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October 5, 2020 DEA-12

Mr. Gavin Powell, PE
David Evans and Associates, Inc
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Temecula, CA 92590

Subject: Air Quality and Greenhouse Gas Assessment for Diaz Road Extension Project, City of Temecula, CA

Dear Mr. Powell,

HELIX Environmental Planning, Inc. (HELIX) has assessed air quality and greenhouse gas (GHG) impacts associated with the construction of the proposed Diaz Road Extension Project (project). In addition, the analysis also addresses impacts to sensitive receptors from exposure to toxic air contaminants (TACs). This letter summarizes the findings of the air quality and GHG emissions assessment.

PROJECT LOCATION

The project is located in the City of Temecula (City) in southwestern Riverside County. The project is located south of the Interstate 215 (I-215) and Interstate 15 (I-15) interchange and west of I-15, within Township 7 South Range 3 West and Township 8 South Range 3 West of the Temecula Land Grant, on the U.S. Geological Survey (USGS) 7.5' Murrieta quadrangle. The approximately 2.2-linear mile project site is bordered by Rancho California Road to the south, Cherry Street to the north, and Murrieta Creek to the east. The Assessor's Parcel Numbers (APNs) identified as being associated with the project site include segments of Diaz Road (APNs 909-120-006 and 909-370-050), the walking/biking pathway adjoining northeast of Diaz Road (APNs 921-740-004 and -005, and 909-120-016, -021, -040, -051 and -055), and several small walled/fenced enclosures containing utility and water company infrastructure along the northeast side of Diaz Road at several locations between Rancho California Road and Cherry Street (APNs 909-370- 051, 909-120-044 and -056, and 921-740-002).

PROJECT DESCRIPTION

The project proposes to improve Diaz Road to meet the roadway classification requirements of a major arterial with four divided lanes, as specified by City Standard No. 101, between Cherry Street and Rancho California Road. The standards call for a 100-foot minimum right-of-way, 76-foot roadway with a 14-foot raised median, and 12-foot parkways on each side of the road. The approximately 2.2-mile segment would be improved on its current horizontal alignment and as depicted in the City's General

Plan, Circulation Element, Figure C-2 Roadway Plan. As such, the proposed project would widen the existing Diaz Road segment and extend the northwestern end of Cherry Street. The project would complete the City's only existing north-south corridor west of Murrieta Creek. North of Cherry Street, this north-south corridor is planned to continue as Washington Avenue within the City of Murrieta.

The project site encompasses the existing Diaz Road segment between Rancho California Road to the south and Cherry Street to the north, and the adjacent areas into which the roadways would be widened. At the northernmost end of the project site (from Dendy Parkway to Cherry Street), Diaz Road transitions to an unimproved dirt road. All widening activities would occur on the northeast side of Diaz Road, which would infringe upon public walking and biking pathways as well as several small fenced/walled enclosures containing existing utility and water infrastructure (i.e., wells, piping, tanks, and small outbuildings). With the exception of the small outbuildings in these utility enclosures, there are no existing buildings on the project site. Land uses at the project site include mostly existing public roadway, a small portion of dirt road, portions of an adjoining public walking/biking pathway, and some undeveloped land. Land uses in the vicinity of the project site consist of industrial and commercial developments to the west and south, Murrieta Creek and public walking/biking pathways to the northeast, and mostly undeveloped land to the north. The elevation of the project site ranges from approximately 1,000 to 1,040 feet above mean sea level (AMSL) and the topography is relatively flat as a graded roadway, with an overall downward slope toward the southeast, and some localized sloping toward Murrieta Creek, which is located 200 feet to the northeast.

Signing and striping improvements for intersecting streets would be provided to the extent necessary to safely transition lane configurations and turning movements to existing improvements. These improvements would be in accordance with the latest edition(s) of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and the City's requirements and specifications. Signal modifications would be needed at the intersection of Winchester Road and Rancho Way to accommodate revised turning movements and the Diaz Road widening. Landscape and planting improvements would include decorative rock, boulders and hardscape improvements for the center median, easterly parkway, and westerly parkway where existing landscape improvements do not exist. The median and parkway improvements would be in accordance with the City's landscape guidelines. In addition, streetlights would be installed as appropriate according to the City's design standards for type, location, and spacing. Storm drains would also be installed as appropriate along the expanded roadway to include catch basins and low impact development improvements.

PROJECT CONSTRUCTION METHODOLOGY AND ASSUMPTIONS

Construction would commence as early as January 2021 and require approximately 16 months to complete. Construction activities would include site preparation, demolition of existing roadway, grading, installation of drainage and utilities, retaining walls, and paving. During construction, material such as vegetation, soil, old asphalt and concrete may be exported from the site and material such as soil, aggregate, asphalt and concrete may be imported to the site. Table 1, *Phases and Material Import/Export*, shows the anticipated construction phases, lengths, and amount of material imported or exported to/from the project site.

Table 1
PHASES AND MATERIAL IMPORT/EXPORT

Phase	Phase Length (workdays)	Import Volume (CY per Day)	Export Volume (CY per Day)
Grubbing/Land Clearing	35	0	433
Grading/Excavation	158	55	293
Drainage/Utilities/Sub-grade/Retaining Wall	106	205	60
Paving	53	151	0

CY = cubic yards

The project's construction emissions were estimated using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Roadway Construction Emissions Model (RCEM), version 9.0 (SMAQMD 2018). This model utilizes the California Air Resources Board's (CARB) 2017 EMFAC and OFFROAD data to calculate vehicle exhaust and fugitive dust emissions. Emission estimates assume the use of water trucks, yielding a 50 percent control of fugitive dust from watering and associated dust control measures to meet the requirements of the South Coast Air Quality Management District's (SCAQMD) Rule 403, *Fugitive Dust* (SCAQMD 2005). Project-specific input was based on general project information, assumptions provided by the project engineers, and default model settings to estimate reasonably conservative conditions. Fugitive dust emissions are calculated using the estimated maximum area (acres) of land disturbed daily, approximately 1 acre per day for the project. Roadway widening construction would disturb a total of 12 acres over approximately 16 months (352 working days).

Construction would require the use of off-road equipment. Because the off-road equipment required for construction of the project had not been determined at the time of this analysis, the RCEM default equipment for a road widening project was used in the modeling. Table 2, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each stage of construction.

Table 2
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase	Equipment	Number	Horsepower
Grubbing/Land Clearing	Crawler Tractors	1	212
	Excavators	2	158
	Signal Boards	5	6
Grading/Excavation	Crawler Tractors	1	212
	Excavators	3	158
	Graders	2	187
	Rollers	2	80
	Rubber Tired Loaders	1	203
	Scrapers	2	367
	Signal Boards	5	6
	Tractors/Loaders/Backhoes	4	97

Table 2 (cont.)
CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase	Equipment	Number	Horsepower
Drainage/Utilities/Sub-grade/ Retaining Wall	Air Compressors	1	78
	Generator Sets	1	84
	Graders	1	187
	Plate Compactors	1	8
	Pumps	1	84
	Rough Terrain Forklifts	1	100
	Scrapers	1	367
	Signal Boards	5	6
	Tractors/Loaders/Backhoes	3	97
Paving	Pavers	1	130
	Paving Equipment	1	132
	Rollers	2	80
	Signal Boards	5	6
	Tractors/Loaders/Backhoes	3	97

Source: RCEM

PROJECT OPERATION METHODLOGY AND ASSUMPTIONS

The project's operational emissions resulting from the change in vehicle miles traveled (VMT) were estimated using emission factor data for off-road equipment in Riverside County from the California Air Resources Board's (CARB) Mobile Source Emissions and Emission Rates Database EMFAC2017 (CARB 2020). The emission factors were multiplied by the estimated change in VMT as a result of the project, as reported in the Traffic Impact Analysis (TIA; David Evans and Associates [DEA] 2020).

AIR QUALITY

Climate and Meteorology

The project site is within the South Coast Air Basin (SCAB), which consists of all or part of four counties: Los Angeles, San Bernardino, Riverside, and Orange. The distinctive climate of the SCAB is determined by its terrain and geographic location. The SCAB is a coastal plain with connecting broad valleys and low hills. It is bound by the Pacific Ocean to the southwest and high mountains around the rest of its perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light, average wind speeds.

The usually mild climatological pattern is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. Winds in the project area are usually driven by the dominant land/ sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night, the wind generally slows and reverses direction traveling toward the sea. Local canyons can also alter wind direction, with wind tending to flow parallel to the canyons. The vertical dispersion of air pollutants in the SCAB is hampered by the presence of persistent temperature inversions. High pressure systems, such as the semi-permanent high-pressure zone in which the SCAB is located, are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. Such

inversions restrict the vertical dispersion of air pollutants released into the marine layer and, together with strong sunlight, can produce worst-case conditions for the formation of photochemical smog. The basin-wide occurrence of inversions at 3,500 feet above mean sea level or less averages 191 days per year (SCAQMD 1993).

Regulatory Framework

Criteria Pollutants

Ambient air quality is described in terms of compliance with state and national standards, and the levels of air pollutant concentrations considered safe, to protect the public health and welfare. These standards are designed to protect people most sensitive to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. The U.S. Environmental Protection Agency (USEPA), the federal agency that administrates the Federal Clean Air Act of 1970, as amended in 1990, has established national ambient air quality standards for several air pollution constituents known as criteria pollutants, including: ozone (O_3); carbon monoxide (CO); coarse particulate matter (PM_{10}; particles 10 microns or less) and fine particulate matter ($PM_{2.5}$; particle 2.5 microns or less); sulfur dioxide (SO_2); and lead (Pb). As permitted by the Clean Air Act, California has adopted the more stringent California ambient air quality standards (CAAQS) and expanded the number of regulated air constituents. Ground-level ozone is not emitted directly into the environment but is generated from complex chemical and photochemical reactions between precursor pollutants, primarily reactive organic gases (ROGs; also known as volatile organic compounds [VOCs]),[1] and oxides of nitrogen (NO_X). PM_{10} and $PM_{2.5}$ are generated from a variety of sources, including road dust, diesel exhaust, fuel combustion, tire and brake wear, construction operations and windblown dust. In addition, PM_{10} and $PM_{2.5}$ can also be formed through chemical and photochemical reactions of precursor pollutants in the atmosphere.

The California Air Resources Board (CARB) is required to designate areas of the state as attainment, nonattainment, or unclassified for the ambient air quality standards. An "attainment" designation for an area signifies that pollutant concentrations do not violate the standard for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once. The air quality attainment status of the SCAB is shown in Table 3, *South Coast Air Basin – Attainment Status*.

[1] CARB defines and uses the term ROGs while the USEPA defines and uses the term VOCs. The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are often used interchangeably.

Table 3
SOUTH COAST AIR BASIN – ATTAINMENT STATUS

Pollutant	Federal Attainment Status	State of California Attainment Status
1-hour Ozone (O_3)	(No federal standard)	Nonattainment
8-hour Ozone (O_3)	Extreme Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment (Maintenance)	Attainment
Respirable Particulate Matter (PM_{10})	Attainment (Maintenance)	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Serious Nonattainment	Nonattainment
Nitrogen Dioxide (NO_2)	Attainment (Maintenance)	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead (Pb)	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Attainment
Visibility	(No federal standard)	Attainment

Source: SCAQMD 2016

The SCAB is currently in nonattainment for federal and/or state ozone (O_3), suspended particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) standards. Concentrations of all other pollutants meet state and federal standards.

The SCAQMD is responsible for implementing emissions standards and other requirements of federal and state laws in the SCAB. As a regional agency, the SCAQMD works directly with the Southern California Association of Governments (SCAG), County transportation commissions, and local governments, and cooperates actively with all federal and state government agencies. The SCAQMD develops rules and regulations; establishes permitting requirements for stationary sources; inspects emissions sources; and enforces such measures through educational programs or fines, when necessary. The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. As required by the California Clean Air Act, the SCAQMD has responded to this requirement by preparing a sequence of Air Quality Management Plans (AQMPs).

On March 3, 2017, the SCAQMD adopted the 2016 AQMP, which is a regional and multi-agency effort (SCAQMD, CARB, SCAG, and USEPA). The 2016 AQMP represents a comprehensive analysis of emissions, meteorology, atmospheric chemistry, regional growth projections, and the impact of existing control measures. The plan seeks to achieve multiple goals in partnership with other entities promoting reductions in criteria pollutant, greenhouse gases, and toxic risk, as well as efficiencies in energy use, transportation, and goods movement (SCAQMD 2017). The AQMP is incorporated into the State Implementation Plan, which is subsequently submitted to the USEPA.

Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness, or that may pose a present or potential hazard to human health. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute effects such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant.

For carcinogenic TACs, there is no level of exposure that is considered safe and impacts are evaluated in terms of overall relative risk expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as diesel particulate matter (DPM). Almost all DPM is 10 microns or less in diameter, and 90 percent of DPM is less than 2.5 microns in diameter (CARB 2018). Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung. In 1998, CARB identified DPM as a TAC based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM has a significant impact on California's population—it is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM (CARB 2018).

Sensitive Receptors

CARB and the Office of Environmental Health Hazard Assessment (OEHHA) have identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis (CARB 2005, OEHHA 2015). Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptors. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers.

The project site is located in a commercial and industrial area with no adjacent sensitive land uses. The closest existing sensitive receptors to the project site are multi- and single-family homes approximately 1,600 feet (0.30 mile) south of Rancho California Road. The closest school (with students under 14) to the project site is the Temecula Elementary School, approximately 4,900 feet (0.93 mile) to the east.

Significance Criteria

The following significance thresholds are based on Appendix G of the state CEQA Guidelines. A significant impact is identified if the project would result in any of the following:

(1) Conflict with or obstruct implementation of the applicable air quality plan;

(2) 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;

(3) Expose sensitive receptors to substantial pollutant concentrations; or

(4) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Appendix G of the State CEQA Guidelines states that the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. The SCAQMD has established significance thresholds to assess the regional and

localized impacts of project-related air pollutant emissions. The significance thresholds are updated, as needed, to appropriately represent the most current technical information and attainment status in the SCAB. Table 4, *SCAQMD Air Quality Significance Thresholds*, presents the most current significance thresholds, including regional daily thresholds for short-term construction and long-term operational emissions; maximum incremental cancer risk and hazard indices for TACs; and maximum ambient concentrations for exposure of sensitive receptors to localized pollutants. A project with daily emission rates, risk values, or concentrations below these thresholds is generally considered to have a less than significant effect on air quality.

Table 4
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Construction	Operation
Mass Daily Thresholds (lbs/day)		
VOC	75	55
NO_X	100	55
CO	550	550
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_X	150	150
Lead	3	3
Toxic Air Contaminants		
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index ≥ 1.0 (project increment)	
Ambient Air Quality for Criteria Pollutants		
NO_2	1-hour average ≥ 0.18 ppm Annual average ≥ 0.03 ppm	
CO	1-hour average ≥ 20.0 ppm (state) 8-hour average ≥ 9.0 ppm (state/federal)	
PM_{10}	24-hour average ≥ 10.4 µg/m^3 (construction) 24-hour average ≥ 2.5 µg/m^3 (operation) Annual average ≥ 1.0 µg/m^3	
$PM_{2.5}$	24-hour average ≥ 10.4 µg/m^3 (construction) 24-hour average ≥ 2.5 µg/m^3 (operation)	
SO_2	24-hour average ≥ 25 µg/m^3	

Source: SCAQMD 2019
SCAQMD = South Coast Air Quality Management District; lbs/day = pounds per day; VOC = volatile organic compound; NO_X = nitrogen oxides; CO = carbon monoxide; PM_{10} = respirable particulate matter with a diameter of 10 microns or less; $PM_{2.5}$ = fine particulate matter with a diameter of 2.5 microns or less; SO_X = sulfur oxides; TACs = toxic air contaminants; NO_2 = nitrogen dioxide; ppm = parts per million; SO_2 = sulfur dioxide; µg/m^3 = micrograms per cubic meter

Project Air Quality Analysis

(1) Conflict with or obstruct implementation of the applicable air quality plan?

Less than Significant Impact. SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties, and addresses regional issues relating to transportation, economy, community development, and environment. With regard to air quality

planning, SCAG has prepared the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), a long-range transportation plan that uses growth forecasts to project trends out over a 20-year period to identify regional transportation strategies to address mobility needs. These growth forecasts form the basis for the land use and transportation control portions of the AQMP. These documents are utilized in the preparation of the air quality forecasts and consistency analysis included in the AQMP. Both the RTP/SCS and AQMP are based, in part, on projections originating with County and City General Plans.[2]

The two principal criteria for determining conformance to the AQMP are:

1. Whether the project would result in an increase in the frequency or severity of existing air quality violations; cause or contribute to new violations; or delay timely attainment of air quality standards; and

2. Whether the project would exceed the assumptions in the AQMP.

With respect to the first criterion, the analyses presented below demonstrate that the project would not generate short-term or long-term emissions that could potentially cause an increase in the frequency or severity of existing air quality violations; cause or contribute to new violations; or delay timely attainment of air quality standards.

With respect to the second criterion, the proposed project is improving and widening a roadway and would not result in population or employment increases and, therefore, would not exceed the growth projection assumptions in the AQMP. In addition, the proposed project would be consistent with the City General Plan Circulation Element roadway design guidelines. The project would support the City General Plan Policy 3.3 by providing Class II bicycle lanes along both sides of Diaz Road, and Policy 3.5 by providing space for future bus stops along Diaz Road.

Because the project is consistent with the City's General Plan and the growth assumptions used in developing the AQMP, pursuant to SCAQMD guidelines, the proposed project is considered consistent with the region's AQMP. As such, proposed project-related emissions are accounted for in the AQMP, which is crafted to bring the basin into attainment for all criteria pollutants. Accordingly, the proposed project would be consistent with the emissions projections in the AQMP, thus resulting in a less than significant impact.

(2) 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?

Construction Emissions

Less than Significant Impact. The project's construction emissions were estimated using the RCEM, as described above. The emissions generated from construction activities include:

[2] SCAG serves as the federally designated metropolitan planning organization for the southern California region.

- Dust (including PM_{10} and $PM_{2.5}$) primarily from fugitive sources such as soil disturbance and vehicle travel over unpaved surfaces; and

- Combustion emissions of air pollutants (including ROG, NO_X, PM_{10}, $PM_{2.5}$, CO, and sulfur oxides [SO_X]), primarily from operation of heavy off-road equipment.

The results of the calculations for project construction are shown in Table 5, *Maximum Daily Construction Emissions*. The data are presented as the maximum anticipated daily emissions for comparison with the SCAQMD thresholds, the model output is included as Attachment A to this letter. As shown in Table 5, the project's construction emissions would not exceed SCAQMD thresholds and would not result in a cumulatively considerable net increase of any criteria pollutant. The impact would be less than significant.

Table 5
MAXIMUM DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Site Preparation/Land Clearing	1.4	18.1	12.2	<0.1	10.8	2.7
Grading/Excavation	6.0	68.3	49.0	0.1	12.9	4.6
Underground Drainage/Utilities	3.5	36.9	31.7	<0.1	11.7	3.6
Paving	1.6	16.3	19.1	<0.1	0.8	0.7
Maximum Daily Emissions	**6.0**	**68.3**	**49.0**	**0.1**	**12.9**	**4.6**
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Significant Impact?	***No***	***No***	***No***	***No***	***No***	***No***

Source: RCEM; SCAQMD 2019
lbs/day = pounds per day; ROG = reactive organic gas; NO_X = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; PM_{10} = respirable particulate matter with a diameter of 10 microns or less; $PM_{2.5}$ = fine particulate matter with a diameter of 2.5 microns or less; SCAQMD = South Coast Air Quality Management District

Operational Emissions

Less than Significant Impact. The project proposes widening and improving an existing roadway and would only generate emissions during construction in the near term. Because the project would result in additional lanes on Diaz Road and, therefore, increase the total available miles of roadways in the region, the TIA concluded that the project would result in a regional increase in VMT of 7,277 miles in the year 2040 (DEA 2020). The criteria pollutant and ozone precursor emissions were calculated using data from EMFAC2017, as described above. The calculated maximum daily emissions as a result of the increase in VMT would be less than 0.1 pounds per day for all pollutants and would not exceed any of the SCAQMD emission thresholds shown in Table 4. The calculation sheets are included as Attachment B to this letter. Therefore, the project's operational criteria pollutant and ozone precursor emissions would not result in a cumulatively considerable net increase of any criteria pollutant. The impact would be less than significant.

(3) Expose sensitive receptors to substantial pollutant concentrations?

Criteria Pollutants

Less than Significant Impact. The localized effects from the on-site portion of daily construction emissions were evaluated at sensitive receptor locations potentially impacted by the project according to the SCAQMD's Localized Significance Thresholds (LSTs) method (SCAQMD 2009). LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard; they are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA). The LST methodology is recommended to be limited to projects of five acres or less and to avoid the need for complex dispersion modeling. For projects that exceed 5 acres, such as the proposed 12-acre project, the 5-acre LST look-up values can be used as a screening tool to determine which pollutants require detailed analysis. This approach is conservative as it assumes that all on-site emissions would occur within a 5-acre area and over-predicts potential localized impacts (i.e., more pollutant emissions occurring within a smaller area and within closer proximity to potential sensitive receptors). If a project exceeds the LST look up values, then the SCAQMD recommends that project-specific localized air quality modeling be performed.

The project is in SRA 26, Temecula Valley, and sensitive receptors are located within 500 meters (1,640 feet) south of the 2.2-mile long project site. Therefore, the LSTs being applied to the project are based on SRA 26, receptors located within 500 meters, and a disturbed area not to exceed 5 acres. Consistent with the LST guidelines, when quantifying mass emissions for localized analysis, only emissions that occur on-site are considered. Emissions related to off-site delivery/haul truck activity and construction worker trips are not considered in the evaluation of construction-related localized impacts, as these do not contribute to emissions generated on a project site. As shown in Table 6, *Maximum Localized Daily Construction Emissions*, localized emissions for all criteria pollutants would remain below their respective SCAQMD LSTs. Therefore, impacts would be a less than significant.

Table 6
MAXIMUM LOCALIZED DAILY CONSTRUCTION EMISSIONS

Phase	Pollutant Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Site Preparation/Land Clearing	1.3	10.5	10.6	2.6
Grading/Excavation	5.8	45.7	12.7	4.5
Underground Drainage/Utilities	3.3	29.2	11.5	3.5
Paving	1.5	17.4	0.7	0.7
Maximum Daily Emissions	**5.8**	**45.7**	**13.7**	**4.5**
SCAQMD LST	*1,072*	*29,265*	*207*	*105*
Significant Impact?	***No***	***No***	***No***	***No***

Source: RCEM; SCAQMD 2009
lbs/day = pounds per day; NO_X = nitrogen oxides; CO = carbon monoxide; PM_{10} = respirable particulate matter with a diameter of 10 microns or less; $PM_{2.5}$ = fine particulate matter with a diameter of 2.5 microns or less;
SCAQMD = South Coast Air Quality Management District; LST = Localized Significance Threshold

Toxic Air Contaminants

Construction of the project would result in the use of heavy-duty construction equipment, haul trucks, and construction worker vehicles. These vehicles and equipment could generate DPM, which is a TAC. Generation of DPM from construction projects typically occurs in a localized area (e.g., near locations with multiple pieces of heavy construction equipment working in close proximity) for a short period of time. Because construction activities and subsequent emissions vary depending on the phase of construction, the construction-related emissions to which nearby receptors are exposed to would also vary throughout the construction period. Concentrations of DPM emissions are typically reduced by 70 percent at approximately 500 feet (CARB 2005). As discussed above, the closest sensitive receptors to the project site are multi- and single-family homes approximately 1,600 feet south of Rancho California Road (the southernmost extent of the proposed roadway improvements).

The dose of TACs to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance in the environment and the extent of exposure a person has with the substance; a longer exposure period to a fixed amount of emissions would result in higher health risks. Current models and methodologies for conducting cancer health risk assessments are associated with longer-term exposure periods (typically 30 years for individual residents based on guidance from OEHHA) and are best suited for evaluation of long duration TAC emissions with predictable schedules and locations. These assessment models and methodologies do not correlate well with the temporary and highly variable nature of construction activities. Cancer potency factors are based on animal lifetime studies or worker studies where there is long-term exposure to the carcinogenic agent. There is considerable uncertainty in trying to evaluate the cancer risk from projects that will only last a small fraction of a lifetime (Office of Environmental Health Hazard Assessment [OEHHA] 2015). Considering this information, the distance to the nearest sensitive receptors, and the fact that any concentrated use of heavy construction equipment would occur at various locations throughout the project site only for short durations, construction of the project would not expose sensitive receptors to substantial DPM concentrations, and the impact would be less than significant.

(4) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant Impact. The project could produce odors during proposed construction activities resulting from heavy diesel equipment exhaust and application of asphalt; however, standard construction practices would minimize the odor emissions and their associated impacts. The increase of construction odors would be minimal, as vehicle exhaust is already prevalent in the area due to its proximity to I-15. Furthermore, any odors emitted during construction would be temporary, short-term, and intermittent in nature, and would cease upon the completion of the respective phase of construction. Therefore, odor impacts from construction of the project would be less than significant due to the duration of exposure.

The project proposes widening and improvement of an existing roadway. Odors generated by traffic on the improved portion of Diaz Road would be similar to existing odors from traffic on streets and highways in the area. Therefore, long-term operation of the project would not result in a change to existing odors in the project vicinity, and there would be no impact.

GREENHOUSE GAS EMISSIONS

Setting

Greenhouse gases, as defined under California's Assembly Bill (AB) 32, include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). AB 32, the California Global Warming Solutions Act of 2006, recognizes that California is a source of substantial amounts of GHG emissions. The statute states that:

> *Global warming poses a serious threat to the economic wellbeing, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

In order to help avert these potential consequences, AB 32 established a State goal of reducing GHG emissions to 1990 levels by the year 2020, which is a reduction of approximately 16 percent from forecasted emission levels, with further reductions to follow. In addition, AB 32 required CARB to develop a Scoping Plan to help the State achieve the targeted GHG emission reductions. In 2015, Executive Order (EO) B-30-15 established a California GHG emission reduction target of 40 percent below 1990 levels by 2030. The EO aligns California's GHG emission reduction targets with those of leading international governments, including the 28 nation European Union. California is on track to meet or exceed the target of reducing GHG emissions to 1990 levels by 2020, as established in AB 32. As a follow-up to AB 32 and in response to EO-B-30-15, Senate Bill (SB) 32 was passed by the California legislature in 2016 to codify the EO's California GHG emission reduction target of 40 percent below 1990 levels by 2030. The most recent update to the Scoping Plan was adopted in December 2017 and establishes a proposed framework for California to meet the EO-B-30-15 reduction target (CARB 2017).

Significance Criteria

Given the relatively small levels of emissions generated by a typical development in relationship to the total amount of GHG emissions generated on a national or global basis, individual development projects are not expected to result in significant, direct impacts with respect to climate change. However, given the magnitude of the impact of GHG emissions on the global climate, GHG emissions from new development could result in significant, cumulative impacts with respect to climate change. Thus, the potential for a significant GHG emissions impact is limited to cumulative impacts.

According to Appendix G of the CEQA Guidelines, a project would have a significant environmental impact if it would:

(1) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

(2) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

There are no established federal, state, or local quantitative thresholds applicable to the project to determine the quantity of GHG emissions that may have a significant effect on the environment. CARB, the SCAQMD, and various cities and agencies have proposed, or adopted on an interim basis, thresholds of significance that require the implementation of GHG emission reduction measures. For the proposed project, the most appropriate screening threshold for determining GHG emissions is the SCAQMD proposed Tier 3 screening threshold (SCAQMD 2010). Therefore, a significant impact would occur if the proposed project would exceed the SCAQMD proposed Tier 3 screening threshold of 3,000 metric tons (MT) of carbon dioxide equivalent (CO_2e) per year.

Project Greenhouse Gas Emissions Analysis

(1) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. Construction would result in GHG emissions generated by vehicle engine exhaust from construction equipment, on-road hauling trucks, and worker commuting trips. Construction GHG emissions were calculated by using the RCEM, as described above. Input details and output are provided in Attachment A to this letter. The estimated construction GHG emissions for the project are shown in Table 7, *Construction GHG Emissions*. For construction emissions, SCAQMD recommends that the emissions be amortized (i.e., averaged) over the anticipated lifespan of the project (30 years) and added to operational emissions. Averaged over 30 years, the proposed construction activities would contribute approximately 37.8 MT CO_2e emissions per year.

Table 7
CONSTRUCTION GHG EMISSIONS

Source	Emissions (MT CO_2e)
Site Preparation/Land Clearing	35.0
Grading/Excavation	668.5
Underground Drainage/Utilities	261.4
Paving	64.6
Total Construction Emissions[1]	**1,134.7**
Amortized Construction Emissions	**37.8**

Source: RCEM; SCAQMD 2010
[1] Total may not sum due to rounding.
MT = metric tons; CO_2e = carbon dioxide equivalent

The project proposes widening and improving an existing roadway and would only generate emissions during construction in the near term. Because the project would result in additional lanes on Diaz Road and, therefore, increase the total available miles of roadways in the region, the TIA concluded that the project would result in a regional increase in VMT of 7,277 miles in the year 2040 (DEA 2020). The GHG emissions resulting from the increase in VMT were calculated using data from EMFAC2017, as described above. As shown in Table 8, *Operational GHG Emissions*, the combined operational emissions from the increased VMT and the amortized construction emissions would be 40.0 MT CO_2e per year and would not exceed the SCAQMD threshold of 3,000 MT CO_2e per year. The impact would be less than significant.

Table 8
OPERATIONAL GHG EMISSIONS

Source	Emissions (MT CO_2e)
Operational Emissions from VMT Increase	2.2
Amortized Construction Emissions	37.8
Total Operational Emissions	**40.0**
SCAQMD Threshold	*3,000*
Significant Impact?	***No***

Source: DEA 2020; EMFAC2017; SCAQMD 2010
CO_2e: carbon dioxide equivalent; MT: metric tons; SCAQMD = South Coast Air Quality Management District

(2) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less than Significant Impact.

There are numerous State plans, policies, and regulations adopted for the purpose of reducing GHG emissions. The principal overall State plan and policy is AB 32, the California Global Warming Solutions Act of 2006. The quantitative goal of AB 32 is to reduce GHG emissions to 1990 levels by 2020. SB 32 would require further reductions of 40 percent below 1990 levels by 2030. Statewide plans and regulations such as GHG emissions standards for vehicles (AB 1493), the low carbon fuel standard, and regulations requiring an increasing fraction of electricity to be generated from renewable sources are being implemented at the statewide level; as such, compliance at the project level is not addressed.

The twelve cities of the Western Riverside Council of Governments (WRCOG), which includes the City of Temecula, adopted a Subregional Climate Action Plan (CAP) in September 2014. The CAP provides a 2010 baseline inventory of GHG emissions for the subregion cities of 5,834,400 MT of CO_2e. Approximately 57 percent of the GHG inventory was from transportation sources, 21 percent from commercial/industrial energy use, 20 percent from residential energy use, and the remaining from waste water and solid waste sources. The CAP established a target of reducing subregional GHG emissions 15 percent below 2010 levels by 2020 and 49 percent below 2010 levels by 2035. To achieve the 2020 reduction target, the CAP identifies 14 State and regional measures, 3 local energy sector measures, 18 local transportation sector measures, and 2 solid waste sector measures. The CAP does not identify GHG reduction measures for achieving goals beyond 2020 (WRCOG 2014). The CAP does not include thresholds for determining the significance of a project's GHG emissions, nor does it include a checklist or other methodology for determining consistency of a project with the goals and measures in the CAP.

The project would involve widening and improvements to an existing roadway and only the transportation sector local reduction measures would be potentially applicable. The project would support the CAP local transportation sector measuresT-1, *Bicycle Infrastructure Improvements*, and T-5 *Transit Service Expansion*, by providing:

- Class II bicycle lanes in both directions of Diaz Road.
- Improved crossings and signal-controlled crossings for pedestrians and bicyclists using the multi-use trail paralleling the north side of Diaz Road to the north.

- Conformance with the latest ADA standards throughout the corridor.
- Space for future bus stops out of the traffic lanes that improve transit safety and operational efficiency.

Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

SUMMARY

As described above, emissions of criteria pollutants would be below SCAQMD thresholds and the project would be consistent with the AQMP. Sensitive receptors would not be exposed to substantial concentrations of TACs or odors. Thus, impacts to air quality would be less than significant and no mitigation measures would be required. Operational GHG emissions, including amortized construction GHG emissions, would be below SCAQMD thresholds. The project would be consistent with the WRCOG Subregional CAP and would not conflict with applicable State GHG reduction plans or policies. Therefore, GHG impacts would be less than significant no mitigation measures would be required.

Sincerely,

Victor Ortiz
Senior Air Quality Specialist

Attachments:

Attachment A: SMAQMD Roadway Construction Model Output
Attachment B: Operational Emissions Calculations

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Attachment A

SMAQMD Roadway Construction Model Output

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> DEA-12 Diaz Road All Sources				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**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)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	1.43	12.24	18.11	10.75	0.75	10.00	2.68	0.60	2.08	0.05	5,056.05	0.61	0.46	5,207.73
Grading/Excavation	5.99	49.02	68.33	12.92	2.92	10.00	4.65	2.57	2.08	0.12	12,193.69	2.89	0.48	12,408.77
Drainage/Utilities/Sub-Grade	3.50	31.66	36.94	11.68	1.68	10.00	3.57	1.49	2.08	0.08	7,846.21	1.22	0.38	7,989.66
Paving	1.62	19.14	16.26	0.85	0.85	0.00	0.73	0.73	0.00	0.04	4,027.09	0.77	0.20	4,107.05
Maximum (pounds/day)	5.99	49.02	68.33	12.92	2.92	10.00	4.65	2.57	2.08	0.12	12,193.69	2.89	0.48	12,408.77
Total (tons/construction project)	0.73	6.28	8.11	1.85	0.36	1.50	0.62	0.31	0.31	0.02	1,575.32	0.32	0.07	1,604.71

Notes:

Project Start Year ->	2021
Project Length (months) ->	16
Total Project Area (acres) ->	12
Maximum Area Disturbed/Day (acres) ->	1
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	215	218	330	330	400	40
Grading/Excavation	263	85	420	150	1,000	40
Drainage/Utilities/Sub-Grade	245	50	390	90	760	40
Paving	0	151	0	240	600	40

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 -> DEA-12 Diaz Road All Sources				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	**ROG (tons/phase)**	**CO (tons/phase)**	**NOx (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM10 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**PM2.5 (tons/phase)**	**SOx (tons/phase)**	**CO2 (tons/phase)**	**CH4 (tons/phase)**	**N2O (tons/phase)**	**CO2e (MT/phase)**
Grubbing/Land Clearing	0.03	0.22	0.32	0.19	0.01	0.18	0.05	0.01	0.04	0.00	88.99	0.01	0.01	83.15
Grading/Excavation	0.47	3.88	5.41	1.02	0.23	0.79	0.37	0.20	0.16	0.01	965.74	0.23	0.04	891.57
Drainage/Utilities/Sub-Grade	0.18	1.67	1.95	0.62	0.09	0.53	0.19	0.08	0.11	0.00	414.28	0.06	0.02	382.70
Paving	0.04	0.51	0.43	0.02	0.02	0.00	0.02	0.02	0.00	0.00	106.32	0.02	0.01	98.36
Maximum (tons/phase)	0.47	3.88	5.41	1.02	0.23	0.79	0.37	0.20	0.16	0.01	965.74	0.23	0.04	891.57
Total (tons/construction project)	0.73	6.28	8.11	1.85	0.36	1.50	0.62	0.31	0.31	0.02	1575.32	0.32	0.07	1,455.78

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 **Version 9.0.0**

Data Entry Worksheet

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	DEA-12 Diaz Road All Sources	
Construction Start Year	2021	Enter a Year between 2014 and 2040 (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	16.00	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)	1	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	2.20	miles
Total Project Area	12.00	acres
Maximum Area Disturbed/Day	1.00	acre
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	20.00		215.00
	Grading/Excavation	20.00	55.00	208.00
	Drainage/Utilities/Sub-Grade	20.00	185.00	60.00
	Paving			
Asphalt	Grubbing/Land Clearing	20.00		218.00
	Grading/Excavation	20.00		85.00
	Drainage/Utilities/Sub-Grade	20.00	50.00	
	Paving	20.00	151.00	

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 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/Businesses/CEQA-Land-Use-Planning/Mitigation).
Off-road Equipment Emissions Mitigation		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	1.60	1.60		1/1/2021
Grading/Excavation	7.20	6.40		2/19/2021
Drainage/Utilities/Sub-Grade	4.80	5.60		9/26/2021
Paving	2.40	2.40		2/19/2022
Totals (Months)		16		

Note: Soil Hauling emission default values can be overridden 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		11	330.00
Miles/round trip: Grading/Excavation		30.00		14	420.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		13	390.00
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)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.07	0.11	0.05	0.02	1,768.77	0.00	0.28	1,851.67
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.03	0.31	2.31	0.08	0.04	0.01	1,294.48	0.00	0.20	1,355.15
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.04	0.00	0.00	0.00	22.78	0.00	0.00	23.85
Pounds per day - Grading/Excavation	0.04	0.39	2.95	0.10	0.05	0.02	1,647.52	0.00	0.26	1,724.74
Tons per const. Period - Grading/Excavation	0.00	0.03	0.23	0.01	0.00	0.00	130.48	0.00	0.02	136.60
Pounds per day - Drainage/Utilities/Sub-Grade	0.04	0.36	2.74	0.10	0.04	0.01	1,520.80	0.00	0.24	1,592.07
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.02	0.14	0.01	0.00	0.00	80.30	0.00	0.01	84.06
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	0.06	0.42	0.01	0.01	0.00	233.56	0.00	0.04	244.51

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

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		11	330.00
Miles/round trip: Grading/Excavation		30.00		5	150.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		3	90.00
Miles/round trip: Paving		30.00		8	240.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.07	0.11	0.05	0.02	1,768.77	0.00	0.28	1,851.67
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.03	0.31	2.31	0.08	0.04	0.01	1,294.48	0.00	0.20	1,355.15
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.04	0.00	0.00	0.00	22.78	0.00	0.00	23.85
Pounds per day - Grading/Excavation	0.01	0.14	1.05	0.04	0.02	0.01	588.40	0.00	0.09	615.98
Tons per const. Period - Grading/Excavation	0.00	0.01	0.08	0.00	0.00	0.00	46.60	0.00	0.01	48.79
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.08	0.63	0.02	0.01	0.00	350.95	0.00	0.06	367.40
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.03	0.00	0.00	0.00	18.53	0.00	0.00	19.40
Pounds per day - Paving	0.02	0.22	1.70	0.06	0.03	0.01	925.19	0.00	0.15	968.55
Tons per const. Period - Paving	0.00	0.01	0.04	0.00	0.00	0.00	24.42	0.00	0.00	25.57
Total tons per construction project	0.00	0.03	0.20	0.01	0.00	0.00	112.34	0.00	0.02	117.60

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		10	20	400.00
No. of employees: Grading/Excavation		25	50	1,000.00
No. of employees: Drainage/Utilities/Sub-Grade		19	38	760.00
No. of employees: Paving		15	30	600.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Grading/Excavation (grams/mile)	0.02	1.10	0.10	0.05	0.02	0.00	339.80	0.00	0.01	342.28
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.07	0.09	0.05	0.02	0.00	336.00	0.00	0.01	338.40
Paving (grams/mile)	0.02	1.00	0.08	0.05	0.02	0.00	328.72	0.00	0.01	330.96
Grubbing/Land Clearing (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Grading/Excavation (grams/trip)	1.18	2.95	0.34	0.00	0.00	0.00	72.81	0.08	0.04	85.39
Draining/Utilities/Sub-Grade (grams/trip)	1.15	2.91	0.33	0.00	0.00	0.00	72.03	0.08	0.03	84.37
Paving (grams/trip)	1.11	2.85	0.32	0.00	0.00	0.00	70.54	0.08	0.03	82.43
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.07	1.10	0.10	0.04	0.02	0.00	302.86	0.01	0.01	305.60
Tons per const. Period - Grubbing/Land Clearing	0.00	0.02	0.00	0.00	0.00	0.00	5.33	0.00	0.00	5.38
Pounds per day - Grading/Excavation	0.17	2.75	0.25	0.10	0.04	0.01	757.15	0.02	0.02	764.01
Tons per const. Period - Grading/Excavation	0.01	0.22	0.02	0.01	0.00	0.00	59.97	0.00	0.00	60.51
Pounds per day - Drainage/Utilities/Sub-Grade	0.13	2.03	0.18	0.08	0.03	0.01	569.01	0.01	0.02	574.07
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.11	0.01	0.00	0.00	0.00	30.04	0.00	0.00	30.31
Pounds per day - Paving	0.10	1.51	0.13	0.06	0.03	0.00	439.49	0.01	0.01	443.23
Tons per const. Period - Paving	0.00	0.04	0.00	0.00	0.00	0.00	11.60	0.00	0.00	11.70
Total tons per construction project	0.02	0.38	0.03	0.01	0.01	0.00	106.94	0.00	0.00	107.90

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Grading/Excavation (grams/mile)	0.04	0.42	3.06	0.11	0.05	0.02	1,779.29	0.00	0.28	1,862.69
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	3.07	0.11	0.05	0.02	1,768.77	0.00	0.28	1,851.67
Paving (grams/mile)	0.04	0.42	3.08	0.11	0.05	0.02	1,748.57	0.00	0.27	1,830.52
Grubbing/Land Clearing (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	3.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	3.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.31	0.01	0.00	0.00	156.91	0.00	0.02	164.26
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	2.76	0.00	0.00	2.89
Pounds per day - Grading/Excavation	0.00	0.04	0.31	0.01	0.00	0.00	156.91	0.00	0.02	164.26
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	12.43	0.00	0.00	13.01
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.31	0.01	0.00	0.00	155.98	0.00	0.02	163.29
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.02	0.00	0.00	0.00	8.24	0.00	0.00	8.62
Pounds per day - Paving	0.00	0.04	0.32	0.01	0.00	0.00	154.20	0.00	0.02	161.42
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.07	0.00	0.00	4.26
Total tons per construction project	0.00	0.01	0.05	0.00	0.00	0.00	27.50	0.00	0.00	28.78

Note: Fugitive dust default values can be overridden in cells D183 through D185.

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		1.00	10.00	0.18	2.08	0.04
Fugitive Dust - Grading/Excavation		1.00	10.00	0.79	2.08	0.16
Fugitive Dust - Drainage/Utilities/Subgrade		1.00	10.00	0.53	2.08	0.11

Off-Road Equipment Emissions

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
Grubbing/Land Clearing														
			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	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25	0.01	768.56
			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	0.46	6.54	4.31	0.21	0.19	0.01	1,000.38	0.32	0.01	1,011.17
			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 Equip	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 Equip	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
			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
	5		Model Default Tier	Signal Boards	0.29	1.51	1.80	0.07	0.07	0.00	246.57	0.03	0.00	247.82
			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
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			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

Phase	Units	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing	pounds per day	1.30	10.48	13.07	0.54	0.50	0.02	2,007.32	0.60	0.02	2,027.55
Grubbing/Land Clearing	tons per phase	0.02	0.18	0.23	0.01	0.01	0.00	35.33	0.01	0.00	35.68

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	0.55	2.44	6.97	0.26	0.24	0.01	760.36	0.25	0.01	768.56
			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
	3		Model Default Tier	Excavators	0.69	9.82	6.46	0.31	0.29	0.02	1,500.58	0.49	0.01	1,516.76
			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
	2		Model Default Tier	Graders	0.91	3.53	11.85	0.38	0.35	0.01	1,283.37	0.42	0.01	1,297.19
			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 Equip	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 Equip	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
	2		Model Default Tier	Rollers	0.38	3.76	3.85	0.24	0.22	0.01	508.18	0.16	0.00	513.65
			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		Model Default Tier	Rubber Tired Loaders	0.34	1.60	3.86	0.13	0.12	0.01	605.23	0.20	0.01	611.76
	2		Model Default Tier	Scrapers	1.86	14.01	21.41	0.83	0.77	0.03	2,935.83	0.95	0.03	2,967.48
	5		Model Default Tier	Signal Boards	0.29	1.51	1.80	0.07	0.07	0.00	246.57	0.03	0.00	247.82
			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
	4		Model Default Tier	Tractors/Loaders/Backhoes	0.75	9.04	7.58	0.45	0.41	0.01	1,203.60	0.39	0.01	1,216.56
			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
Grading/Excavation	pounds per day	5.76	45.70	63.78	2.66	2.46	0.09	9,043.71	2.87	0.08	9,139.78
Grading/Excavation	tons per phase	0.46	3.62	5.05	0.21	0.19	0.01	716.26	0.23	0.01	723.87

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	0.29	2.42	1.98	0.12	0.12	0.00	375.26	0.03	0.00	376.74
			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	0.35	3.68	3.08	0.16	0.16	0.01	623.04	0.03	0.00	625.21
	1		Model Default Tier	Graders	0.44	1.75	5.70	0.18	0.17	0.01	641.55	0.21	0.01	648.46
			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 Equip	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 Equipı	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		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		Model Default Tier	Pumps	0.37	3.74	3.13	0.17	0.17	0.01	623.04	0.03	0.00	625.26
			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	0.12	2.29	1.57	0.06	0.05	0.00	333.76	0.11	0.00	337.36
			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	0.89	6.79	10.10	0.39	0.36	0.02	1,468.73	0.48	0.01	1,484.56
	5		Model Default Tier	Signal Boards	0.29	1.51	1.80	0.07	0.07	0.00	246.57	0.03	0.00	247.82
			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	0.54	6.76	5.46	0.31	0.29	0.01	903.05	0.29	0.01	912.77
			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	3.32	29.15	33.07	1.48	1.40	0.06	5,249.47	1.20	0.04	5,292.83
Drainage/Utilities/Sub-Grade	tons per phase	0.18	1.54	1.75	0.08	0.07	0.00	277.17	0.06	0.00	279.46

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
			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
			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
			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 Equip	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 Equip	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	0.21	2.88	2.10	0.10	0.09	0.00	455.26	0.15	0.00	460.17
	1		Model Default Tier	Paving Equipment	0.18	2.55	1.74	0.08	0.08	0.00	394.47	0.13	0.00	398.73
			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
	2		Model Default Tier	Rollers	0.33	3.72	3.45	0.20	0.18	0.01	508.21	0.16	0.00	513.68
			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
	5		Model Default Tier	Signal Boards	0.29	1.51	1.80	0.07	0.07	0.00	246.57	0.03	0.00	247.82
			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	0.49	6.71	5.03	0.27	0.25	0.01	903.72	0.29	0.01	913.44
			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
	Paving		pounds per day	1.50	17.37	14.11	0.72	0.67	0.03	2,508.22	0.76	0.02	2,533.84
	Paving		tons per phase	0.04	0.46	0.37	0.02	0.02	0.00	66.22	0.02	0.00	66.89
Total Emissions all Phases (tons per construction period) =>				0.69	5.80	7.40	0.32	0.30	0.01	1,094.98	0.32	0.01	1,105.91

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

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		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> DEA-12 Diaz Road On-Site Only

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	1.30	10.52	13.55	10.55	0.55	10.00	2.59	0.51	2.08	0.02	2,164.22	0.60	0.04	2,191.82
Grading/Excavation	5.77	45.74	64.23	12.67	2.67	10.00	4.54	2.46	2.08	0.10	9,200.62	2.87	0.11	9,304.04
Drainage/Utilities/Sub-Grade	3.32	29.18	33.51	11.49	1.49	10.00	3.48	1.40	2.08	0.06	5,405.45	1.20	0.07	5,456.12
Paving	1.50	17.41	14.50	0.73	0.73	0.00	0.68	0.68	0.00	0.03	2,662.42	0.76	0.05	2,695.26
Maximum (pounds/day)	5.77	45.74	64.23	12.67	2.67	10.00	4.54	2.46	2.08	0.10	9,200.62	2.87	0.11	9,304.04
Total (tons/construction project)	0.69	5.81	7.48	1.82	0.32	1.50	0.61	0.30	0.31	0.01	1,122.47	0.32	0.01	1,134.69

Notes:

Project Start Year ->	2021
Project Length (months) ->	16
Total Project Area (acres) ->	12
Maximum Area Disturbed/Day (acres) ->	1
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	215	218	0	0	0	40
Grading/Excavation	263	85	0	0	0	40
Drainage/Utilities/Sub-Grade	245	50	0	0	0	40
Paving	0	151	0	0	0	40

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 -> DEA-12 Diaz Road On-Site Only

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	0.02	0.19	0.24	0.19	0.01	0.18	0.05	0.01	0.04	0.00	38.09	0.01	0.00	35.00
Grading/Excavation	0.46	3.62	5.09	1.00	0.21	0.79	0.36	0.19	0.16	0.01	728.69	0.23	0.01	668.49
Drainage/Utilities/Sub-Grade	0.18	1.54	1.77	0.61	0.08	0.53	0.18	0.07	0.11	0.00	285.41	0.06	0.00	261.35
Paving	0.04	0.46	0.38	0.02	0.02	0.00	0.02	0.02	0.00	0.00	70.29	0.02	0.00	64.55
Maximum (tons/phase)	0.46	3.62	5.09	1.00	0.21	0.79	0.36	0.19	0.16	0.01	728.69	0.23	0.01	668.49
Total (tons/construction project)	0.69	5.81	7.48	1.82	0.32	1.50	0.61	0.30	0.31	0.01	1122.47	0.32	0.01	1,029.39

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.

Attachment B

Operational Emissions Calculations

Emissions from Change in VMT

VMT/Year Increase (miles)
7,277

	ROG	NOX	CO	SOX	PM10	PM2.5	CO2	CH4	N20	CO2e (MT)
Emissions Factor (tons/VMT)	1.359E-08	2.594E-07	8.044E-07	3.095E-09	6.023E-08	2.534E-08	3.201E-04	1.168E-08	2.234E-08	-
Pounds per Day	0.0005	0.0103	0.0321	0.0001	0.0024	0.0010	12.7632	0.0005	0.0009	-
Tons Per Year	0.0001	0.0019	0.0059	0.0000	0.0004	0.0002	2.3293	0.0001	0.0002	2.16

Notes:
1. Emission factors claulated from EMFAC2017 data for Riverside County in 2023.
2. Pounds per day = Emissions Factor * VMT * 2,000 pounds per ton / 365 days per year.
3. Ton per year = Emissions Factor * VMT.
4. 1 Metric Ton (MT) = 0.9071847 Tons.
5. CO2e = C02 + (CH4 * 25) + (N20 * 298)

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: RIVERSIDE
Calendar Year: 2040
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	NOx_TOTEX	PM2.5_TOTAL	PM10_TOTAL	CO2_TOTEX	CH4_TOTEX	N2O_TOTEX	ROG_RUNEX	ROG_TOTAL	TOG_RUNEX	CO_TOTEX	SOx_TOTEX
RIVERSIDE	2040	HHDT	Aggregated	Aggregated	GAS	13.4955351	1502.956936	270.0186671	0.005052478	5.38059E-05	0.000137254	2.550870358	0.000110931	0.000219958	0.000485645	0.000584549	0.000708651	0.046511818	2.52429E-05
RIVERSIDE	2040	HHDT	Aggregated	Aggregated	DSL	33740.3646	5125739.993	397160.6275	13.65580031	0.331368057	0.684767002	5813.086777	0.016451078	0.913736289	0.100245556	0.354187205	0.114121934	4.61593784	0.054919161
RIVERSIDE	2040	HHDT	Aggregated	Aggregated	NG	873.934732	35622.84889	3408.345453	0.038009475	0.001521266	0.00397267	105.9091571	0.159481462	0.021590274	0.002772269	0.002790705	0.162197004	0.595468002	0
RIVERSIDE	2040	LDA	Aggregated	Aggregated	GAS	1108066.28	36538843.09	5196954.759	1.333743811	0.739334502	1.828956864	8123.267416	0.137647546	0.222611838	0.075916033	1.891695587	0.110776498	23.98599135	0.080386316
RIVERSIDE	2040	LDA	Aggregated	Aggregated	DSL	13559.5635	452844.9096	63948.00621	0.004322658	0.009250974	0.022746389	75.12090368	9.2479E-05	0.01180796	0.001991019	0.001991019	0.002266643	0.063805979	0.000710163
RIVERSIDE	2040	LDA	Aggregated	Aggregated	ELEC	68820.7814	2229326.743	327950.8584	0	0.043619065	0.109969191	0	0	0	0	0.005271528	0	0	0
RIVERSIDE	2040	LDT1	Aggregated	Aggregated	GAS	124317.605	3991479.588	571692.0612	0.169219328	0.081155581	0.200219485	1039.275829	0.017427344	0.02658306	0.0117021	0.29880174	0.017075677	2.804560497	0.010284477
RIVERSIDE	2040	LDT1	Aggregated	Aggregated	DSL	16.4950165	540.9481873	76.81539067	2.19859E-05	1.30808E-05	2.92936E-05	0.171241099	3.69063E-07	2.69167E-05	7.9457E-06	7.9457E-06	9.04565E-06	8.35887E-05	1.61884E-06
RIVERSIDE	2040	LDT1	Aggregated	Aggregated	ELEC	4410.05464	141311.682	20922.17446	0	0.002764908	0.006970684	0	0	0	0	0.000344478	0	0	0
RIVERSIDE	2040	LDT2	Aggregated	Aggregated	GAS	367885.395	12076450.32	1709980.89	0.4949696	0.244817471	0.604988776	3105.187732	0.062942009	0.07765479	0.041532161	0.925231462	0.060603632	9.846643204	0.03072835
RIVERSIDE	2040	LDT2	Aggregated	Aggregated	DSL	3673.24758	122980.1122	17286.90631	0.003777252	0.002936008	0.006620146	27.16552065	8.12921E-05	0.004270042	0.001750171	0.001750171	0.001992454	0.018097844	0.000256812
RIVERSIDE	2040	LDT2	Aggregated	Aggregated	ELEC	15825.108	353454.734	75258.36179	0	0.006915704	0.017435368	0	0	0	0	0.001236857	0	0	0
RIVERSIDE	2040	LHDT1	Aggregated	Aggregated	GAS	22405.1162	688032.6771	333802.8475	0.132436866	0.02717587	0.064925693	494.357758	0.006804271	0.013088972	0.002272919	0.165043775	0.003316637	0.670844351	0.004892071
RIVERSIDE	2040	LHDT1	Aggregated	Aggregated	DSL	23560.0154	710299.8344	296355.355	0.199018955	0.033231843	0.074715387	303.1736935	0.001272594	0.047654683	0.02454768	0.02739819	0.027945901	0.148595135	0.002866082
RIVERSIDE	2040	LHDT2	Aggregated	Aggregated	GAS	3550.37349	106473.3752	52895.27501	0.02156409	0.004844581	0.011540663	87.97608172	0.001047709	0.002108602	0.00035179	0.024372507	0.000513331	0.105617373	0.000870595
RIVERSIDE	2040	LHDT2	Aggregated	Aggregated	DSL	9795.87525	281664.4863	123219.7875	0.112065559	0.016659151	0.035450229	132.5547719	0.000544057	0.020835764	0.010528029	0.011713225	0.011985461	0.065013144	0.001253119
RIVERSIDE	2040	MCY	Aggregated	Aggregated	GAS	47247.186	292741.8543	94494.37198	0.382864675	0.002900876	0.006106327	73.27539529	0.12467375	0.022236656	0.668585796	1.335568659	0.839297791	6.404104763	0.000725119
RIVERSIDE	2040	MDV	Aggregated	Aggregated	GAS	246415.858	7829871.319	1131403.364	0.374961278	0.159017169	0.392562554	2457.675821	0.045971363	0.054526368	0.030930692	0.799955936	0.045133993	6.654780591	0.024320695
RIVERSIDE	2040	MDV	Aggregated	Aggregated	DSL	8556.49655	279529.0953	39930.24913	0.003175844	0.0057755	0.014108805	80.78331077	6.76762E-05	0.012698011	0.001457028	0.001457028	0.00165873	0.045473954	0.000763693
RIVERSIDE	2040	MDV	Aggregated	Aggregated	ELEC	11772.3789	262736.6526	55979.26723	0	0.005140712	0.012960387	0	0	0	0	0.00091966	0	0	0
RIVERSIDE	2040	MH	Aggregated	Aggregated	GAS	4023.88514	34354.58806	402.5494699	0.003935481	0.002263118	0.005427449	50.3728262	0.000125884	0.000468055	0.000312092	0.000910114	0.000455404	0.006755012	0.00049848
RIVERSIDE	2040	MH	Aggregated	Aggregated	DSL	2286.70808	16374.34879	228.670808	0.03982502	0.001922617	0.003521628	14.22992014	3.36101E-05	0.002236745	0.000723606	0.000723606	0.000823778	0.002785015	0.000134524
RIVERSIDE	2040	MHDT	Aggregated	Aggregated	GAS	3502.92858	164277.7286	70086.59508	0.041034078	0.010858818	0.025993342	242.5430621	0.003858451	0.003841237	0.001560729	0.043009574	0.002277413	0.305817696	0.00240016
RIVERSIDE	2040	MHDT	Aggregated	Aggregated	DSL	19856.1096	1135629.238	198906.9573	1.669847358	0.08565233	0.190695257	895.014082	0.000467998	0.14068375	0.008790863	0.010075864	0.010007728	0.124317813	0.008455649
RIVERSIDE	2040	OBUS	Aggregated	Aggregated	GAS	675.155661	26159.47605	13508.51446	0.00779342	0.001727881	0.004137781	38.46265614	0.000603993	0.000654337	0.000343791	0.008152805	0.000501659	0.048083069	0.000380619
RIVERSIDE	2040	OBUS	Aggregated	Aggregated	DSL	572.896073	36818.77261	5337.513754	0.06626394	0.002930043	0.006342611	35.71364457	3.70369E-05	0.005613688	0.000397826	0.000797394	0.000452894	0.009974149	0.000337405
RIVERSIDE	2040	SBUS	Aggregated	Aggregated	GAS	593.063228	22007.46711	2372.252911	0.005706821	0.007824711	0.018297794	19.87447654	0.001765047	0.000527748	0.000289198	0.010020795	0.000421998	0.075642739	0.000196674
RIVERSIDE	2040	SBUS	Aggregated	Aggregated	DSL	1439.54404	45936.41379	16612.13859	0.165490289	0.016609772	0.038629605	51.39911703	7.08774E-05	0.008079225	0.001095932	0.00152597	0.001247635	0.024856009	0.000485593
RIVERSIDE	2040	UBUS	Aggregated	Aggregated	GAS	181.921075	25613.54248	727.6843	0.004881618	0.001378976	0.003280134	31.19193068	0.000143881	0.000482262	0.000286841	0.000759864	0.000418558	0.009797262	0.000308669
RIVERSIDE	2040	UBUS	Aggregated	Aggregated	DSL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RIVERSIDE	2040	UBUS	Aggregated	Aggregated	NG	348.058852	47081.12942	1392.235408	0.021251269	0.002307701	0.005759671	90.32703332	0.271457382	0.018413757	0.004046426	0.004046426	0.277225404	2.104263639	0
						Total VMT	**73075699.93**	**Tons/VMT**	**2.59416E-07**	**2.53432E-08**	**6.02289E-08**	**0.000320088**	**1.16753E-08**	**2.23419E-08**	**1.35876E-08**	**8.11534E-08**	**2.31737E-08**	**8.04424E-07**	**3.09544E-09**