El Capitan High School, Cactus County Park, and the intersections of Ashwood Street with Mapleview Street and Willow Road. The project would also enhance pedestrian access with the continuation of sidewalk along the west side of Ashwood Street. The project would not impact the existing bicycle lanes or equestrian crossing associated with the San Diego River Park Regional Trail. All pedestrian curb ramps installed by the County would be compliant with the Americans with Disability Act requirements, including truncated domes and crosswalk pavement markings.



Project Location

FIGURE 1
Regional Location
Ashwood Street Corridor Improvements Project

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Image Source: NearMap (flown September 2019)

Project Boundary

FIGURE 2
Project Location on Aerial Photograph
Ashwood Street Corridor Improvements Project

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Specifically, Mapleview Street would be improved by installing an additional left-turn lane for vehicles traveling eastbound turning north onto Ashwood Street. As motorists travel north, Ashwood Street would be widened to include an additional travel lane only for vehicles entering El Capitan High School. To enhance turning movements into and out of El Capitan High School, a traffic signal system would be installed at the school's entrance; however, the primary northbound travel lane on Ashwood Street would remain unsignalized.

A raised median would be installed to separate through-traffic from vehicles entering the school. To accommodate the roadway widening near El Capitan High School, a soil nail retaining wall and a soldier pile wall would be installed along the east and west sides of Ashwood Street, respectively, due to the proximity of steep slopes.

To improve pedestrian access, a sidewalk would be installed on the west side of Ashwood Street between El Capitan High School and Cactus County Park. A dedicated left-turn lane would also be installed for vehicles entering Cactus Park's western property. At the intersection of Ashwood Street and Willow Road, the existing all-way stop would be signalized with Americans with Disability Act-compliant pedestrian ramps and crosswalk pavement markings, and a dedicated left-turn lane would be added in each direction.

Existing storm drain facilities would be relocated and concrete brow ditches would be installed to adequately convey and capture stormwater runoff along Ashwood Street. Stormwater runoff would either be conveyed to proposed biofiltration basins for treatment or directed to curb inlets to reduce the volume of runoff discharged from the site. The project would not alter or modify the existing culvert system that conveys flows from the San Diego River underneath Ashwood Street.

Following approval of the project, the County would proceed with acquiring right-of-way necessary to construct the road improvements, including areas for slopes, drainages, or other facilities. In addition, temporary easements would be required during construction activities. No structure demolitions are proposed. Construction is anticipated to take approximately 24 months to complete. No nighttime construction is anticipated to be required.

2.0 Existing Conditions

2.1 Existing Setting

The project is located in the San Diego County, about 20 miles east of the Pacific Ocean, within the western portion of the San Diego Air Basin (SDAB). The western portion of the SDAB is surrounded by mountains to the north, east, and south. These mountains tend to restrict airflow and concentrate pollutants in the valleys and low-lying areas below.

2.2 Climate and Meteorology

The project area, like the rest of San Diego County, has a Mediterranean climate characterized by warm, dry summers and mild winters. The mean annual temperature for the project area is 65 degrees Fahrenheit (°F). The average annual precipitation is 16 inches, falling primarily from November to April. Winter low temperatures in the project area average about 42°F, and summer high temperatures average about 91°F. The average relative humidity is 69 percent and is based on the yearly average humidity at Lindbergh Field (Western Regional Climate Center 2019).

The prevailing westerly wind pattern is sometimes interrupted by regional "Santa Ana" conditions. A Santa Ana occurs when a strong high pressure develops over the Nevada-Utah area and overcomes the prevailing westerly coastal winds, sending strong, steady, hot, dry northeasterly winds over the mountains and out to sea.

Strong Santa Ana winds tend to blow pollutants out over the ocean, producing clear days. However, at the onset or during breakdown of these conditions, or if the Santa Ana is weak, local air quality may be adversely affected. In these cases, emissions from the South Coast Air Basin to the north are blown out over the ocean, and low pressure over Baja California draws this pollutant-laden air mass southward. As the high pressure weakens, prevailing northwesterly winds reassert themselves and send this cloud of contamination ashore in the SDAB. When this event does occur, the combination of transported and locally produced contaminants produce the worst air quality measurements recorded in the basin.

2.3 Regulatory Setting

The project site lies within the SDAB, which is regulated locally by the San Diego Air Pollution Control District (SDAPCD). Air quality at a given location is a function of the types and quantities of pollutants being emitted into the air locally and throughout the basin, and the dispersal rates of pollutants within the region. The major factors affecting pollutant dispersion are wind speed and direction, the vertical dispersion of pollutants (which is affected by inversions), and the local topography.

2.3.1 Federal Regulations

Ambient Air Quality Standards (AAQS) represent the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. The federal Clean Air Act (CAA) was enacted in 1970 and amended in 1977 and 1990 (42 U.S. Code [U.S.C.] 7401) for the purposes of protecting and enhancing the quality of the nation's air resources to benefit public health, welfare, and productivity. In 1971, in order to achieve the purposes of Section 109 of the Clean Air Act [42 U.S.C. 7409], the U.S. Environmental Protection Agency (EPA) developed primary and secondary National AAQS (NAAQS).

Six pollutants of primary concern were designated: ozone (O_3), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and particulate matter (PM_{10} and $PM_{2.5}$). The primary NAAQS "in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health…." and the secondary standards "…protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air" [42 U.S.C. 7409(b)(2)]. The primary NAAQS were established, with a margin of safety, considering long-term exposure for the most sensitive groups in the general population (i.e., children, senior citizens, and people with breathing difficulties). The NAAQS are presented in Table 1 (California Air Resources Board [CARB] 2016).

An air basin is designated as either attainment or non-attainment for a particular pollutant. Once a non-attainment area has achieved the AAQS for a particular pollutant, it is re-designated as an attainment area for that pollutant. To be re-designated, the area must meet air quality standards for three consecutive years. After re-designation to attainment, the area is known as a maintenance area and must develop a 10-year plan for continuing to meet and maintain air quality standards, as well as satisfy other requirements of the federal CAA. The SDAB is a non-attainment area for the federal eight-hour ozone standard.

2.3.2 State Regulations

2.3.2.1 Criteria Pollutants

The CARB has developed the California AAQS (CAAQS) and generally has set more stringent limits on the criteria pollutants than the NAAQS (see Table 1). In addition to the federal criteria pollutants, the CAAQS also specify standards for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride (see Table 1).

Similar to the federal CAA, the state classifies either "attainment" or "non-attainment" areas for each pollutant based on the comparison of measured data with the CAAQS. The SDAB is a non-attainment area for the state ozone standards, the state PM_{10} standard, and the state $PM_{2.5}$ standard.

Table 1
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]		National Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.07 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM_{10})[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		–		
Fine Particulate Matter ($PM_{2.5}$)[9]	24 Hour	No Separate State Standard		35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-dispersive Infrared Photometry	35 ppm (40 mg/m³)	–	Non-dispersive Infrared Photometry
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		–	–	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemi-luminescence	100 ppb (188 µg/m³)	–	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	–	Ultraviolet Fluorescence; Spectro-photometry (Pararosaniline Method)
	3 Hour	–		–	0.5 ppm (1,300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[11]	–	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	–		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chroma-tography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chroma-tography			

Table 1
Ambient Air Quality Standards

NOTES:

ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; – = not applicable.

[1] California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency (EPA) for further clarification and current national policies.

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

[4] Any equivalent measurement method which can be shown to the satisfaction of the Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.

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

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

[7] Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

[8] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

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

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

[11] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
Note that the 1-hour national standard is in units of ppb. California standards are in units of ppm. To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

[12] The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

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

[14] In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

SOURCE: CARB 2016.

2.3.2.2 Toxic Air Contaminants

The public's exposure to toxic air contaminants (TACs) is a significant public health issue in California. Diesel-exhaust particulate matter emissions have been established as TACs. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health (Assembly Bill 1807: Health and Safety Code Sections 39650–39674). The California 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 California Air Toxics Program establishes the process for the identification and control of TACs and includes provisions to make the public aware of significant toxic exposures and for reducing risk. Additionally, the Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill 2588, 1987, Connelly Bill) was enacted in 1987 and requires stationary sources to report the types and quantities of certain substances routinely released into the air.

The goals of the Air Toxics "Hot Spots" Act are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels.

The Children's Environmental Health Protection Act, California Senate Bill 25 (Chapter 731, Escutia, Statutes of 1999), focuses on children's exposure to air pollutants. The act requires CARB to review its air quality standards from a children's health perspective, evaluate the statewide air monitoring network, and develop any additional air toxic control measures needed to protect children's health. Locally, toxic air pollutants are regulated through the SDAPCD Regulation XII. Of particular concern statewide are diesel-exhaust particulate matter emissions. Diesel-exhaust particulate matter was established as a TAC in 1998, and is estimated to represent a majority of the cancer risk from TACs statewide (based on the statewide average). Diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB and are listed as carcinogens either under the state's Proposition 65 or under the federal Hazardous Air Pollutants program.

Following the identification of diesel particulate matter (DPM) as a TAC in 1998, CARB has worked on developing strategies and regulations aimed at reducing the risk from DPM. The overall strategy for achieving these reductions is found in the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB 2000). A stated goal of the plan is to reduce the statewide cancer risk arising from exposure to DPM by 85 percent by 2020.

In April 2005, CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB 2005). The handbook makes recommendations directed at protecting sensitive land uses from air pollutant emissions while balancing a myriad of other land use issues (e.g., housing, transportation needs, economics, etc.). It notes that the handbook is not regulatory or binding on local agencies and recognizes that application takes a qualitative approach. As reflected in the CARB Handbook, there is currently no adopted standard for the significance of health effects from mobile sources. Therefore, the CARB has provided guidelines for the siting of land uses near heavily traveled roadways. Of pertinence to this study, the CARB guidelines indicate that siting new sensitive land uses within 500 feet of a freeway or urban roads with 100,000 or more vehicles/day should be avoided when possible.

As an ongoing process, CARB will continue to establish new programs and regulations for the control of DPM and other air-toxics emissions as appropriate. The continued development and implementation of these programs and policies will ensure that the public's exposure to DPM will continue to decline.

2.3.2.3 State Implementation Plan

The State Implementation Plan (SIP) is a collection of documents that set forth the state's strategies for achieving the NAAQS. In California, the SIP is a compilation of new and previously submitted plans, programs (such as air quality management plans, monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. The CARB is the lead agency for all purposes related to the SIP under state law. Local air districts and other agencies, such as the Department of Pesticide Regulation and the Bureau of Automotive Repair, prepare SIP elements and submit them to CARB for review and approval. The CARB then forwards SIP revisions to the U.S. Environmental Protection Agency (U.S. EPA) for approval and publication in the Federal Register. All of the items included in the California SIP are listed in the Code of Federal Regulations (CFR) at 40 CFR 52.220.

The SDAPCD is responsible for preparing and implementing the portion of the SIP applicable to the SDAB. The SIP plans for San Diego County specifically include the Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard for San Diego County (2012), and the 2004 Revision to the California State Implementation Plan for Carbon Monoxide–Updated Maintenance Plan for Ten Federal Planning Areas.

2.3.2.4 The California Environmental Quality Act

Section 15125(d) of the California Environmental Quality Act (CEQA) Guidelines requires discussion of any inconsistencies between the project and applicable general plans and regional plans, including the applicable air quality attainment or maintenance plan (or SIP).

2.3.3 Local

2.3.3.1 Regional Air Quality Strategy

The SDAPCD prepared the original 1991/1992 Regional Air Quality Strategy (RAQS) in response to requirements set forth in the California CAA. The California CAA requires areas that are designated state non-attainment areas for ozone, CO, SO_2, and NO_2 prepare and implement plans to attain the standards by the earliest practicable date. The California CAA does not provide guidance on timing or requirements for attaining the state PM_{10} and $PM_{2.5}$ standards. Attached as part of the RAQS are the Transportation Control Measures (TCMs) adopted by the San Diego Association of Governments (SANDAG). Updates of the RAQS and corresponding TCM are required every three years. The RAQS and TCM set forth the steps needed to accomplish attainment of state and federal AAQS. The most recent update of the RAQS and TCM occurred in 2016.

2.3.3.2 San Diego County Grading, Clearing and Watercourses Ordinance

Section 87.428 of the County Code of Regulatory Ordinances requires all clearing and grading to be carried out with dust control measures adequate to prevent creation of a nuisance to persons or public or private property. Clearing, grading or improvement plans shall require that measures such as the following be undertaken to achieve this result: watering, application of surfactants, shrouding, control of vehicle speeds, paving of access areas, or other operational or technological measures to reduce dispersion of dust. These project design measures are to be incorporated into all earth-disturbing activities to minimize the amount of particulate matter emissions from construction.

2.4 Background Air Quality

Air quality is commonly expressed as the number of days per year in which air pollution levels exceed federal standards set by the U.S. EPA or state standards set by CARB. The SDAPCD currently maintains 10 air-quality monitoring stations located throughout the greater San Diego metropolitan region. Air pollutant concentrations and meteorological information are continuously recorded at these stations. Measurements are then used by scientists to help forecast daily air pollution levels.

The El Cajon monitoring station is the nearest air quality station to the project site. This air quality monitoring station was originally located at Lexington Elementary School, approximately 5.5 miles southwest of the project site. In 2014, the school began remodeling activities and the monitoring station was temporarily relocated to a vacant lot south of Gillespie Field at the intersection of Floyd Smith Drive and Bradley Avenue, approximately 4.5 miles southwest of the project site. Remodeling is complete, and the air quality monitoring station at Lexington Elementary School began operating again in April 2016.

The El Cajon air quality monitoring station measures ozone, NO_2, PM_{10}, and $PM_{2.5}$. Table 2 provides a summary of measurements collected at the El Cajon monitoring station for the years 2013 through 2017. Data for years 2013, 2016, and 2017 is from the Lexington Elementary School location and data for years 2014 and 2015 is from the Floyd Smith Drive location.

Table 2
Summary of Air Quality Measurements Recorded at the
El Cajon Air Quality Monitoring Station

Pollutant/Standard	2013	2014	2015	2016	2017
Ozone					
Days State 1-hour Standard Exceeded (0.09 ppm)	0	0	0	0	1
Days State 8-hour Standard Exceeded (0.07 ppm)	3	2	0	1	9
Days 2008 Federal 8-hour Standard Exceeded (0.075 ppm)	1	0	0	0	5
Days 2015 Federal 8-hour Standard Exceeded (0.070 ppm)	3	2	0	1	9
Max. 1-hr (ppm)	0.090	0.083	0.082	0.087	0.096
Max 8-hr (ppm)	0.078	0.075	0.067	0.074	0.081
Nitrogen Dioxide					
Days State 1-hour Standard Exceeded (0.18 ppm)	0	0	0	0	0
Days Federal 1-hour Standard Exceeded (0.100 ppm)	0	0	0	0	0
Max 1-hr (ppm)	0.051	0.057	0.059	0.048	0.045
Annual Average (ppm)	0.012	--	--	--	0.010
PM_{10}*					
Measured Days State 24-hour Standard Exceeded (50 µg/m^3)	0	0	0	0	0
Calculated Days State 24-hour Standard Exceeded (50 µg/m^3)	0.0	--	--	--	0.0
Measured Days Federal 24-hour Standard Exceeded (150 µg/m^3)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (150 µg/m^3)	0.0	--	--	--	0.0
Max. Daily (µg/m^3)	41.1	35.2	50.3	44.1	49.4
State Annual Average (µg/m^3)	24.4	18.3	22.3	--	23.0
Federal Annual Average (µg/m^3)	24.1	18.3	22.3	21.9	22.6
$PM_{2.5}$*					
Measured Days Federal 24-hour Standard Exceeded (35 µg/m^3)	0	0	0	0	0
Calculated Days Federal 24-hour Standard Exceeded (35 µg/m^3)	0.0	--	--	--	0.0
Max. Daily (µg/m^3)	23.1	13.9	24.7	31.0	35.6
State Annual Average (µg/m^3)	10.6	--	--	--	9.6
Federal Annual Average (µg/m^3)	10.6	--	--	--	9.5

SOURCE: CARB 2019.
ppm = parts per million; µg/m^3 = micrograms per cubic meter; -- = Not available.
* Calculated days value. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.

3.0 Significance Criteria and Analysis Methodologies

3.1 Guidelines for Determining Significance

The County has developed and approved the *Guidelines for Determining Significance, Air Quality* (March 19, 2007) that are used in considering air quality impacts under the CEQA and are provided here for information purposes. Under the County's guidelines, the County considers a project to have an environmental impact related to air quality if it would:

1. Conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP.
2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.
    a. Result in emissions that exceed 250 pounds per day of nitrogen oxide (NO_X), or 75 pounds per day of volatile organic compounds (VOCs).
    b. Result in emissions of CO of 550 pounds per day, and when totaled with the ambient concentrations will exceed a 1-hour concentration of 20 parts per million (ppm) or an 8-hour average of 9 ppm.
    c. Result in emissions of $PM_{2.5}$ that exceed 55 pounds per day.
    d. Result in emissions of PM_{10} that exceed 100 pounds per day and increase the ambient PM_{10} concentration by 5.0 micrograms per cubic meter ($\mu g/m^3$) or greater at the maximum exposed individual.
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is non-attainment under an applicable Federal or State AAQS (PM_{10}, $PM_{2.5}$, or exceed quantitative thresholds for ozone precursors: NO_X and reactive organic gases (see Table 3).
4. Expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, day-care centers and project residents) to substantial pollutant concentrations.
    a. Place sensitive receptors near CO hot spots or creates CO hot spots near sensitive receptors.
    b. Result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of best available control technology for toxics or a health hazard index greater than one would be deemed as having a potentially significant impact.
5. Expose considerable number of persons to objectionable odors.

The SDAPCD does not provide quantitative thresholds for determining the significance of construction or mobile source-related impacts. However, the district does specify Air Quality Impact Analysis (AQIA) screening levels for new or modified stationary sources (SDAPCD Rules 20.1, 20.2, and 20.3). The County's Guidelines for Determining Significance, Air Quality allow the use of the SDAPCD AQIA as CEQA significance thresholds (County of San Diego 2007). If these incremental levels are exceeded, the district requires that an AQIA be performed for the project. Although these screening levels do not generally apply to mobile sources, for comparative purposes, these levels are used to evaluate the increased emissions that would be discharged to the SDAB if the project were approved. The AQIA screening levels are shown in Table 3 (note: there is no level specified for reactive organic gases in the SDAPCD AQIA screening criteria).

Table 3
Screening Level Thresholds for Air Quality Impacts

Pollutant	Emission Rate		
	Pounds/Hour	Pounds/Day	Tons/Year
Respirable Particulate Matter (PM_{10})	--	100	15
Fine Particulate Matter ($PM_{2.5}$)	--	55[a]	10[a]
Oxides of Nitrogen (NO_X)	25	250	40
Oxides of Sulfur (SO_X)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	--	3.2	0.6
Volatile Organic Compounds (VOCs)	--	75[b]	13.7[c]

SOURCE: SDAPCD, Rules 20.1, 20.2, 20.3; County of San Diego 2007.

[a] Based on the U.S. EPA "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" published September 8, 2005. Also used by the South Coast Air Quality Management District.

[b] Threshold for VOCs based on the threshold of significance for VOCs from the South Coast Air Quality Management District for the Coachella Valley.

[c] 13.7 tons per year threshold based on 75 pounds per day multiplied by 365 days per year and divided by 2,000 pounds per ton.

3.2 Methodology and Assumptions

The SDAPCD does not have a specific construction emissions modeling program. Construction emissions were calculated using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model, Version 8.1.0 (SMAQMD 2016). This model is applicable for all construction projects that involve construction equipment that is subject to CARB construction equipment emissions standards. The Roadway Construction Emissions Model is a spreadsheet-based model that is able to use basic project information (e.g., total construction months, project type, total project area) to estimate a construction schedule and quantify exhaust emissions from heavy- duty construction equipment, haul trucks, and worker commute trips associated with linear construction projects. Version 8.1.0 of the model incorporates the most currently approved Emission Factor model and Off-Road emissions factors model. The Road Construction Emissions Model calculates fugitive dust, exhaust, and off-gas emissions from grubbing/land clearing, grading/excavation, drainage/utilities/sub-grade, and paving activities associated with construction projects that are linear in nature (e.g., road or levee construction, pipeline installation, transmission lines).

Construction operations are subject to the requirements established in Regulation 4, Rules 52, 54, and 55, of the SDAPCD's rules and regulations.

Construction activities for the project are anticipated to begin in 2021 and last for approximately two years. Construction activities would include grubbing/land clearing, grading/excavation, construction of drainage/utilities, and paving. Earthwork would include the export of 27,000 cubic yards of soil. Soil export was modeled over the duration of the grading/excavation phase. Table 4 summarizes the anticipated construction equipment that would be required for each phase along with the anticipated total duration of each phase over the two-year construction period. Detailed Road Construction Emissions Model input is provided in Attachment 1.

Table 4 Construction Equipment		
Phase	Duration	Construction Equipment
Grubbing/Land Clearing	2.4 months	Rubber Tired Dozers Scrapers Skid Steer Loaders Tractors/Loaders/Backhoes Signal Board Water Truck
Grading/Excavation	10.8 months	Excavators Graders Plate Compactors Rubber Tired Loaders Tractors/Loaders/Backhoes Signal Boards Water Truck
Drainage/Utilities	7.2 months	Graders Plate Compactors Pumps Signal Boards
Paving	3.6 months	Air Compressors Bore/Drill Rig Cement and Mortar Mixers Crane Excavator Pumps Rollers Surfacing Equipment Sweepers/Scrubbers Welders Signal Boards
Source: Jeff Kashak (County of San Diego), email message to author, February 4, 2019.		

4.0 Project Impact Analysis

4.1 Conformance to the Regional Air Quality Strategy

Would the project conflict with or obstruct the implementation of the RAQS and/or applicable portions of the SIP?

The RAQS is the applicable regional air quality plan that sets forth the SDAPCD's strategies for achieving the NAAQS and CAAQS. The SDAB is designated non-attainment for the federal and state ozone standard. Accordingly, the RAQS was developed to identify feasible emission control measures and provide expeditious progress toward attaining the standards for ozone. The two pollutants addressed in the RAQS are VOC and NOX, which are precursors to the formation of ozone. Projected increases in motor vehicle usage, population, and growth create challenges in controlling emissions and by extension to maintaining and improving air quality. The RAQS, in conjunction with the TCM, were most recently adopted in 2016 as the air quality plan for the region.

The growth projections used by the SDAPCD to develop the RAQS emissions budgets are based on the population, vehicle trends, and land use plans developed in general plans and used by SANDAG in the development of the regional transportation plans and sustainable communities strategy. As such, projects that propose development that are consistent with the growth anticipated by SANDAG's growth projections and/or the general plan would not conflict with the RAQS. In the event that a project would propose development that would generate less traffic, population, or employment than anticipated by growth

projections, the project would likewise be consistent with the RAQS. In the event a project proposes development that is greater than anticipated in the growth projections, further analysis would be warranted to determine if the project would exceed the growth projections used in the RAQS.

The project would construct roadway improvements and does not propose a change in land use designation or development that would result in operational emissions. As such, the project would be consistent with SANDAG's growth projections and the project would not obstruct or conflict with the implementation of the RAQS. Impacts would be less than significant.

4.2 Conformance to Federal and State Ambient Air Quality Standards

Would the project result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

A project is determined to have a significant direct air quality impact if the project exceeds any of the following thresholds:

- 250 pounds per day (lbs/day) of NO_X or 75 lbs/day of VOC;
- CO that exceeds a one-hour concentration of 20 ppm or an eight-hour average of 9 ppm, or 550 lbs/day; or
- 55 lbs/day of $PM_{2.5;}$ or
- Increases the ambient PM_{10} concentration by 5 µg/m^3 or 100 lbs/day of $PM_{10.}$

The results of construction emissions calculated using the SMAQMD Road Construction Emissions Model are summarized in Table 5. Road Construction Emissions Model data is provided in Attachment 1.

Table 5
Maximum Daily Construction Emissions
(pounds per day)

	Pollutant					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Grubbing/Land Clearing	3	35	28	<1	22	6
Grading/Excavation	5	51	36	<1	22	6
Drainage/Utilities/Sub-Grade	3	29	32	<1	42	10
Paving	3	30	35	<1	2	1
Maximum Daily Emissions	**5**	**51**	**36**	**<1**	**42**	**10**
Significance Threshold	*75*	*250*	*550*	*250*	*100*	*55*
Significant Impact?	No	No	No	No	No	No

As shown, maximum daily construction emissions are projected to be less than the applicable thresholds for all criteria pollutants. Therefore, air quality impacts during construction activities would be less than significant.

Once construction is complete, there would be no operational source of emissions. Therefore, operational impacts would be less than significant.

4.3 Cumulatively Considerable Net Increase of Criteria Pollutants

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 (PM_{10}, $PM_{2.5}$, or exceed quantitative thresholds for ozone precursors: NO_X and VOC)?

The County's guidelines state that even if direct air quality impacts from a project are less than significant, the project may still have a significant cumulative impact on air quality if the emissions are cumulatively considerable when viewed in combination with other reasonably foreseeable future projects within proximity of the proposed action. Projects that would individually cause a significant direct air quality impact with respect to VOC, NO_X, PM_{10}, or $PM_{2.5}$ would also be considered to have a cumulatively considerable net increase in emissions.

As shown in Table 5, the construction-related emissions of the criteria pollutants would not exceed the County's significance level thresholds for construction and would therefore not cause a significant direct impact. These thresholds were developed based on the CAA de minimis level, which are designed to provide limits below which project emissions from an individual project would not significantly affect regional air quality or the timely attainment of the NAAQS and CAAQS. As a project design feature, the County would water the grading areas a minimum of twice daily to minimize fugitive dust. Additionally, construction would be short-term (two years), and the project would not result in long-term operational emissions. . Upon review of cumulative projects in the vicinity of the County's proposed project, none were identified that would contribute to a significant air quality impact in combination with the proposed project. Therefore, the project would not result in a cumulatively considerable net increase in emissions of ozone, PM_{10}, or $PM_{2.5}$, and impacts would be less than significant.

4.4 Impacts to Sensitive Receptors

Would the project expose sensitive receptors (including, but not limited to, schools, hospitals, resident care facilities, day-care centers and project residents) to substantial pollutant concentrations?

Air quality regulators typically define sensitive receptors as schools (Preschool–12th grade), hospitals, resident care facilities, day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. However, for the purposes of CEQA analysis in the County the definition of a sensitive receptor also includes residents. Sensitive receptors near the project site include El Capitan High School west of Ashwood Street, and residential uses at the intersection of Ashwood Street and Mapleview Street, east of El Capitan High School, and in the vicinity of the intersection of Ashwood Street/Wildcat Canyon Road and Willow Road. The closest receivers include the residences northwest of the intersection of Ashwood Street/Wildcat Canyon Road and Willow Road and the residence located at 10480 Ashwood Street, all of which are approximately 45 to 55 feet from the centerline of the alignment and construction activity.

The two primary emissions of concern regarding health effects for land development projects are diesel-fired particulates and CO. Projects that would site sensitive receptors near potential CO hot spots (i.e., exceedance of County CO thresholds) or would contribute vehicle traffic to local intersections where a CO hot spot could occur would be considered as having a potentially significant impact. Additionally, projects that would result in exposure to TAC resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of best available control technology for toxics or a threshold of 10 in 1 million for project's implementing best emission-control technologies or a health hazard index greater than one would be considered as having a potentially significant impact.

Construction of the project would result in the generation of DPM emissions from the use of off-road diesel construction activities and on-road diesel equipment. Generation of DPM from construction projects typically occurs in a single area for a short period. Construction of the project would occur over a two-year period. The

dose to which the receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (Office of Environmental Health Hazard Assessment 2015). Thus, if the duration of proposed construction activities near any specific sensitive receptor were two years, the exposure would be less than seven percent of the total exposure period used for health risk calculation.

Therefore, DPM generated by project construction is not expected to create conditions where the probability is greater than 10 in 1 million of contracting cancer for the Maximally Exposed Individual or to generate ground-level concentrations of noncarcinogenic TACs that exceed a Hazard Index greater than 1 for the Maximally Exposed Individual. Additionally, with ongoing implementation of U.S. EPA and CARB requirements for cleaner fuels; off-road diesel engine retrofits; and new, low-emission diesel engine types, the DPM emissions of individual equipment would be substantially reduced. Due to the limited time of exposure, project construction would not expose sensitive receptors to substantial pollutant concentration.

4.5 Odor Impacts

Would the project expose considerable number of persons to objectionable odors?

SDAPCD Rule 51 (Public Nuisance) and California Health & Safety Code, Division 26, Part 4, Chapter 3, Section 41700 prohibit the emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of the public. Projects required to obtain permits from SDAPCD, typically industrial and some commercial projects, are evaluated by SDAPCD staff for potential odor nuisance and conditions may be applied (or control equipment required) where necessary to prevent occurrence of public nuisance.

The project does not include the construction or operation of heavy industrial or agricultural uses that are typically associated with odor complaints. During construction, diesel equipment may generate some temporary nuisance odors. Sensitive receptors near the project site include El Capitan High School west of Ashwood Street, and residential uses at the intersection of Ashwood Street and Mapleview Street, east of El Capitan High School, and in the vicinity of the intersection of Ashwood Street/Wildcat Canyon Road and Willow Road. However, exposure to odors associated with project construction would be short term and temporary in nature. There would be no permanent or operational source of odors associated with the project. Impacts would be less than significant.

5.0 Recommended Project Design Features, Impacts and Mitigation Measures

The project would not result in any significant air quality impacts during construction. Once construction is complete, there would be no operational source of emissions. Therefore, operational impacts would be less than significant. No mitigation is required.

If you have any questions about the results of this analysis, please contact me at jfleming@reconenvironmental.com or (619) 308-9333.

Sincerely,

Jessica Fleming
Air Quality Specialist

JLF:jg

Attachment

6.0 References Cited

California Air Resources Board (CARB)
2000 Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. California Air Resources Board. Stationary Source Division, Mobile Source Control Division. October.

2005 Air Quality and Land Use Handbook: A Community Health Perspective. California Air Resources Board. April.

2016 Ambient Air Quality Standards. California Air Resources Board. Available at: https://www.arb.ca.gov/desig/desig.htm. May 4, 2016.

2019 California Air Quality Data Statistics. California Air Resources Board. Available at: http://www.arb.ca.gov/adam/welcome.html. Top 4 Summary and Hourly Listing. Accessed on March 15, 2019.

Office of Environmental Health Hazard Assessment (OEHHA)
2015 Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments (Guidance Manual), February.

Sacramento Metropolitan Air Quality Management District (SMAQMD)
2016 Road Construction Emissions Model, Version 8.1.0.

San Diego, County of
2007 Guidelines for Determining Significance and Report Format and Content Requirements, Air Quality. March 19, 2007.

Western Regional Climate Center
2019 Western U.S. Climate Historical Summaries. Available at https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca9378 and https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2709. Accessed on March 15, 2019.

ATTACHMENT 1

Road Construction Emissions Model Data

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Ashwood Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	3.25	28.41	34.82	21.52	1.52	20.00	5.54	1.38	4.16	0.05	5,084.90	1.50	0.05	5,137.34
Grading/Excavation	4.59	35.74	50.65	22.42	2.42	20.00	6.17	2.01	4.16	0.12	11,822.99	2.04	0.22	11,940.47
Drainage/Utilities/Sub-Grade	3.18	31.95	29.49	41.48	1.48	40.00	9.68	1.36	8.32	0.06	5,585.20	1.18	0.05	5,629.34
Paving	3.34	34.50	30.00	1.50	1.50	0.00	1.38	1.38	0.00	0.07	6,554.31	1.66	0.06	6,613.18
Maximum (pounds/day)	4.59	35.74	50.65	41.48	2.42	40.00	9.68	2.01	8.32	0.12	11,822.99	2.04	0.22	11,940.47
Total (tons/construction project)	1.02	8.89	10.46	6.58	0.50	6.07	1.70	0.44	1.26	0.02	2,240.71	0.44	0.03	2,261.88

Notes:

Project Start Year ->	2021
Project Length (months) ->	24
Total Project Area (acres) ->	33
Maximum Area Disturbed/Day (acres) ->	2
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	320	40
Grading/Excavation	114	329	360	990	920	40
Drainage/Utilities/Sub-Grade	0	0	0	0	680	0
Paving	0	0	0	0	520	0

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

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Ashwood Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.09	0.75	0.92	0.57	0.04	0.53	0.15	0.04	0.11	0.00	134.24	0.04	0.00	123.04
Grading/Excavation	0.55	4.25	6.02	2.66	0.29	2.38	0.73	0.24	0.49	0.01	1,404.57	0.24	0.03	1,286.88
Drainage/Utilities/Sub-Grade	0.25	2.53	2.34	3.29	0.12	3.17	0.77	0.11	0.66	0.00	442.35	0.09	0.00	404.47
Paving	0.13	1.37	1.19	0.06	0.06	0.00	0.05	0.05	0.00	0.00	259.55	0.07	0.00	237.58
Maximum (tons/phase)	0.55	4.25	6.02	3.29	0.29	3.17	0.77	0.24	0.66	0.01	1404.57	0.24	0.03	1,286.88
Total (tons/construction project)	1.02	8.89	10.46	6.58	0.50	6.07	1.70	0.44	1.26	0.02	2240.71	0.44	0.03	2,051.96

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

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 8.1.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Ashwood	
Construction Start Year	2021	Enter a Year between 2014 and 2025 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	24.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	1.40	miles
Total Project Area	33.11	acres
Maximum Area Disturbed/Day	2.00	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	10.00		114.00
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation	10.00		328.00
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		2.40		1/1/2021
Grading/Excavation		10.80		3/15/2021
Drainage/Utilities/Sub-Grade		7.20		2/7/2022
Paving		3.60		9/14/2022
Totals (Months)	24			

Note: Soil Hauling emission default values can be overridcen in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		12	360.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Grading/Excavation (grams/mile)	0.07	0.37	1.42	0.10	0.04	0.01	1,558.33	0.00	0.05	1,573.68
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,548.71	0.00	0.05	1,563.97
Paving (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,548.59	0.00	0.05	1,563.85
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.05	0.29	1.13	0.08	0.03	0.01	1,236.79	0.00	0.04	1,248.98
Tons per const. Period - Grading/Excavation	0.01	0.03	0.13	0.01	0.00	0.00	146.93	0.00	0.00	148.38
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.01	0.03	0.13	0.01	0.00	0.00	146.93	0.00	0.00	148.38

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		33	990.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Grading/Excavation (grams/mile)	0.07	0.37	1.42	0.10	0.04	0.01	1,558.33	0.00	0.05	1,573.68
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,548.71	0.00	0.05	1,563.97
Paving (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,548.59	0.00	0.05	1,563.85
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.15	0.81	3.11	0.22	0.09	0.03	3,401.17	0.01	0.11	3,434.69
Tons per const. Period - Grading/Excavation	0.02	0.10	0.37	0.03	0.01	0.00	404.06	0.00	0.01	408.04
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.02	0.10	0.37	0.03	0.01	0.00	404.06	0.00	0.01	408.04

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions User Input	User Override of Worker Commute Default Values	Default Values	Calculated Daily Trips	Calculated Daily VMT
Miles/ one-way trip		20		
One-way trips/day		2		
No. of employees: Grubbing/Lanc Clearing		8	16	320.00
No. of employees: Grading/Excavation		23	46	920.00
No. of employees: Drainage/Utilities/Sub-Grade		17	34	680.00
No. of employees: Paving		13	26	520.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48
Grading/Excavation (grams/mile)	0.02	0.98	0.10	0.05	0.02	0.00	358.69	0.01	0.00	360.12
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.92	0.09	0.05	0.02	0.00	348.29	0.01	0.00	349.59
Paving (grams/mile)	0.02	0.92	0.09	0.05	0.02	0.00	348.12	0.01	0.00	349.43
Grubbing/Land Clearing (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35
Grading/Excavation (grams/trip)	0.92	2.26	0.17	0.00	0.00	0.00	81.62	0.01	0.01	84.06
Draining/Utilities/Sub-Grade (grams/trip)	0.87	2.06	0.16	0.00	0.00	0.00	79.59	0.01	0.01	81.77
Paving (grams/trip)	0.87	2.05	0.16	0.00	0.00	0.00	79.56	0.01	0.01	81.73
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.78	0.08	0.03	0.01	0.00	256.88	0.01	0.00	257.99
Tons per const. Period - Grubbing/Land Clearing	0.00	0.02	0.00	0.00	0.00	0.00	6.78	0.00	0.00	6.81
Pounds per day - Grading/Excavation	0.13	2.22	0.22	0.09	0.04	0.01	735.79	0.02	0.01	738.95
Tons per const. Period - Grading/Excavation	0.02	0.26	0.03	0.01	0.00	0.00	87.41	0.00	0.00	87.79
Pounds per day - Drainage/Utilities/Sub-Grade	0.09	1.53	0.15	0.07	0.03	0.01	528.10	0.01	0.01	530.22
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.12	0.01	0.01	0.00	0.00	41.83	0.00	0.00	41.99
Pounds per day - Paving	0.07	1.17	0.11	0.05	0.02	0.00	403.65	0.01	0.00	405.27
Tons per const. Period - Paving	0.00	0.05	0.00	0.00	0.00	0.00	15.98	0.00	0.00	16.05
Total tons per construction project	0.03	0.45	0.04	0.02	0.01	0.00	152.00	0.00	0.00	152.64

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT
Grubbing/Land Clearing - Exhaust	1	1		40.00	40.00
Grading/Excavation - Exhaust	1	1		40.00	40.00
Drainage/Utilities/Subgrade	0	1		40.00	0.00
Paving	0	1		40.00	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Grading/Excavation (grams/mile)	0.07	0.37	1.42	0.10	0.04	0.01	1,558.33	0.00	0.05	1,573.68
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,548.71	0.00	0.05	1,563.97
Paving (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,548.59	0.00	0.05	1,563.85
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.01	0.03	0.13	0.01	0.00	0.00	137.53	0.00	0.00	138.89
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	3.63	0.00	0.00	3.67
Pounds per day - Grading/Excavation	0.01	0.03	0.13	0.01	0.00	0.00	137.42	0.00	0.00	138.78
Tons per const. Period - Grading/Excavation	0.00	0.00	0.01	0.00	0.00	0.00	16.33	0.00	0.00	16.49
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.02	0.00	0.00	0.00	19.96	0.00	0.00	20.15

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		2.00	20.00	0.53	4.16	0.11
Fugitive Dust - Grading/Excavation		2.00	20.00	2.38	4.16	0.49
Fugitive Dust - Drainage/Utilities/Subgrade		2.00	40.00	3.17	8.32	0.66

Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.54	2.39	6.84	0.26	0.24	0.01	746.02	0.24	0.01	754.06
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Excavators	0.47	6.75	4.44	0.22	0.20	0.01	1,032.04	0.33	0.01	1,043.17
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Rubber Tired Dozers	0.89	7.27	9.14	0.42	0.38	0.01	861.68	0.28	0.01	870.94
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Scrapers	0.92	6.91	10.56	0.41	0.38	0.02	1,447.91	0.47	0.01	1,463.52
2.00	3		Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
1.00			Model Default Tier	Skid Steer Loaders	0.08	1.39	1.00	0.04	0.04	0.00	200.20	0.06	0.00	202.36
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.28	1.92	0.11	0.10	0.00	304.00	0.10	0.00	307.27
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	3.20	27.59	34.61	1.48	1.37	0.05	4,690.49	1.50	0.04	4,740.46
Grubbing/Land Clearing	tons per phase	0.08	0.73	0.91	0.04	0.04	0.00	123.83	0.04	0.00	125.15

Grading/Excavation Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.53	2.38	6.73	0.25	0.23	0.01	745.87	0.24	0.01	753.91
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	3		Model Default Tier	Excavators	0.23	3.37	2.18	0.11	0.10	0.01	516.00	0.17	0.00	521.56
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	2		Model Default Tier	Graders	0.63	4.49	6.02	0.34	0.31	0.01	605.56	0.20	0.01	612.07
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.38	3.80	3.85	0.23	0.22	0.01	514.53	0.17	0.00	520.08
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Rubber Tired Loaders	0.33	1.57	3.71	0.12	0.11	0.01	596.33	0.19	0.01	602.77
	2		Model Default Tier	Scrapers	1.81	13.68	20.72	0.81	0.74	0.03	2,896.36	0.94	0.03	2,927.59
2.00	3		Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	4		Model Default Tier	Tractors/Loaders/Backhoes	0.19	2.28	1.89	0.11	0.10	0.00	304.04	0.10	0.00	307.31
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment — If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation		pounds per day		4.26	32.38	46.07	2.01	1.85	0.07	6,311.81	2.01	0.06	6,379.08
Grading/Excavation		tons per phase		0.51	3.85	5.47	0.24	0.22	0.01	749.84	0.24	0.01	757.83

Drainage/Utilities/Subgrade Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.27	2.42	1.88	0.11	0.11	0.00	375.26	0.02	0.00	376.72
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.33	3.68	2.93	0.15	0.15	0.01	623.04	0.03	0.00	625.17
1.00	1		Model Default Tier	Graders	0.56	4.42	5.22	0.29	0.27	0.01	605.60	0.20	0.01	612.11
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1		Model Default Tier	Pumps	0.35	3.73	2.97	0.16	0.16	0.01	623.04	0.03	0.00	625.23
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.11	2.29	1.48	0.05	0.05	0.00	333.75	0.11	0.00	337.35
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	0.81	6.29	8.82	0.34	0.32	0.02	1,450.26	0.47	0.01	1,465.90
2.00	3		Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.50	6.78	5.08	0.27	0.25	0.01	913.03	0.30	0.01	922.86
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type		ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day	3.09	30.42	29.35	1.41	1.33	0.05	5,057.10	1.17	0.04	5,099.12
Drainage/Utilities/Sub-Grade	tons per phase	0.24	2.41	2.32	0.11	0.11	0.00	400.52	0.09	0.00	403.85

Paving Override of Default Number of Vehicles	Default Number of Vehicles *Program-estimate*	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Air Compressors	0.27	2.42	1.88	0.11	0.11	0.00	375.26	0.02	0.00	376.72
1.00			Model Default Tier	Bore/Drill Rigs	0.21	1.90	2.11	0.07	0.06	0.01	851.58	0.28	0.01	860.78
1.00			Model Default Tier	Cement and Mortar Mixers	0.06	0.31	0.37	0.01	0.01	0.00	50.52	0.01	0.00	50.77
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Cranes	0.36	1.85	4.09	0.17	0.16	0.01	546.73	0.18	0.00	552.63
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Excavators	0.21	3.36	1.83	0.09	0.08	0.01	515.84	0.17	0.00	521.40
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.20	2.80	2.03	0.10	0.09	0.00	441.25	0.14	0.00	446.01
	1		Model Default Tier	Paving Equipment	0.18	2.53	1.72	0.08	0.08	0.00	391.48	0.13	0.00	395.70
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Pumps	0.35	3.73	2.97	0.16	0.16	0.01	623.04	0.03	0.00	625.23
1.00	2		Model Default Tier	Rollers	0.17	1.88	1.75	0.10	0.09	0.00	257.28	0.08	0.00	260.05
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	3		Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Surfacing Equipment	0.18	1.56	2.09	0.08	0.07	0.01	632.35	0.20	0.01	639.18
1.00			Model Default Tier	Sweepers/Scrubbers	0.19	1.92	1.80	0.12	0.11	0.00	246.18	0.08	0.00	248.83
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.50	6.78	5.07	0.27	0.25	0.01	913.05	0.30	0.01	922.87
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Model Default Tier	Welders	0.28	1.70	1.46	0.06	0.06	0.00	207.48	0.02	0.00	208.61

User-Defined Off-road Equipment If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab

Number of Vehicles	Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Paving	pounds per day	3.27	33.33	29.89	1.45	1.36	0.06	6,150.66	1.65	0.05	6,207.91
Paving	tons per phase	0.13	1.32	1.18	0.06	0.05	0.00	243.57	0.07	0.00	245.83
Total Emissions all Phases (tons per construction period) =>		0.96	8.30	9.89	0.45	0.42	0.02	1,517.76	0.44	0.01	1,532.67

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET