City of Redlands

# Zanja Trail and Pocket Park

# Air Quality and Greenhouse Gas Study

April 2016

rincon

Environmental Scientists Planners Engineers

# Zanja Trail and Greenway Park Project

# Air Quality and Greenhouse Gas Study

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**Appendix A**

# AIR QUALITY AND GREENHOUSE GAS STUDY ZANJA TRAIL AND GREENWAY PARK, CITY OF REDLANDS, CALIFORNIA

This report is an analysis of the air quality and greenhouse gas (GHG) impacts of the proposed trail and greenway pocket-parks along the Zanja channel in the City of Redlands, California. The report has been prepared by Rincon Consultants, Inc. under contract to ECORP Consulting, Inc. for use by the City of Redlands, in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the proposed project's air quality and GHG emissions and associated impacts. This study analyzes both temporary emissions impacts related to construction activity and possible long-term impacts associated with operation of the proposed project.

## PROJECT DESCRIPTION

The proposed trail is approximately 3,300 feet long and would run along the Zanja channel from Wabash Ave. to Lincoln St. along an existing access road for the San Bernardino County flood Control District. The trail would incorporate a pedestrian crossing at Dearborn St. with removable bollards at trail entrance points to deter the use of motorized vehicles. The trail would be six feet wide, made from natural-colored decomposed granite, and incorporate fencing installed along the right-of-way boundary, with landscaping consisting of native vegetation and shade trees.

Greenway pocket parks would be constructed at each end of the trail. Laramie Pocket Park, approximately 1.2 acres in size, would be located at Lincoln and Laramie and would incorporate numerous amenities including landscaping, an exercise circuit, benches, play areas, interpretive signage, and a shade structure. Wabash Pocket Park, approximately 0.5 acres in size, would be located at the intersection of the Zanja channel and Wabash Ave. and would also incorporate amenities such as landscaping, interpretive signage, and a boulder seat-wall. Construction of the proposed project is expected to take approximately six months.

## AIR QUALITY

This section analyzes the proposed project's temporary and long-term impacts to local and regional air quality. Both temporary impacts related to construction and long-term impacts associated with operation of the project are discussed.

### Setting

#### Air Pollution Regulation

The federal and state governments have authority under the federal and state Clean Air Acts to regulate emissions of airborne pollutants and have established ambient air quality standards for the protection of public health. The U.S. Environmental Protection Agency (EPA) is the federal agency designated to administer air quality regulation, while the California Air Resources Board (ARB) is the state equivalent in California. Federal and state standards have been established for six criteria pollutants, including ozone ($O_3$), carbon monoxide (CO), nitrogen

dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulates less than 10 and 2.5 microns in diameter ($PM_{10}$ and $PM_{2.5}$), and lead (Pb). Table 1 lists the current federal and state standards for each of these pollutants. California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Standards have been set at levels intended to be protective of public health. California standards are more restrictive than federal standards for each of these pollutants except lead and the eight-hour average for CO.

**Table 1**
**Current Federal and State Ambient Air Quality Standards**

| Pollutant | Averaging Time | Federal Primary Standards | California Standard |
|---|---|---|---|
| Ozone | 1-Hour | --- | 0.09 ppm |
| | 8-Hour | 0.075 µg/m$^3$ | 0.070 µg/m$^3$ |
| $PM_{10}$ | 24-Hour | 150 µg/m$^3$ | 50 µg/m$^3$ |
| | Annual | --- | 20 µg/m$^3$ |
| $PM_{2.5}$ | 24-Hour | 35 µg/m$^3$ | --- |
| | Annual | 15 µg/m$^3$ | 12 µg/m$^3$ |
| Carbon Monoxide | 8-Hour | 9.0 ppm | 9.0 ppm |
| | 1-Hour | 35.0 ppm | 20.0 ppm |
| Nitrogen Dioxide | Annual | 0.053 ppm | 0.030 ppm |
| | 1-Hour | 0.100 ppm | 0.18 ppm |
| Sulfur Dioxide | 24-Hour | --- | 0.04 ppm |
| | 1-Hour | 0.075 ppm (primary) | 0.25 ppm |
| Lead | 30-Day Average | --- | 1.5 µg/m$^3$ |
| | 3-Month Average | 0.15 µg/m$^3$ | --- |

*ppm = parts per million  µg/m$^3$ = micrograms per cubic meter*
*Source: California Air Resources Board, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, October 1, 2015*

The ARB provides local air quality management through county-level or regional (multi-county) Air Pollution Control Districts (APCDs). The ARB establishes air quality standards and is responsible for control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The ARB has established 14 air basins statewide. This portion of San Bernardino County is located within the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment." The South Coast Air Basin is a non-attainment area for both the federal and state standards for ozone and $PM_{10}$. The Basin is in attainment of the state and federal standards for nitrogen dioxide and carbon monoxide. Characteristics of ozone, carbon monoxide, nitrogen dioxide, and suspended particulates are described below.

Ozone

Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides ($NO_X$) and reactive organic gases (ROG). Nitrogen oxides are formed during the combustion of fuels, while reactive organic compounds are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide

Carbon monoxide (CO) is a local pollutant that is found in high concentrations only near the source. The major source of CO, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. CO's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Nitrogen Dioxide

Nitrogen dioxide ($NO_2$) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form $NO_2$, creating the mixture of NO and $NO_2$ commonly called $NO_X$. Nitrogen dioxide is an acute irritant. A relationship between $NO_2$ and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of $PM_{10}$ and acid rain.

Suspended Particulates

$PM_{10}$ is particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in diameter. Suspended particulates are mostly dust particles, nitrates and sulfates. Both $PM_{10}$ and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads, and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

## Local Air Quality

California's weather is heavily influenced by a semi-permanent high-pressure system west of the Pacific Ocean. The Mediterranean climate of the region and the coastal influence produce moderate temperatures year round, with rainfall concentrated in the winter months. The sea breeze, which is the predominant wind, is a primary factor in creating this climate and typically flows from the west-southwest in a day-night cycle with speeds generally ranging from 5 to 15 miles per hour. The sea breeze maintains the cool temperatures and clean air circulation and generally prevents warmer inland temperatures and air pollution from permeating into the peninsula, except under certain seasonal conditions such as the offshore Santa Ana winds.

Air quality in the South Coast Air Basin is affected by the emission sources located in the region, as well as by three natural factors:

1. A **natural terrain barrier** to emission dispersion north and east of the metropolitan Los Angeles area.
2. A **dominant on-shore flow** transports and disperses air pollution by driving air pollution originating in industrial areas along the coast toward the natural terrain barrier, limiting horizontal dispersion. The effect of this flow is a gradual degradation of air quality from coastal to inland areas. The greatest impacts can be seen in the San Gabriel Valley and near Riverside at the foot of the San Gabriel Mountains.
3. **Atmospheric inversions** limit dispersion of air pollution on a vertical scale. Temperature typically decreases with altitude. However, under inversion conditions temperature begins to increase at some height above the ground. This height is called the base of the inversion. The temperature increase continues through an unspecified layer after which the temperature change with height returns to standard conditions. The inversion layer is typically very stable and acts as a cap to the vertical dispersions of pollutants.

The SCAQMD operates a network of air monitoring stations throughout the Basin. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the California and federal standards. The air quality monitoring station located nearest to the project site is the Redlands-Dearborn station, located at 500 North Dearborn Street, approximately 0.7 miles northwest of the project site. The Redlands-Dearborn station does not record $N_2O$ or $PM_{2.5}$, so the next closest location (San Bernardino-4$^{th}$ Street) was used for this data. Table 2 indicates the number of days that each of the state and federal standards has been exceeded at the closest monitoring stations.

The ozone concentration exceeded the state and federal standards on 43 days in 2013, on 47 days in 2014, and on 44 days in 2015. The $PM_{10}$ concentration exceeded state standards on 11.8 days in 2013 and 12 days in 2014. $PM_{10}$ concentrations did not exceed federal standards in 2013, 2014, or 2015. The $PM_{2.5}$ concentration exceeded federal standards on 3.3 days in 2013 and on 6.9 days in 2015. In addition, $N_2O$ concentrations exceeded the state standards by 70 days in 2013, 2014, and 2015. There was no representative data available for CO in the year range and location

**Table 2**
**Ambient Air Quality Data**

| Pollutant | 2013 | 2014 | 2015 |
|---|---|---|---|
| Ozone, ppm - Worst Hour | 0.133 | 0.128 | 0.137 |
| Number of days of State exceedances (>0.09 ppm) | 43 | 47 | 44 |
| Number of days of Federal exceedances (>0.12 ppm) | 3 | 2 | 2 |
| Carbon Monoxide, ppm - Worst 8 Hours | * | * | * |
| Number of days of State/Federal exceedances (>9.0 ppm) | * | * | * |
| Nitrogen Dioxide, ppm - Worst Hour | 72.1 | 72.6 | 71.4 |
| Number of days of State exceedances (>0.25 ppm) | 70 | 70 | 70 |
| Particulate Matter <10 microns, $\mu g/m^3$ Worst 24 Hours | 72.0 | 62.0 | 45.0 |
| Number of samples of State exceedances (>50 $\mu g/m^3$ ) | 11.8 | 12.0 | * |
| Number of samples of Federal exceedances (>150 $\mu g/m^3$ ) | 0 | 0 | * |
| Particulate Matter <2.5 microns, $\mu g/m^3$ Worst 24 Hours | 55.3 | 73.9 | 53.5 |
| Number of samples of Federal exceedances (>35 $\mu g/m^3$ ) | 3.3 | * | 6.9 |

**Insufficient data available.*

*Redlands-Dearborn monitoring station and San Bernardino-4th Street monitoring station*

*$PM_{10}$ and $N_2O$ data taken from San Bernardino-4th Street monitoring station (Not available at West Los Angeles)*
*Source: California Air Resources Board, available at http://www.arb.ca.gov/adam/topfour/topfour1.php*

### Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; persons over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are therefore schools and hospitals. Nearby sensitive receptors include the adjacent residential units along the length of the trail, which includes Herrington Drive, Hamstead Circle, Sylvan Boulevard, and Laramie Avenue.

## Impact Analysis

### Methodology and Significance Thresholds

This air quality analysis conforms to the methodologies recommended in the SCAQMD's *CEQA Air Quality Handbook* (1993). The handbook includes thresholds for emissions associated with both construction and operation of proposed projects.

Construction activities would generate diesel emissions and dust. Construction equipment that would generate criteria air pollutants includes excavators, graders, dump trucks, and loaders.

Some of this equipment would be used during grading activities as well as when structures are constructed. It is assumed that all construction equipment used would be diesel-powered. Regional construction emissions associated with development of the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) software and estimates of the types and number of pieces of equipment that would be used on-site during each of the construction phases. Construction emissions are analyzed based on the regional thresholds established by the SCAQMD and published in the *CEQA Air Quality Handbook*. The highest emissions from the output were included in this analysis. In this case, the highest emissions are from the Winter Output.

Operational emissions associated with on-site development were also estimated using CalEEMod. Operational emissions include mobile source emissions and area source emissions. Mobile source emissions are generated by the increase in motor vehicle trips to and from the project site. This emissions estimate is considered conservative because the project is expected to provide recreational opportunities for residences that currently border the site. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coating. To determine whether a regional air quality impact would occur, the increase in emissions would be compared with the SCAQMD's recommended regional thresholds for operational emissions. Because CalEEMod does not contain a *trail project* land use type a *city park* land use type was used instead, which results in conservative air quality emissions estimates resulting from increases in vehicle miles traveled (VMT), water use, energy use, solid waste, and landscape maintenance.

Regional Thresholds

To determine whether a proposed project would have a significant impact to air quality, Appendix G of the *CEQA Guidelines* questions whether a project would:

a) *Conflict with or obstruct implementation of the applicable air quality plan;*
b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation;*
c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);*
d) *Expose sensitive receptors to substantial pollutant concentrations; or*
e) *Create objectionable odors affecting a substantial number of people.*

The SCAQMD has established the following significance thresholds for construction activities and project operations within the South Coast Air Basin:

Construction Thresholds
- *75 pounds per day of ROG*
- *100 pounds per day of NOx*
- *550 pounds per day of CO*
- *150 pounds per day of PM10*
- *55 pounds per day of PM2.5*

Operation Thresholds
- *55 pounds per day of ROG*
- *55 pounds per day of $NO_X$*
- *550 pounds per day of CO*
- *150 pounds per day of $SO_X$*
- *150 pounds per day of $PM_{10}$*
- *55 pounds per day of $PM_{2.5}$*

Localized Significance Thresholds

In addition to the above thresholds, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4), which was prepared to update the *CEQA Air Quality Handbook*. LSTs were devised in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in each source receptor area (SRA), project size, and distance to the sensitive receptor, etc. However, LSTs only apply to emissions within a fixed stationary location, including idling emissions during both project construction and operation. According to the SCAQMD's publication *Final Localized Significant (LST) Thresholds Methodology*, the use of LSTs is voluntary, to be implemented at the discretion of local agencies.

The project site is located in Source Receptor Area 35 (SRA-35), which is designated by the SCAQMD as East San Bernardino Valley. LSTs have been developed for $NO_X$, CO, $PM_{10}$ and $PM_{2.5}$. LSTs do not apply to mobile sources such as cars on a roadway (SCAQMD, June 2003). As such, LSTs for operational emissions do not apply to long-term operation of on-site development since the majority of emissions would be generated by cars on the roadways. LSTs have been developed for emissions within construction areas up to five acres in size. The SCAQMD provides lookup tables for project sites that measure one, two, or five acres. The project involves approximately 2.11 acres of on-site construction. Therefore, the thresholds for a 2-acre site were used in the analysis. The calculated LSTs are provided for receptors at a distance of 82 to 1,640 feet (25 to 500 meters) from the project site boundary. According to the LST methodology document, projects with boundaries located closer than 82 feet to the nearest receptor should use the LSTs for receptors located at 82 feet. Because the nearest sensitive receptor is an adjacent residential property, the LSTs for receptors located at 82 feet and closer are used to determine significance.

**Table 3**
**SCAQMD LSTs for Construction**

| Pollutant | Allowable emissions in SRA-35 at a distance of 82 feet (lbs/day) |
|---|---|
| Gradual conversion of $NO_x$ to $NO_2$ | 170 |
| CO | 1,174 |
| $PM_{10}$ | 7 |
| $PM_{2.5}$ | 5 |

*Source: SCAQMD, June 2003, Revised October 2009, http://www.aqmd.gov/CEQA/handbook/LST/appC.pdf, accessed online September 2015.*

### Construction Impacts

Project construction would generate temporary air pollutant emissions. These impacts are associated with fugitive dust ($PM_{10}$ and $PM_{2.5}$) and exhaust emissions from heavy construction vehicles, in addition to ROG that would be released during the drying phase upon application

of architectural coatings. Construction would generally consist of site preparation, grading, paving, and architectural coating.

The site preparation phase would involve the greatest amount of heavy equipment and the most substantial generation of fugitive dust. It was assumed that the project would comply with the SCAQMD Rule 403, which identifies measures to reduce fugitive dust and is required to be implemented at all construction sites located within the South Coast Air Basin. Therefore, the following conditions, which would be required to reduce fugitive dust in compliance with SCAQMD Rule 403, were included in CalEEMod for the site preparation and grading phases of construction.

1. **Minimization of Disturbance.** Construction contractors should minimize the area disturbed by clearing, grading, earth moving, or excavation operations to prevent excessive amounts of dust.
2. **Soil Treatment.** Construction contractors should treat all graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways to minimize fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. Watering shall be done as often as necessary, and at least twice daily, preferably in the late morning and after work is done for the day.
3. **Soil Stabilization.** Construction contractors should monitor all graded and/or excavated inactive areas of the construction site at least weekly for dust stabilization. Soil stabilization methods, such as water and roll compaction, and environmentally safe dust control materials, shall be applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until landscape growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.
4. **No Grading During High Winds.** Construction contractors should stop all clearing, grading, earth moving, and excavation operations during periods of high winds (20 miles per hour or greater, as measured continuously over a one-hour period).
5. **Street Sweeping.** Construction contractors should sweep all on-site driveways and adjacent streets and roads at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

The emissions modeling also includes the use of low-VOC paint (150 g/L for nonflat coatings) as required by SCAQMD Rule 1113. Construction emissions estimates for the proposed project are conservative in nature because they include emissions associated with a city park that may not be included in the proposed project, including restrooms and other buildings on-site. Table 4 summarizes the estimated maximum daily emissions of air pollutants during construction.

**Table 4**
**Estimated Maximum Daily Construction Emissions**

| Construction Phase | Maximum Emissions (lbs/day) | | | | |
|---|---|---|---|---|---|
| | ROG | $NO_x$ | CO | $PM_{10}$ | $PM_{2.5}$ |
| **Maximum Daily Construction Emissions** | **66.0** | **28.7** | **20.1** | **4.4** | **3.0** |
| *SCAQMD Regional Thresholds* | *75* | *100* | *550* | *150* | *55* |
| **Threshold Exceeded?** | **No** | **No** | **No** | **No** | **No** |
| **Maximum lbs/day (on-site only)** | *n/a* | **28.6** | **19.0** | **4.3** | **2.9** |
| *Local Significance Threshold [1] (on-site only)* | *n/a* | *170* | *1,174* | *7* | *5* |
| **Threshold Exceeded?** | **n/a** | **No** | **No** | **No** | **No** |

*Notes: All calculations were made using the CalEEMod software. See the Appendix for calculations. Totals include worker trips, construction vehicle emissions and fugitive dust.*

*Grading phase incorporates anticipated emissions reductions include the conditions listed above, which are required by SCAQMD Rule 403 to reduce fugitive dust.*

*Architectural Coating phase anticipated emissions reductions include the standards in SCAQMD Rule 1113, and the phase is assumed to occur over last 60 days of building construction phase.*

*[1] LSTs are for a two-acre project in SRA-35 within a distance of 82 feet from the site boundary.*

With the use of low-VOC paint according to SCAQMD Rule 1113, temporary ROG emissions would not exceed SCAQMD regional thresholds. Maximum daily emissions of $NO_X$ and CO would not exceed SCAQMD or LST thresholds. With adherence to the conditions listed above, as required by SCAQMD Rule 403, maximum daily emissions of fugitive dust ($PM_{10}$ and $PM_{2.5}$) would not exceed SCAQMD or LST thresholds. Therefore, construction-related emissions would be less than significant.

### Long-Term Regional Impacts

Table 5 summarizes estimated emissions associated with operation of the proposed project. The majority of project-related operational emissions would be due to area emissions and vehicle trips to and from the site. CalEEMod default traffic numbers were used for the mid-rise apartment land use type. Project traffic is estimated at 788,153 annual vehicle trips.

**Table 5**
**Estimated Operational Emissions**

| Operational Phase | Estimated Emissions (lbs/day) | | | | | |
|---|---|---|---|---|---|---|
| | **ROG** | **$NO_X$** | **CO** | **$SO_X$** | **$PM_{10}$** | **$PM_{2.5}$** |
| Area | 0.4 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| Energy | N/A | N/A | N/A | N/A | N/A | N/A |
| Mobile | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| **Maximum lbs/day** | **0.4** | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 |
| *SCAQMD Thresholds* | **55** | **55** | **550** | **150** | **150** | **55** |
| **Threshold Exceeded?** | **No** | **No** | **No** | **No** | **No** | **No** |

*See Appendix for CalEEMod computer model output. Winter emissions shown.*

Project-generated emissions would not exceed SCAQMD thresholds for ROG, CO, $SO_X$, $PM_{10}$ or $PM_{2.5}$. Therefore, the project's long-term regional air quality impacts (including impacts related to criteria pollutants, sensitive receptors and violations of air quality standards) would be less than significant.

# GREENHOUSE GASES

This section analyzes greenhouse gas (GHG) emissions associated with the proposed project and potential impacts related to climate change.

## Setting

### Climate Change and Greenhouse Gases

Climate change refers to changes in climate (such as wind patterns, precipitation, and storm frequency/intensity) over an extended period of time resulting from observed increases in the average temperature of the Earth's atmosphere and oceans. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising average temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2013), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20$^{th}$ century (IPCC, 2013).

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases GHGs. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxides ($N_2O$), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride ($SF_6$). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, $CO_2$ and $CH_4$ are emitted in the greatest quantities from human activities. Emissions of $CO_2$ are largely by-products of fossil fuel combustion, whereas $CH_4$ results from off-gassing associated with agricultural practices and landfills. Observations of $CO_2$ concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC projections. The recently observed increases in $CH_4$ and $N_2O$ concentrations are smaller than those assumed in the scenarios in the previous assessments. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

Man-made GHGs, many of which have greater heat-absorption potential than $CO_2$, include fluorinated gases and sulfur hexafluoride ($SF_6$) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas ($CO_2$) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" ($CO_2e$), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane $CH_4$ has a GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 2007).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHGs, Earth's surface would be about 34° C cooler (CalEPA, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

**Greenhouse Gas Emissions Inventory**

Worldwide anthropogenic emissions of GHGs were approximately 46,000 million metric tons (MMT, or gigatonne) $CO_2e$ in 2010 (IPCC, 2014). $CO_2$ emissions from fossil fuel combustion and industrial processes contributed about 65 percent of total emissions in 2010. Of anthropogenic GHGs, $CO_2$ was the most abundant accounting for 76 percent of total 2010 emissions. $CH_4$emissions accounted for 16 percent of the 2010 total, while $N_2O$ and fluorinated gases account for 6 and 2 percent respectively (IPCC, 2014).

Total U.S. GHG emissions were 6,673.0 MMT $CO_2e$ in 2013 (U.S. EPA, 2015). Total U.S. emissions have increased by 5.9 percent since 1990; emissions increased by 2.0 percent from 2012 to 2013 (U.S. EPA, 2014). The increase from 2012 to 2013 was due to an increase in the carbon intensity of fuels

consumed to generate electricity due to an increase in coal consumption, with decreased natural gas consumption. Additionally, relatively cool winter conditions resulted in an overall increase in fuels for the residential and commercial sectors for heating. Since 1990, U.S. emissions have increased at an average annual rate of 0.3 percent. In 2013, industrial and transportation end-use sectors accounted for 28.8 percent and 27.1 percent of $CO_2$ emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16.9 percent of $CO_2$ emissions each (U.S. EPA, 2015).

Based upon the California Air Resources Board (ARB) California Greenhouse Gas Inventory for 2000-2013, California produced 459.3 MMT $CO_2e$ in 2013 (ARB, 2015). The major source of GHG in California is transportation, contributing 37 percent of the state's total GHG emissions. Industrial sources are the second largest source of the state's GHG emissions (CARB, 2015). California emissions are due in part to its large size and large population compared to other states. However, per capita emissions are lower than in many other states. A factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. The ARB has projected statewide unregulated GHG emissions for the year 2020 will be 509.4 MMT $CO_2e$ (ARB, 2014). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

**Potential Effects of Climate Change**

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air, land, and water temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT, as well as sea surface temperatures, has increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC, 2013).

According to the CalEPA's *2010 Climate Action Team Biennial Report*, potential impacts of climate change in California may include decreased snow pack, sea level rise, and increase in extreme heat days per year, high ground-level ozone days, large forest fires, and drought (CalEPA, 2010). Below is a summary of some of the potential impacts that could be experienced in California as a result of climate change.

Air Quality

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in many areas of California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are

accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC], 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR], 2008; CCCC, 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR, 2008).

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to The Impacts of Sea-Level Rise on the California Coast, prepared by the California Climate Change Center (CCCC) (CCCC, 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. I*n addition, i*ncreased $CO_2$

emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a $30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher $CO_2$ levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC, 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on the local and global levels. Increasing concentrations of GHGs are likely to accelerate the rate and severity of climate change impacts. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) during the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2006).

**Regulatory Setting**

The following regulations address both climate change and GHG emissions.

Federal Regulations

The United States Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) held that the U.S. EPA has the authority to regulate tail pipe emissions from motor-vehicles under the federal Clean Air Act.

The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the U.S. EPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 tons $CO_2e$/year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the U.S. EPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The U.S. EPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the U.S. EPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the U.S. EPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 tons $CO_2e$/year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 tons $CO_2e$/year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 tons $CO_2e$/year.

On July 3, 2012 the U.S. EPA issued the final rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

California Regulations

California Air Resources Board (ARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction from 2009 levels by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (ARB, 2011).

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc. In April 2015 Governor Brown issued EO B-30-15, calling for a new target of 40percent below 1990 levels by 2030.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels; the same requirement as under S-3-05), and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT $CO_2e$. The Scoping Plan was approved by ARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted over the last five years. Implementation activities are ongoing and ARB is currently the process of updating the Scoping Plan.

In May 2014, ARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 goals set forth in EO S-3-05. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB, 2014).

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

ARB Resolution 07-54 establishes 25,000 MT of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

The Southern California Association of Governments (SCAG) was assigned targets of an 8 percent reduction in GHGs from transportation sources by 2020 and a 13 percent reduction in GHGs from transportation sources by 2035. In the SCAG region, SB 375 also provides the option

for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

In April 2011, Governor Brown signed SB 2X, requiring California to generate 33 percent of its electricity from renewable energy by 2020. On April 29, 2015, Governor Brown issued an executive order establishing a statewide mid-term GHG reduction target of 40 percent below 1990 levels by 2030. According to CARB, reducing GHG emissions by 40 percent below 1990 levels in 2030 ensures that California will continue its efforts to reduce carbon pollution and help to achieve federal health-based air quality standards. Setting clear targets beyond 2020 also provides market certainty to foster investment and growth in a wide array of industries throughout the State, including clean technology and clean energy. CARB is currently working to update the Scoping Plan to provide a framework for achieving the 2030 target. The updated Scoping Plan is expected to be completed and adopted by CARB in 2016 (CARB 2015).

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs. The SCAQMD threshold, which was adopted in December 2008, considers emissions of over 10,000 MT $CO_2e$/year to be significant. However, the SCAQMD's threshold applies only to stationary sources and is expressly intended to apply only when the SCAQMD is the CEQA lead agency. Although not yet adopted, the SCAQMD recommends a quantitative threshold for all land use types of 3,000 MT $CO_2e$ /year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds – Option 1", September 2010). Note that no air district has the power to establish definitive thresholds that will completely relieve a lead agency of the obligation to determine significance on a case-by-case basis for a specific project.

Local Regulations

The San Bernardino Associated Governments (SANBAG) adopted the San Bernardino County Regional Greenhouse Gas Reduction Plan on March 5, 2014. The plan includes a regional greenhouse gas inventory and summarizes actions that participating jurisdictions have selected in order to reduce GHG emissions. As part of the plan, the City of Redlands (City) established a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020. Although the City will be able to exceed its stated goal using only state/county level actions, it has nevertheless committed to additional local GHG emission reduction measures and supports all applicable regional GHG emission reduction measures. Additional GHG emission reduction measures include implementing SB X7-7 to reduce water use in the City, encouraging the installation of solar energy collectors (e.g., photovoltaics) on existing housing, and working with the City's wastewater treatment provider to upgrade to more energy efficient equipment at the wastewater treatment plant.

## Impact Analysis

### Significance Thresholds

Based on Appendix G of the *State CEQA Guidelines*, impacts related to GHG emissions from the proposed project would be significant if the project would:

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

The vast majority of individual projects do not generate sufficient GHG emissions to create significant project-specific environment effects. However, the environmental effects of a project's GHG emissions can contribute incrementally to cumulative environmental effects that are significant, contributing to climate change, even if an individual project's environmental effects are limited (CEQA Guidelines, §15064[h][1]). The issue of a project's environmental effects and contribution towards climate change typically involves an analysis of whether or not a project's contribution towards climate change is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, §15064[h][1]).

The significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with respect to a regional GHG emissions reduction plan (such as a Climate Action Plan). Although not yet adopted, the SCAQMD has a recommended quantitative GHG emissions threshold for all land use types of 3,000 MT $CO_2e$/year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds – Option 1", September 2010).

Because the SCAQMD has not formally adopted GHG emissions thresholds that apply to land use projects where the SCAQMD is not the lead agency, and no GHG emissions thresholds have been adopted by the City, the proposed project was evaluated based on the SCAQMD's recommended/preferred option GHG emissions threshold for all land use types of 3,000 MT $CO_2e$/year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds – Option 1", September 2010).

### Study Methodology

Calculations of $CO_2$, $CH_4$, and $N_2O$ emissions are provided to identify the magnitude and nature of the proposed project's potential GHG emissions and environmental effects. The analysis focuses on $CO_2$, $CH_4$, and $N_2O$ because these make up 98.9 percent of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and $SF_6$, were also considered for the analysis, but because the project is a trail and greenway park development, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Emissions of all GHGs are converted into their equivalent GWP in MT $CO_2e$. Small amounts of other GHGs (such as chlorofluorocarbons [CFCs]) would also be emitted; however, these other GHG emissions would not substantially add to the total GHG emissions. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper

(CAPCOA, 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (CCAR, 2009).

GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2. Because CalEEMod does not contain a *trail project* land use type a *city park* land use type was used instead, which results in conservative GHG emissions estimates resulting from increases in vehicle miles traveled (VMT), water use, energy use, solid waste, and landscape maintenance.

Operational Emissions

The proposed project would generate operational emissions from moving water to the site, general landscape maintenance, waste management, and vehicle miles traveled to get to the project site. Emissions associated with operation of the project were calculated using CalEEMod, which calculates $CO_2$, $N_2O$, and $CH_4$. Emissions from energy use would not be generated by the project and, as such are not included in the analysis below. The project would include a streetlight; however, the streetlight is already operational onsite and would not result in new emissions.

Emissions associated with area sources include consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod using standard emission rates from ARB, U.S. EPA, and emission factor values provided by the local air district (CalEEMod User Guide, 2013).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2013). Waste disposal rates by land use and overall composition of municipal solid waste in California were primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions related to water usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

For mobile sources, $CO_2$ and $CH_4$ emissions were also quantified in CalEEMod. Because CalEEMod does not calculate $N_2O$ emissions from mobile sources, $N_2O$ emissions were quantified using the California Climate Action Registry General Reporting Protocol (CAPCOA, 2009) direct emissions factors for mobile combustion. The estimate of total daily trips associated with the proposed project was based on the standard Institute of Transportation Engineers (ITE) vehicle trip rates and was calculated and extrapolated to derive total annual mileage in CalEEMod. Emission rates for $N_2O$ emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

A limitation of the quantitative analysis of emissions from mobile combustion is that emission models, such as CalEEMod, evaluate aggregate emissions, meaning that all vehicle trips and related emissions assigned to a project are assumed to be new trips and emissions generated by the project itself. Such models do not demonstrate, with respect to a regional air quality impact, what proportion of these emissions are actually "new" emissions, specifically attributable to the

project in question. For most projects, the main contributor to regional air quality emissions is from motor vehicles; however, the quantity of vehicle trips appropriately characterized as "new" is usually uncertain as traffic associated with a project may be relocated trips from other locales. In other words, vehicle trips associated with the project may include trips relocated from other existing locations, as people begin to use the proposed project instead of similar existing land uses. Therefore, because the proportion of "new" versus relocated trips is unknown, the VMT estimate generated by CalEEMod is used as a conservative, "worst-case" estimate.

Construction Emissions

Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). In accordance with SCAQMD's recommendation, GHG emissions from construction of the proposed project are amortized over a 30 year period and added to annual operating emissions to determine whether or not the annual GHG emissions from the proposed project would be significant.

Construction of the proposed project would generate GHG emissions, primarily due to the operation of construction equipment and truck trips. Project construction is estimated to take approximately six months. For this analysis, it was assumed that construction would commence in January 2017 and would be completed in May of 2017. Emissions associated with the construction period were estimated using CalEEMod, based on the default equipment that would be used onsite at one time. Complete CalEEMod results and assumptions, including types and numbers of construction equipment, can be viewed in the Appendix.

**Project Impacts**

The following summarizes the proposed project and compares calculated emissions to the SCAQMD's recommended GHG emissions threshold of 3,000 MT $CO_2e$ (see Appendix for full CalEEMod worksheets).

Construction Emissions

Construction activity is assumed to occur over a period of approximately six months. Based on CalEEMod results, construction activity for the project would generate an estimated 83.5 MT $CO_2e$ (see Table 6). Amortized over a 30-year period, the assumed life of the project, construction of the proposed project would generate approximately 2.8 MT $CO_2e$/year.

**Table 6**
**Estimated Construction Emissions of Greenhouse Gases**

| Year | Annual Emissions MT $CO_2e$/year |
|---|---|
| 2017 | 83.5 |
| **Total** | **83.5** |
| Amortized over 30 years | 2.8 |

*See Appendix for CalEEMod Results.*

Operational Emissions

Long-term emissions relate to area source emissions, energy use, solid waste, water use, and transportation. Specifically, operational emissions associated with the proposed project relate to landscape maintenance equipment, solid waste disposal, and vehicle miles traveled. Each of these operational emission sources is discussed below.

*Area Source Emissions*

The CalEEMod model was used to calculate direct sources of GHG emissions from the proposed project. These included consumer product use, architectural coatings, and landscape maintenance equipment. GHG emissions from area sources were calculated to be less than 0.1 MT $CO_2e$/year.

*Energy Use*

Combustion of any type of fuel emits GHG emissions directly into the atmosphere; when this occurs on a project site, the project is a direct emission source. Operation of the proposed project would not require the use of a generator. Therefore, GHG emissions would only result from mobile and area emissions associated with the project.

*Solid Waste Emissions*

As shown in Table 2, CalEEMod estimated the proposed project would generate less than 0.1 MT $CO_2e$ year from solid waste.

*Water Use Emissions*

CalEEMod estimated that the proposed project would use approximately 2.5 million gallons of water per year, which is a conservative estimate, considering that the proposed project's water use would be limited to watering of landscaping much of which is draught tolerant. Based on the amount of electricity needed to supply this amount of water, the CalEEMod estimated the proposed project would generate approximately 8.0 MT $CO_2e$/year.

*Transportation Emissions*

CalEEMod estimates for mobile source GHG emissions were estimated using the total vehicle miles traveled (VMT) estimated in CalEEMod. Based on the CalEEMod estimates, onsite development would generate an estimated 9,654 VMT per year. As noted above, CalEEMod does not calculate $N_2O$ emissions related to mobile sources. As such, $N_2O$ emissions were calculated based on the project's estimated VMT using calculation methods provided by the California Climate Action Registry General Reporting Protocol (January, 2009). As shown in Table 2, the project would generate approximately 4.2 MT $CO_2e$/year from mobile emissions.

*Combined Operational and Construction Emissions*

Table 7 combines the construction, operational, and mobile source GHG emissions associated with the proposed project. Emissions resulting from construction activity (approximately 83.5 MT $CO_2e$) were amortized over 30 years, the anticipated life of the project, resulting in 2.8 MT $CO_2e$/year. The combined long-term annual emissions associated with the proposed project would total approximately 15.0 MT $CO_2e$/year.

**Table 7**
**Combined Annual Emissions of Greenhouse Gases**

| Emission Source | Annual Emissions MT $CO_2e$/year |
|---|---|
| **Construction** | 2.8 |
| **Operational** | |
| Area | <0.1 |
| Solid Waste | <0.1 |
| Water | 8.0 |
| **Mobile** | |
| *$CO_2$ and $CH_4$* | 4.4 |
| *$N_2O$* | 0.2 |
| **Total** | **15.4** |

*Sources: See Appendix for calculations and for GHG emission factor assumptions.*
*Note: All numbers may not add due to rounding.*

The estimated total GHG emissions from the construction and operation of the proposed project are well below the recommended SCAQMD's GHG emissions threshold of 3,000 MT $CO_2e$. Therefore, the GHG emissions environmental impact of the proposed project would be less than significant.

### GHG Cumulative Significance

As discussed under "Local Regulations," the City of Redlands has selected a goal to reduce its community GHG emissions to a level that is 15 percent below its 2008 GHG emissions levels by 2020 as part of SANBAG's San Bernardino County Regional Greenhouse Gas Reduction Plan, released on March 5, 2014. The City of Redlands exceeds the goal using only state/county level actions, but has committed to additional GHG emissions reductions through local measures. The proposed project's consistency with local measures is described in Table 8.

**Table 8**
**Project Consistency with SANBAG's San Bernardino County Regional Greenhouse Gas Reduction Plan**

| Strategy | Project Consistency |
|---|---|
| **Building Energy** | |
| **Water Conveyance** | |
| ***Water-4 Implement SB X7-7***<br>SB X7-7, the Water Conservation Act of 2009, requires urban water agencies throughout California to increase conservation to achieve a statewide goal of a 20% reduction in urban per capita use (compared to nominal 2005 levels) by December 31, 2020. Each urban water retailer in the county subject to the law has established a 2020 per-capita urban water use target to meet this goal. | **Consistent**<br>The project would be required to comply with the City's water use restrictions on time, area, frequency, and duration of specified allowable water usages. The project also includes drought tolerant landscaping throughout the project site, which would further reduce water use. |

As part of the San Bernardino County Regional Greenhouse Gas Reduction Plan, the City also supports the following applicable regional measures:

- Measure Wastewater-3: Recycled Water [V] establishes the goal of 50 percent of water use for non-potable water sources, such as landscaping, to be supplied by recycled, and treated, wastewater.
- Measure Water-1: requires the adoption of voluntary CALGreen water efficiency measures for new construction, such as use of low-water irrigation systems.
- Measure Water-3: encourages the use of water-efficient landscaping practices.
- Measure Land Use-1: establishes city-wide tree planting goal to decrease heat island effects.
- Measure Off-Road-2: limits the idling time for heavy-duty construction equipment, beyond CARB or local air district regulations, to 3 minutes.
- Measure Off-Road-3: reduces the use of gasoline-powered landscaping equipment use and/or the number and operating time of such equipment, and requires a certain percentage of participating cities' landscaping equipment to be electric by 2020 and 100 percent by 2030.

The proposed project would not conflict with any of these regional regulations intended to reduce GHG emissions.

As discussed under "Greenhouse Gas Emissions Background," the 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. The strategies include the reduction of passenger and light duty truck emissions, reduction of energy and water use, and increased recycling. In addition, in 2008 the California Attorney General published Addressing Global Warming Impacts at the Local Agency Level (California Attorney General's Office, 2008). The proposed project would meet many objectives set forth in the CAT Report and by the Attorney General's Office through compliance with City of Redland standards as described in Table 9 and Table 10. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

## Table 9
## Project Consistency with 2006 CAT Report
## Greenhouse Gas Emission Reduction Strategies

| Strategy | Project Consistency |
|---|---|
| **California Air Resources Board** | |
| **Vehicle Climate Change Standards**<br>AB 143 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the ARB I September 2004. | **Consistent**<br>The vehicles that travel to and from the project site on public roadways would be in compliance with ARB vehicle standards that are in effect at the time of vehicle purchase. |
| **Diesel Anti-Idling**<br>In July 2004, the ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling | **Consistent**<br>Current state law restricts diesel truck idling to five minutes or less. Diesel trucks operating on the project site during construction are subject to this statewide law. |
| **Alternative Fuels: Biodiesel Blends**<br>ARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel. | **Consistent**<br>The ARB is in the process of developing regulations that would increase the use of biodiesel for transportation uses. Currently, it is unknown when such regulations would be implemented; however, it is expected that upon implementation of such a regulation that would require increase biodiesel blends, the diesel fueled vehicles that travel to and from the project site would be replaced by vehicles using biodiesel. |
| **Heavy-Duty Vehicle Emission Reduction Measures**<br>Increased efficiency in the design of heavy duty vehicles and an education program for the heavy-duty vehicle sector. | **Consistent**<br>The heavy-duty vehicles that travel to and from the project site on public roadways would be subject to all applicable ARB efficiency standards that are in effect at the time of vehicle manufacture. |
| **Achieving 50% Statewide Recycling Goal**<br>Achieving the State's 50% waste reduction mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions, associated with energy intensive material extraction and production, as well as methane emission from landfills. A per-capita diversion rate of 65% has been achieved on a statewide basis, consistent with AB 939. | **Consistent**<br>The City of Redlands has enacted numerous programs to achieve the mandated 50% diversion. It is anticipated that the proposed project would participate in the City's waste diversion programs and would similarly divert at least 50% of its solid waste. The project would also be subject to all applicable State and City requirements for solid waste reduction as they change in the future. |
| **Department of Forestry** | |
| **Urban Forestry**<br>A new statewide goal of planning 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs. | **Consistent**<br>The landscaping proposed for the project would include tree planting trees and would therefore help move toward this statewide goal. |
| **Department of Water Resources** | |
| **Water Use Efficiency**<br>Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions. | **Consistent**<br>The proposed project would include drought-tolerant landscaping. |

## Table 101
## Project Consistency with Applicable Attorney General Greenhouse Gas Reduction Measures

| Strategy | Project Consistency |
|---|---|
| **Transportation-Related Emissions** | |
| **Diesel Anti-Idling**<br>Set specific limits on idling time for commercial vehicles, including delivery vehicles. | **Consistent**<br>Currently, the ARB's Airborne Toxic Control Measure (ATCM) to Limit Diesel-Fueled Commercial Motor Vehicle Idling restricts diesel truck idling to five minutes or less. Diesel powered construction vehicles are subject to this regulation and thus would comply with the applicable provisions. |
| **Transportation Emissions Reduction**<br>Incorporate bike lanes into the project circulation system. | **Consistent**<br>The trail and greenway system would include bike racks and provide a trial for cyclists to utilize. |
| **Solid Waste and Energy Emissions** | |
| **Solid Waste Reduction Strategy**<br>Project construction shall require reuse and recycling of construction and demolition waste. | **Consistent**<br>It is anticipated that the proposed project would participate in the City's waste diversion programs and would similarly divert at least 50% of its solid waste from construction. The project would also be subject to all applicable State and City requirements for solid waste reduction as they change in the future. |
| **Water Use Efficiency**<br>Require measures that reduce the amount of water sent to the sewer system – see examples in CAT standard above. Reduction in water volume sent to the sewer system means less water has to be treated and pumped to the end user, thereby saving energy. | **Consistent**<br>As described above, the proposed project would include water saving features such as a landscape palette that includes drought tolerant/ low water use species. |

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# Appendix A

*Air Quality and Greenhouse Gas Emissions Modeling Results*

# Zanja Trail and Greenway Park

**South Coast Air Basin, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| City Park | 2.11 | Acre | 2.11 | 91,911.60 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 31 |
| **Climate Zone** | 10 | | | **Operational Year** | 2014 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 630.89 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

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

Project Characteristics -

Land Use -

Grading - Site is approx 2.11 acres total

Architectural Coating - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Area Coating - Use of low VOC paint (150 g/L for non-flat coatings) as req by SCAQMD Rule 1113

Area Mitigation - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Waste Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | EF_Nonresidential_Exterior | 250.00 | 150.00 |
| tblArchitecturalCoating | EF_Nonresidential_Interior | 250.00 | 150.00 |
| tblAreaCoating | Area_EF_Nonresidential_Exterior | 250 | 150 |
| tblAreaMitigation | UseLowVOCPaintNonresidentialInteriorValue | 250 | 150 |
| tblConstructionPhase | NumDays | 10.00 | 20.00 |
| tblConstructionPhase | NumDays | 220.00 | 20.00 |
| tblConstructionPhase | NumDays | 6.00 | 20.00 |
| tblConstructionPhase | NumDays | 3.00 | 20.00 |
| tblConstructionPhase | PhaseEndDate | 5/5/2017 | 4/28/2017 |
| tblConstructionPhase | PhaseStartDate | 3/25/2017 | 3/27/2017 |
| tblConstructionPhase | PhaseStartDate | 2/25/2017 | 2/27/2017 |
| tblConstructionPhase | PhaseStartDate | 1/28/2017 | 1/30/2017 |
| tblConstructionPhase | PhaseStartDate | 4/22/2017 | 4/17/2017 |
| tblGrading | AcresOfGrading | 10.00 | 2.11 |
| tblGrading | AcresOfGrading | 30.00 | 2.11 |

# 2.0 Emissions Summary

## 2.1 Overall Construction

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2017 | 0.7399 | 0.9168 | 0.6591 | 9.4000e-004 | 0.0713 | 0.0512 | 0.1226 | 0.0357 | 0.0478 | 0.0836 | 0.0000 | 83.0967 | 83.0967 | 0.0204 | 0.0000 | 83.5256 |
| **Total** | **0.7399** | **0.9168** | **0.6591** | **9.4000e-004** | **0.0713** | **0.0512** | **0.1226** | **0.0357** | **0.0478** | **0.0836** | **0.0000** | **83.0967** | **83.0967** | **0.0204** | **0.0000** | **83.5256** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2017 | 0.7399 | 0.9168 | 0.6591 | 9.4000e-004 | 0.0370 | 0.0512 | 0.0882 | 0.0174 | 0.0478 | 0.0652 | 0.0000 | 83.0966 | 83.0966 | 0.0204 | 0.0000 | 83.5255 |
| **Total** | **0.7399** | **0.9168** | **0.6591** | **9.4000e-004** | **0.0370** | **0.0512** | **0.0882** | **0.0174** | **0.0478** | **0.0652** | **0.0000** | **83.0966** | **83.0966** | **0.0204** | **0.0000** | **83.5255** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **48.16** | **0.00** | **28.03** | **51.34** | **0.00** | **21.95** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.4280 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 6.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 2.5700e-003 | 7.4200e-003 | 0.0288 | 5.0000e-005 | 3.6600e-003 | 1.1000e-004 | 3.7600e-003 | 9.8000e-004 | 1.0000e-004 | 1.0800e-003 | 0.0000 | 4.4762 | 4.4762 | 2.1000e-004 | 0.0000 | 4.4806 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0365 | 0.0000 | 0.0365 | 2.1600e-003 | 0.0000 | 0.0819 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 7.9929 | 7.9929 | 3.7000e-004 | 8.0000e-005 | 8.0242 |
| **Total** | **0.4306** | **7.4200e-003** | **0.0288** | **5.0000e-005** | **3.6600e-003** | **1.1000e-004** | **3.7600e-003** | **9.8000e-004** | **1.0000e-004** | **1.0800e-003** | **0.0365** | **12.4692** | **12.5057** | **2.7400e-003** | **8.0000e-005** | **12.5867** |

## 2.2 Overall Operational

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 0.3960 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 6.0000e-005 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 2.5700e-003 | 7.4200e-003 | 0.0288 | 5.0000e-005 | 3.6600e-003 | 1.1000e-004 | 3.7600e-003 | 9.8000e-004 | 1.0000e-004 | 1.0800e-003 | 0.0000 | 4.4762 | 4.4762 | 2.1000e-004 | 0.0000 | 4.4806 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0365 | 0.0000 | 0.0365 | 2.1600e-003 | 0.0000 | 0.0819 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 7.9929 | 7.9929 | 3.7000e-004 | 8.0000e-005 | 8.0242 |
| **Total** | **0.3986** | **7.4200e-003** | **0.0288** | **5.0000e-005** | **3.6600e-003** | **1.1000e-004** | **3.7600e-003** | **9.8000e-004** | **1.0000e-004** | **1.0800e-003** | **0.0365** | **12.4692** | **12.5057** | **2.7400e-003** | **8.0000e-005** | **12.5867** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **7.42** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 1/2/2017 | 1/27/2017 | 5 | 20 | |
| 2 | Grading | Grading | 1/30/2017 | 2/24/2017 | 5 | 20 | |
| 3 | Building Construction | Building Construction | 2/27/2017 | 3/24/2017 | 5 | 20 | |
| 4 | Architectural Coating | Architectural Coating | 3/27/2017 | 4/21/2017 | 5 | 20 | |
| 5 | Paving | Paving | 4/17/2017 | 4/28/2017 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 2.11**

**Acres of Grading (Grading Phase): 2.11**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,867; Non-Residential Outdoor: 45,956 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 1 | 8.00 | 174 | 0.41 |
| Site Preparation | Scrapers | 1 | 8.00 | 361 | 0.48 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 7.00 | 97 | 0.37 |
| Grading | Graders | 1 | 8.00 | 174 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 2 | 7.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 8.00 | 226 | 0.29 |
| Building Construction | Forklifts | 2 | 7.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 1 | 6.00 | 97 | 0.37 |
| Building Construction | Welders | 3 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 8.00 | 125 | 0.42 |
| Paving | Paving Equipment | 1 | 8.00 | 130 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 3 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 4 | 10.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 8 | 39.00 | 15.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

## 3.2 Site Preparation - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 1.1200e-003 | 0.0000 | 1.1200e-003 | 1.2000e-004 | 0.0000 | 1.2000e-004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0253 | 0.2862 | 0.1713 | 2.4000e-004 | | 0.0140 | 0.0140 | | 0.0129 | 0.0129 | 0.0000 | 22.1302 | 22.1302 | 6.7800e-003 | 0.0000 | 22.2726 |
| **Total** | **0.0253** | **0.2862** | **0.1713** | **2.4000e-004** | **1.1200e-003** | **0.0140** | **0.0151** | **1.2000e-004** | **0.0129** | **0.0130** | **0.0000** | **22.1302** | **22.1302** | **6.7800e-003** | **0.0000** | **22.2726** |

## 3.2 Site Preparation - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.9000e-004 | 4.3000e-004 | 4.4200e-003 | 1.0000e-005 | 8.8000e-004 | 1.0000e-005 | 8.8000e-004 | 2.3000e-004 | 1.0000e-005 | 2.4000e-004 | 0.0000 | 0.7908 | 0.7908 | 4.0000e-005 | 0.0000 | 0.7916 |
| **Total** | **2.9000e-004** | **4.3000e-004** | **4.4200e-003** | **1.0000e-005** | **8.8000e-004** | **1.0000e-005** | **8.8000e-004** | **2.3000e-004** | **1.0000e-005** | **2.4000e-004** | **0.0000** | **0.7908** | **0.7908** | **4.0000e-005** | **0.0000** | **0.7916** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 5.0000e-004 | 0.0000 | 5.0000e-004 | 5.0000e-005 | 0.0000 | 5.0000e-005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0253 | 0.2862 | 0.1713 | 2.4000e-004 | | 0.0140 | 0.0140 | | 0.0129 | 0.0129 | 0.0000 | 22.1302 | 22.1302 | 6.7800e-003 | 0.0000 | 22.2726 |
| **Total** | **0.0253** | **0.2862** | **0.1713** | **2.4000e-004** | **5.0000e-004** | **0.0140** | **0.0145** | **5.0000e-005** | **0.0129** | **0.0129** | **0.0000** | **22.1302** | **22.1302** | **6.7800e-003** | **0.0000** | **22.2726** |

## 3.2 Site Preparation - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.9000e-004 | 4.3000e-004 | 4.4200e-003 | 1.0000e-005 | 8.8000e-004 | 1.0000e-005 | 8.8000e-004 | 2.3000e-004 | 1.0000e-005 | 2.4000e-004 | 0.0000 | 0.7908 | 0.7908 | 4.0000e-005 | 0.0000 | 0.7916 |
| **Total** | **2.9000e-004** | **4.3000e-004** | **4.4200e-003** | **1.0000e-005** | **8.8000e-004** | **1.0000e-005** | **8.8000e-004** | **2.3000e-004** | **1.0000e-005** | **2.4000e-004** | **0.0000** | **0.7908** | **0.7908** | **4.0000e-005** | **0.0000** | **0.7916** |

## 3.3 Grading - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0613 | 0.0000 | 0.0613 | 0.0332 | 0.0000 | 0.0332 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0270 | 0.2816 | 0.1897 | 2.1000e-004 | | 0.0156 | 0.0156 | | 0.0143 | 0.0143 | 0.0000 | 19.0924 | 19.0924 | 5.8500e-003 | 0.0000 | 19.2152 |
| **Total** | **0.0270** | **0.2816** | **0.1897** | **2.1000e-004** | **0.0613** | **0.0156** | **0.0769** | **0.0332** | **0.0143** | **0.0475** | **0.0000** | **19.0924** | **19.0924** | **5.8500e-003** | **0.0000** | **19.2152** |

## 3.3 Grading - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.6000e-004 | 5.3000e-004 | 5.5300e-003 | 1.0000e-005 | 1.1000e-003 | 1.0000e-005 | 1.1100e-003 | 2.9000e-004 | 1.0000e-005 | 3.0000e-004 | 0.0000 | 0.9884 | 0.9884 | 5.0000e-005 | 0.0000 | 0.9895 |
| **Total** | **3.6000e-004** | **5.3000e-004** | **5.5300e-003** | **1.0000e-005** | **1.1000e-003** | **1.0000e-005** | **1.1100e-003** | **2.9000e-004** | **1.0000e-005** | **3.0000e-004** | **0.0000** | **0.9884** | **0.9884** | **5.0000e-005** | **0.0000** | **0.9895** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0276 | 0.0000 | 0.0276 | 0.0150 | 0.0000 | 0.0150 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0270 | 0.2816 | 0.1897 | 2.1000e-004 | | 0.0156 | 0.0156 | | 0.0143 | 0.0143 | 0.0000 | 19.0924 | 19.0924 | 5.8500e-003 | 0.0000 | 19.2152 |
| **Total** | **0.0270** | **0.2816** | **0.1897** | **2.1000e-004** | **0.0276** | **0.0156** | **0.0432** | **0.0150** | **0.0143** | **0.0293** | **0.0000** | **19.0924** | **19.0924** | **5.8500e-003** | **0.0000** | **19.2152** |

## 3.3 Grading - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 3.6000e-004 | 5.3000e-004 | 5.5300e-003 | 1.0000e-005 | 1.1000e-003 | 1.0000e-005 | 1.1100e-003 | 2.9000e-004 | 1.0000e-005 | 3.0000e-004 | 0.0000 | 0.9884 | 0.9884 | 5.0000e-005 | 0.0000 | 0.9895 |
| **Total** | **3.6000e-004** | **5.3000e-004** | **5.5300e-003** | **1.0000e-005** | **1.1000e-003** | **1.0000e-005** | **1.1100e-003** | **2.9000e-004** | **1.0000e-005** | **3.0000e-004** | **0.0000** | **0.9884** | **0.9884** | **5.0000e-005** | **0.0000** | **0.9895** |

## 3.4 Building Construction - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0333 | 0.2286 | 0.1625 | 2.5000e-004 | | 0.0146 | 0.0146 | | 0.0140 | 0.0140 | 0.0000 | 21.1814 | 21.1814 | 4.7100e-003 | 0.0000 | 21.2803 |
| **Total** | **0.0333** | **0.2286** | **0.1625** | **2.5000e-004** | | **0.0146** | **0.0146** | | **0.0140** | **0.0140** | **0.0000** | **21.1814** | **21.1814** | **4.7100e-003** | **0.0000** | **21.2803** |

## 3.4 Building Construction - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.2200e-003 | 0.0124 | 0.0166 | 3.0000e-005 | 9.2000e-004 | 1.9000e-004 | 1.1100e-003 | 2.6000e-004 | 1.7000e-004 | 4.4000e-004 | 0.0000 | 2.9108 | 2.9108 | 2.0000e-005 | 0.0000 | 2.9113 |
| Worker | 1.4000e-003 | 2.0700e-003 | 0.0216 | 5.0000e-005 | 4.2800e-003 | 4.0000e-005 | 4.3100e-003 | 1.1400e-003 | 3.0000e-005 | 1.1700e-003 | 0.0000 | 3.8549 | 3.8549 | 2.0000e-004 | 0.0000 | 3.8591 |
| **Total** | **2.6200e-003** | **0.0145** | **0.0381** | **8.0000e-005** | **5.2000e-003** | **2.3000e-004** | **5.4200e-003** | **1.4000e-003** | **2.0000e-004** | **1.6100e-003** | **0.0000** | **6.7657** | **6.7657** | **2.2000e-004** | **0.0000** | **6.7704** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 0.0333 | 0.2286 | 0.1625 | 2.5000e-004 | | 0.0146 | 0.0146 | | 0.0140 | 0.0140 | 0.0000 | 21.1814 | 21.1814 | 4.7100e-003 | 0.0000 | 21.2802 |
| **Total** | **0.0333** | **0.2286** | **0.1625** | **2.5000e-004** | | **0.0146** | **0.0146** | | **0.0140** | **0.0140** | **0.0000** | **21.1814** | **21.1814** | **4.7100e-003** | **0.0000** | **21.2802** |

## 3.4 Building Construction - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 1.2200e-003 | 0.0124 | 0.0166 | 3.0000e-005 | 9.2000e-004 | 1.9000e-004 | 1.1100e-003 | 2.6000e-004 | 1.7000e-004 | 4.4000e-004 | 0.0000 | 2.9108 | 2.9108 | 2.0000e-005 | 0.0000 | 2.9113 |
| Worker | 1.4000e-003 | 2.0700e-003 | 0.0216 | 5.0000e-005 | 4.2800e-003 | 4.0000e-005 | 4.3100e-003 | 1.1400e-003 | 3.0000e-005 | 1.1700e-003 | 0.0000 | 3.8549 | 3.8549 | 2.0000e-004 | 0.0000 | 3.8591 |
| **Total** | **2.6200e-003** | **0.0145** | **0.0381** | **8.0000e-005** | **5.2000e-003** | **2.3000e-004** | **5.4200e-003** | **1.4000e-003** | **2.0000e-004** | **1.6100e-003** | **0.0000** | **6.7657** | **6.7657** | **2.2000e-004** | **0.0000** | **6.7704** |

## 3.5 Architectural Coating - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.6390 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.3200e-003 | 0.0219 | 0.0187 | 3.0000e-005 | | 1.7300e-003 | 1.7300e-003 | | 1.7300e-003 | 1.7300e-003 | 0.0000 | 2.5533 | 2.5533 | 2.7000e-004 | 0.0000 | 2.5589 |
| **Total** | **0.6423** | **0.0219** | **0.0187** | **3.0000e-005** | | **1.7300e-003** | **1.7300e-003** | | **1.7300e-003** | **1.7300e-003** | **0.0000** | **2.5533** | **2.5533** | **2.7000e-004** | **0.0000** | **2.5589** |

## 3.5 Architectural Coating - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.9000e-004 | 4.3000e-004 | 4.4200e-003 | 1.0000e-005 | 8.8000e-004 | 1.0000e-005 | 8.8000e-004 | 2.3000e-004 | 1.0000e-005 | 2.4000e-004 | 0.0000 | 0.7908 | 0.7908 | 4.0000e-005 | 0.0000 | 0.7916 |
| **Total** | **2.9000e-004** | **4.3000e-004** | **4.4200e-003** | **1.0000e-005** | **8.8000e-004** | **1.0000e-005** | **8.8000e-004** | **2.3000e-004** | **1.0000e-005** | **2.4000e-004** | **0.0000** | **0.7908** | **0.7908** | **4.0000e-005** | **0.0000** | **0.7916** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Archit. Coating | 0.6390 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 3.3200e-003 | 0.0219 | 0.0187 | 3.0000e-005 | | 1.7300e-003 | 1.7300e-003 | | 1.7300e-003 | 1.7300e-003 | 0.0000 | 2.5533 | 2.5533 | 2.7000e-004 | 0.0000 | 2.5589 |
| **Total** | **0.6423** | **0.0219** | **0.0187** | **3.0000e-005** | | **1.7300e-003** | **1.7300e-003** | | **1.7300e-003** | **1.7300e-003** | **0.0000** | **2.5533** | **2.5533** | **2.7000e-004** | **0.0000** | **2.5589** |

## 3.5 Architectural Coating - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.9000e-004 | 4.3000e-004 | 4.4200e-003 | 1.0000e-005 | 8.8000e-004 | 1.0000e-005 | 8.8000e-004 | 2.3000e-004 | 1.0000e-005 | 2.4000e-004 | 0.0000 | 0.7908 | 0.7908 | 4.0000e-005 | 0.0000 | 0.7916 |
| **Total** | **2.9000e-004** | **4.3000e-004** | **4.4200e-003** | **1.0000e-005** | **8.8000e-004** | **1.0000e-005** | **8.8000e-004** | **2.3000e-004** | **1.0000e-005** | **2.4000e-004** | **0.0000** | **0.7908** | **0.7908** | **4.0000e-005** | **0.0000** | **0.7916** |

## 3.6 Paving - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.2000e-003 | 0.0823 | 0.0603 | 9.0000e-005 | | 5.1100e-003 | 5.1100e-003 | | 4.7100e-003 | 4.7100e-003 | 0.0000 | 8.0625 | 8.0625 | 2.4200e-003 | 0.0000 | 8.1134 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **8.2000e-003** | **0.0823** | **0.0603** | **9.0000e-005** | | **5.1100e-003** | **5.1100e-003** | | **4.7100e-003** | **4.7100e-003** | **0.0000** | **8.0625** | **8.0625** | **2.4200e-003** | **0.0000** | **8.1134** |

## 3.6 Paving - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.7000e-004 | 4.0000e-004 | 4.1400e-003 | 1.0000e-005 | 8.2000e-004 | 1.0000e-005 | 8.3000e-004 | 2.2000e-004 | 1.0000e-005 | 2.2000e-004 | 0.0000 | 0.7413 | 0.7413 | 4.0000e-005 | 0.0000 | 0.7421 |
| **Total** | **2.7000e-004** | **4.0000e-004** | **4.1400e-003** | **1.0000e-005** | **8.2000e-004** | **1.0000e-005** | **8.3000e-004** | **2.2000e-004** | **1.0000e-005** | **2.2000e-004** | **0.0000** | **0.7413** | **0.7413** | **4.0000e-005** | **0.0000** | **0.7421** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Off-Road | 8.2000e-003 | 0.0823 | 0.0603 | 9.0000e-005 | | 5.1100e-003 | 5.1100e-003 | | 4.7100e-003 | 4.7100e-003 | 0.0000 | 8.0625 | 8.0625 | 2.4200e-003 | 0.0000 | 8.1134 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | **8.2000e-003** | **0.0823** | **0.0603** | **9.0000e-005** | | **5.1100e-003** | **5.1100e-003** | | **4.7100e-003** | **4.7100e-003** | **0.0000** | **8.0625** | **8.0625** | **2.4200e-003** | **0.0000** | **8.1134** |

### 3.6 Paving - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 2.7000e-004 | 4.0000e-004 | 4.1400e-003 | 1.0000e-005 | 8.2000e-004 | 1.0000e-005 | 8.3000e-004 | 2.2000e-004 | 1.0000e-005 | 2.2000e-004 | 0.0000 | 0.7413 | 0.7413 | 4.0000e-005 | 0.0000 | 0.7421 |
| **Total** | **2.7000e-004** | **4.0000e-004** | **4.1400e-003** | **1.0000e-005** | **8.2000e-004** | **1.0000e-005** | **8.3000e-004** | **2.2000e-004** | **1.0000e-005** | **2.2000e-004** | **0.0000** | **0.7413** | **0.7413** | **4.0000e-005** | **0.0000** | **0.7421** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 2.5700e-003 | 7.4200e-003 | 0.0288 | 5.0000e-005 | 3.6600e-003 | 1.1000e-004 | 3.7600e-003 | 9.8000e-004 | 1.0000e-004 | 1.0800e-003 | 0.0000 | 4.4762 | 4.4762 | 2.1000e-004 | 0.0000 | 4.4806 |
| Unmitigated | 2.5700e-003 | 7.4200e-003 | 0.0288 | 5.0000e-005 | 3.6600e-003 | 1.1000e-004 | 3.7600e-003 | 9.8000e-004 | 1.0000e-004 | 1.0800e-003 | 0.0000 | 4.4762 | 4.4762 | 2.1000e-004 | 0.0000 | 4.4806 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| City Park | 3.35 | 3.35 | 3.35 | 9,654 | 9,654 |
| Total | 3.35 | 3.35 | 3.35 | 9,654 | 9,654 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| City Park | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 66 | 28 | 6 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.516610 | 0.060517 | 0.179979 | 0.140587 | 0.041566 | 0.006616 | 0.015092 | 0.027587 | 0.001923 | 0.002530 | 0.004314 | 0.000602 | 0.002075 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.2 Energy by Land Use - NaturalGas

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | tons/yr | | | | | | | | | | MT/yr | | | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

### 5.3 Energy by Land Use - Electricity

**Mitigated**

| | Electricity Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | kWh/yr | MT/yr | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Mitigated | 0.3960 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 6.0000e-005 |
| Unmitigated | 0.4280 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 6.0000e-005 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0959 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.3321 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 6.0000e-005 |
| **Total** | **0.4280** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **6.0000e-005** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Architectural Coating | 0.0639 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.3321 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 0.0000 | 0.0000 | 3.0000e-005 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 5.0000e-005 | 5.0000e-005 | 0.0000 | 0.0000 | 6.0000e-005 |
| **Total** | **0.3960** | **0.0000** | **3.0000e-005** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **5.0000e-005** | **5.0000e-005** | **0.0000** | **0.0000** | **6.0000e-005** |

## 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| Category | MT/yr | | | |
| Mitigated | 7.9929 | 3.7000e-004 | 8.0000e-005 | 8.0242 |
| Unmitigated | 7.9929 | 3.7000e-004 | 8.0000e-005 | 8.0242 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| City Park | 0 / 2.51403 | 7.9929 | 3.7000e-004 | 8.0000e-005 | 8.0242 |
| **Total** | | **7.9929** | **3.7000e-004** | **8.0000e-005** | **8.0242** |

### 7.2 Water by Land Use

**Mitigated**

| | Indoor/Outdoor Use | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | Mgal | MT/yr | | | |
| City Park | 0 / 2.51403 | 7.9929 | 3.7000e-004 | 8.0000e-005 | 8.0242 |
| **Total** | | **7.9929** | **3.7000e-004** | **8.0000e-005** | **8.0242** |

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

**Category/Year**

| | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|
| | MT/yr | | | |
| Mitigated | 0.0365 | 2.1600e-003 | 0.0000 | 0.0819 |
| Unmitigated | 0.0365 | 2.1600e-003 | 0.0000 | 0.0819 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| City Park | 0.18 | 0.0365 | 2.1600e-003 | 0.0000 | 0.0819 |
| **Total** | | **0.0365** | **2.1600e-003** | **0.0000** | **0.0819** |

**Mitigated**

| | Waste Disposed | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Land Use | tons | MT/yr | | | |
| City Park | 0.18 | 0.0365 | 2.1600e-003 | 0.0000 | 0.0819 |
| **Total** | | **0.0365** | **2.1600e-003** | **0.0000** | **0.0819** |

## 9.0 Operational Offroad

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

## 10.0 Vegetation

# Zanja Trail and Greenway Park

**South Coast Air Basin, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| City Park | 2.11 | Acre | 2.11 | 91,911.60 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 31 |
| **Climate Zone** | 10 | | | **Operational Year** | 2014 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 630.89 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

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

Project Characteristics -

Land Use -

Grading - Site is approx 2.11 acres total

Architectural Coating - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Area Coating - Use of low VOC paint (150 g/L for non-flat coatings) as req by SCAQMD Rule 1113

Area Mitigation - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Waste Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | EF_Nonresidential_Exterior | 250.00 | 150.00 |
| tblArchitecturalCoating | EF_Nonresidential_Interior | 250.00 | 150.00 |
| tblAreaCoating | Area_EF_Nonresidential_Exterior | 250 | 150 |
| tblAreaMitigation | UseLowVOCPaintNonresidentialInteriorValue | 250 | 150 |
| tblConstructionPhase | NumDays | 10.00 | 20.00 |
| tblConstructionPhase | NumDays | 220.00 | 20.00 |
| tblConstructionPhase | NumDays | 6.00 | 20.00 |
| tblConstructionPhase | NumDays | 3.00 | 20.00 |
| tblConstructionPhase | PhaseEndDate | 5/5/2017 | 4/28/2017 |
| tblConstructionPhase | PhaseStartDate | 3/25/2017 | 3/27/2017 |
| tblConstructionPhase | PhaseStartDate | 2/25/2017 | 2/27/2017 |
| tblConstructionPhase | PhaseStartDate | 1/28/2017 | 1/30/2017 |
| tblConstructionPhase | PhaseStartDate | 4/22/2017 | 4/17/2017 |
| tblGrading | AcresOfGrading | 10.00 | 2.11 |
| tblGrading | AcresOfGrading | 30.00 | 2.11 |

# 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2017 | 65.9600 | 28.6606 | 19.9458 | 0.0337 | 6.2458 | 1.5559 | 7.8017 | 3.3520 | 1.4315 | 4.7834 | 0.0000 | 3,103.0335 | 3,103.0335 | 0.7519 | 0.0000 | 3,118.8242 |
| **Total** | **65.9600** | **28.6606** | **19.9458** | **0.0337** | **6.2458** | **1.5559** | **7.8017** | **3.3520** | **1.4315** | **4.7834** | **0.0000** | **3,103.0335** | **3,103.0335** | **0.7519** | **0.0000** | **3,118.8242** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2017 | 65.9600 | 28.6606 | 19.9458 | 0.0337 | 2.8721 | 1.5559 | 4.4280 | 1.5247 | 1.4315 | 2.9561 | 0.0000 | 3,103.0335 | 3,103.0335 | 0.7519 | 0.0000 | 3,118.8242 |
| **Total** | **65.9600** | **28.6606** | **19.9458** | **0.0337** | **2.8721** | **1.5559** | **4.4280** | **1.5247** | **1.4315** | **2.9561** | **0.0000** | **3,103.0335** | **3,103.0335** | **0.7519** | **0.0000** | **3,118.8242** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **54.02** | **0.00** | **43.24** | **54.51** | **0.00** | **38.20** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.3451 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0143 | 0.0380 | 0.1588 | 3.0000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0100e-003 | | 28.1985 | 28.1985 | 1.2700e-003 | | 28.2251 |
| **Total** | **2.3594** | **0.0380** | **0.1590** | **3.0000e-004** | **0.0205** | **6.0000e-004** | **0.0211** | **5.4600e-003** | **5.5000e-004** | **6.0100e-003** | | **28.1989** | **28.1989** | **1.2700e-003** | **0.0000** | **28.2256** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1700 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0143 | 0.0380 | 0.1588 | 3.0000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0100e-003 | | 28.1985 | 28.1985 | 1.2700e-003 | | 28.2251 |
| **Total** | **2.1843** | **0.0380** | **0.1590** | **3.0000e-004** | **0.0205** | **6.0000e-004** | **0.0211** | **5.4600e-003** | **5.5000e-004** | **6.0100e-003** | | **28.1989** | **28.1989** | **1.2700e-003** | **0.0000** | **28.2256** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **7.42** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 1/2/2017 | 1/27/2017 | 5 | 20 | |
| 2 | Grading | Grading | 1/30/2017 | 2/24/2017 | 5 | 20 | |
| 3 | Building Construction | Building Construction | 2/27/2017 | 3/24/2017 | 5 | 20 | |
| 4 | Architectural Coating | Architectural Coating | 3/27/2017 | 4/21/2017 | 5 | 20 | |
| 5 | Paving | Paving | 4/17/2017 | 4/28/2017 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 2.11**

**Acres of Grading (Grading Phase): 2.11**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,867; Non-Residential Outdoor: 45,956 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 1 | 8.00 | 174 | 0.41 |
| Site Preparation | Scrapers | 1 | 8.00 | 361 | 0.48 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 7.00 | 97 | 0.37 |
| Grading | Graders | 1 | 8.00 | 174 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 2 | 7.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 8.00 | 226 | 0.29 |
| Building Construction | Forklifts | 2 | 7.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 1 | 6.00 | 97 | 0.37 |
| Building Construction | Welders | 3 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 8.00 | 125 | 0.42 |
| Paving | Paving Equipment | 1 | 8.00 | 130 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 3 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 4 | 10.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 8 | 39.00 | 15.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

## 3.2 Site Preparation - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.1119 | 0.0000 | 0.1119 | 0.0121 | 0.0000 | 0.0121 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.5289 | 28.6230 | 17.1310 | 0.0238 | | 1.3967 | 1.3967 | | 1.2850 | 1.2850 | | 2,439.4360 | 2,439.4360 | 0.7474 | | 2,455.1322 |
| **Total** | **2.5289** | **28.6230** | **17.1310** | **0.0238** | **0.1119** | **1.3967** | **1.5086** | **0.0121** | **1.2850** | **1.2971** | | **2,439.4360** | **2,439.4360** | **0.7474** | | **2,455.1322** |

## 3.2 Site Preparation - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0299 | 0.0376 | 0.4696 | 1.1300e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 91.5246 | 91.5246 | 4.5000e-003 | | 91.6192 |
| **Total** | **0.0299** | **0.0376** | **0.4696** | **1.1300e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **91.5246** | **91.5246** | **4.5000e-003** | | **91.6192** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0504 | 0.0000 | 0.0504 | 5.4400e-003 | 0.0000 | 5.4400e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.5289 | 28.6230 | 17.1310 | 0.0238 | | 1.3967 | 1.3967 | | 1.2850 | 1.2850 | 0.0000 | 2,439.4360 | 2,439.4360 | 0.7474 | | 2,455.1322 |
| **Total** | **2.5289** | **28.6230** | **17.1310** | **0.0238** | **0.0504** | **1.3967** | **1.4471** | **5.4400e-003** | **1.2850** | **1.2904** | **0.0000** | **2,439.4360** | **2,439.4360** | **0.7474** | | **2,455.1322** |

## 3.2 Site Preparation - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0299 | 0.0376 | 0.4696 | 1.1300e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 91.5246 | 91.5246 | 4.5000e-003 | | 91.6192 |
| **Total** | **0.0299** | **0.0376** | **0.4696** | **1.1300e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **91.5246** | **91.5246** | **4.5000e-003** | | **91.6192** |

## 3.3 Grading - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.1340 | 0.0000 | 6.1340 | 3.3223 | 0.0000 | 3.3223 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.6973 | 28.1608 | 18.9679 | 0.0206 | | 1.5550 | 1.5550 | | 1.4306 | 1.4306 | | 2,104.5737 | 2,104.5737 | 0.6448 | | 2,118.1153 |
| **Total** | **2.6973** | **28.1608** | **18.9679** | **0.0206** | **6.1340** | **1.5550** | **7.6890** | **3.3223** | **1.4306** | **4.7529** | | **2,104.5737** | **2,104.5737** | **0.6448** | | **2,118.1153** |

## 3.3 Grading - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0374 | 0.0470 | 0.5870 | 1.4200e-003 | 0.1118 | 9.0000e-004 | 0.1127 | 0.0296 | 8.3000e-004 | 0.0305 | | 114.4058 | 114.4058 | 5.6300e-003 | | 114.5239 |
| **Total** | **0.0374** | **0.0470** | **0.5870** | **1.4200e-003** | **0.1118** | **9.0000e-004** | **0.1127** | **0.0296** | **8.3000e-004** | **0.0305** | | **114.4058** | **114.4058** | **5.6300e-003** | | **114.5239** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.7603 | 0.0000 | 2.7603 | 1.4950 | 0.0000 | 1.4950 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.6973 | 28.1608 | 18.9679 | 0.0206 | | 1.5550 | 1.5550 | | 1.4306 | 1.4306 | 0.0000 | 2,104.5737 | 2,104.5737 | 0.6448 | | 2,118.1153 |
| **Total** | **2.6973** | **28.1608** | **18.9679** | **0.0206** | **2.7603** | **1.5550** | **4.3153** | **1.4950** | **1.4306** | **2.9257** | **0.0000** | **2,104.5737** | **2,104.5737** | **0.6448** | | **2,118.1153** |

## 3.3 Grading - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0374 | 0.0470 | 0.5870 | 1.4200e-003 | 0.1118 | 9.0000e-004 | 0.1127 | 0.0296 | 8.3000e-004 | 0.0305 | | 114.4058 | 114.4058 | 5.6300e-003 | | 114.5239 |
| **Total** | **0.0374** | **0.0470** | **0.5870** | **1.4200e-003** | **0.1118** | **9.0000e-004** | **0.1127** | **0.0296** | **8.3000e-004** | **0.0305** | | **114.4058** | **114.4058** | **5.6300e-003** | | **114.5239** |

## 3.4 Building Construction - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.3275 | 22.8585 | 16.2492 | 0.0249 | | 1.4621 | 1.4621 | | 1.3998 | 1.3998 | | 2,334.8503 | 2,334.8503 | 0.5189 | | 2,345.7479 |
| **Total** | **3.3275** | **22.8585** | **16.2492** | **0.0249** | | **1.4621** | **1.4621** | | **1.3998** | **1.3998** | | **2,334.8503** | **2,334.8503** | **0.5189** | | **2,345.7479** |

## 3.4 Building Construction - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.1149 | 1.1862 | 1.4071 | 3.2600e-003 | 0.0938 | 0.0189 | 0.1127 | 0.0267 | 0.0174 | 0.0441 | | 322.0007 | 322.0007 | 2.2700e-003 | | 322.0484 |
| Worker | 0.1460 | 0.1834 | 2.2894 | 5.5200e-003 | 0.4359 | 3.5100e-003 | 0.4394 | 0.1156 | 3.2300e-003 | 0.1188 | | 446.1824 | 446.1824 | 0.0220 | | 446.6434 |
| **Total** | **0.2608** | **1.3695** | **3.6966** | **8.7800e-003** | **0.5297** | **0.0224** | **0.5521** | **0.1423** | **0.0206** | **0.1629** | | **768.1832** | **768.1832** | **0.0242** | | **768.6918** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.3275 | 22.8585 | 16.2492 | 0.0249 | | 1.4621 | 1.4621 | | 1.3998 | 1.3998 | 0.0000 | 2,334.8503 | 2,334.8503 | 0.5189 | | 2,345.7479 |
| **Total** | **3.3275** | **22.8585** | **16.2492** | **0.0249** | | **1.4621** | **1.4621** | | **1.3998** | **1.3998** | **0.0000** | **2,334.8503** | **2,334.8503** | **0.5189** | | **2,345.7479** |

## 3.4 Building Construction - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.1149 | 1.1862 | 1.4071 | 3.2600e-003 | 0.0938 | 0.0189 | 0.1127 | 0.0267 | 0.0174 | 0.0441 | | 322.0007 | 322.0007 | 2.2700e-003 | | 322.0484 |
| Worker | 0.1460 | 0.1834 | 2.2894 | 5.5200e-003 | 0.4359 | 3.5100e-003 | 0.4394 | 0.1156 | 3.2300e-003 | 0.1188 | | 446.1824 | 446.1824 | 0.0220 | | 446.6434 |
| **Total** | **0.2608** | **1.3695** | **3.6966** | **8.7800e-003** | **0.5297** | **0.0224** | **0.5521** | **0.1423** | **0.0206** | **0.1629** | | **768.1832** | **768.1832** | **0.0242** | | **768.6918** |

## 3.5 Architectural Coating - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 63.9015 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3323 | 2.1850 | 1.8681 | 2.9700e-003 | | 0.1733 | 0.1733 | | 0.1733 | 0.1733 | | 281.4481 | 281.4481 | 0.0297 | | 282.0721 |
| **Total** | **64.2338** | **2.1850** | **1.8681** | **2.9700e-003** | | **0.1733** | **0.1733** | | **0.1733** | **0.1733** | | **281.4481** | **281.4481** | **0.0297** | | **282.0721** |

## 3.5 Architectural Coating - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0299 | 0.0376 | 0.4696 | 1.1300e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 91.5246 | 91.5246 | 4.5000e-003 | | 91.6192 |
| **Total** | **0.0299** | **0.0376** | **0.4696** | **1.1300e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **91.5246** | **91.5246** | **4.5000e-003** | | **91.6192** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 63.9015 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3323 | 2.1850 | 1.8681 | 2.9700e-003 | | 0.1733 | 0.1733 | | 0.1733 | 0.1733 | 0.0000 | 281.4481 | 281.4481 | 0.0297 | | 282.0721 |
| **Total** | **64.2338** | **2.1850** | **1.8681** | **2.9700e-003** | | **0.1733** | **0.1733** | | **0.1733** | **0.1733** | **0.0000** | **281.4481** | **281.4481** | **0.0297** | | **282.0721** |

## 3.5 Architectural Coating - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0299 | 0.0376 | 0.4696 | 1.1300e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 91.5246 | 91.5246 | 4.5000e-003 | | 91.6192 |
| **Total** | **0.0299** | **0.0376** | **0.4696** | **1.1300e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **91.5246** | **91.5246** | **4.5000e-003** | | **91.6192** |

## 3.6 Paving - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6402 | 16.4619 | 12.0566 | 0.0176 | | 1.0230 | 1.0230 | | 0.9423 | 0.9423 | | 1,777.4745 | 1,777.4745 | 0.5344 | | 1,788.6966 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.6402** | **16.4619** | **12.0566** | **0.0176** | | **1.0230** | **1.0230** | | **0.9423** | **0.9423** | | **1,777.4745** | **1,777.4745** | **0.5344** | | **1,788.6966** |

## 3.6 Paving - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0561 | 0.0705 | 0.8806 | 2.1200e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2400e-003 | 0.0457 | | 171.6086 | 171.6086 | 8.4400e-003 | | 171.7859 |
| **Total** | **0.0561** | **0.0705** | **0.8806** | **2.1200e-003** | **0.1677** | **1.3500e-003** | **0.1690** | **0.0445** | **1.2400e-003** | **0.0457** | | **171.6086** | **171.6086** | **8.4400e-003** | | **171.7859** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6402 | 16.4619 | 12.0566 | 0.0176 | | 1.0230 | 1.0230 | | 0.9423 | 0.9423 | 0.0000 | 1,777.4745 | 1,777.4745 | 0.5344 | | 1,788.6966 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.6402** | **16.4619** | **12.0566** | **0.0176** | | **1.0230** | **1.0230** | | **0.9423** | **0.9423** | **0.0000** | **1,777.4745** | **1,777.4745** | **0.5344** | | **1,788.6966** |

### 3.6 Paving - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0561 | 0.0705 | 0.8806 | 2.1200e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2400e-003 | 0.0457 | | 171.6086 | 171.6086 | 8.4400e-003 | | 171.7859 |
| **Total** | **0.0561** | **0.0705** | **0.8806** | **2.1200e-003** | **0.1677** | **1.3500e-003** | **0.1690** | **0.0445** | **1.2400e-003** | **0.0457** | | **171.6086** | **171.6086** | **8.4400e-003** | | **171.7859** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0143 | 0.0380 | 0.1588 | 3.0000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0100e-003 | | 28.1985 | 28.1985 | 1.2700e-003 | | 28.2251 |
| Unmitigated | 0.0143 | 0.0380 | 0.1588 | 3.0000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0100e-003 | | 28.1985 | 28.1985 | 1.2700e-003 | | 28.2251 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| City Park | 3.35 | 3.35 | 3.35 | 9,654 | 9,654 |
| Total | 3.35 | 3.35 | 3.35 | 9,654 | 9,654 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| City Park | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 66 | 28 | 6 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.516610 | 0.060517 | 0.179979 | 0.140587 | 0.041566 | 0.006616 | 0.015092 | 0.027587 | 0.001923 | 0.002530 | 0.004314 | 0.000602 | 0.002075 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.1700 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| Unmitigated | 2.3451 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5252 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.8199 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| **Total** | **2.3451** | **0.0000** | **2.3000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.6000e-004** | **4.6000e-004** | **0.0000** | | **4.9000e-004** |

### 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.3502 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.8199 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| **Total** | **2.1700** | **0.0000** | **2.3000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.6000e-004** | **4.6000e-004** | **0.0000** | | **4.9000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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

## 10.0 Vegetation

# Zanja Trail and Greenway Park

**South Coast Air Basin, Winter**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| City Park | 2.11 | Acre | 2.11 | 91,911.60 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Urban | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 31 |
| **Climate Zone** | 10 | | | **Operational Year** | 2014 |
| **Utility Company** | Southern California Edison | | | | |
| **CO2 Intensity (lb/MWhr)** | 630.89 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

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

Project Characteristics -

Land Use -

Grading - Site is approx 2.11 acres total

Architectural Coating - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Area Coating - Use of low VOC paint (150 g/L for non-flat coatings) as req by SCAQMD Rule 1113

Area Mitigation - Use of low VOC paint (150 g/L for non-flat) coatings as req by SCAQMD Rule 1113

Waste Mitigation -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation -

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblArchitecturalCoating | EF_Nonresidential_Exterior | 250.00 | 150.00 |
| tblArchitecturalCoating | EF_Nonresidential_Interior | 250.00 | 150.00 |
| tblAreaCoating | Area_EF_Nonresidential_Exterior | 250 | 150 |
| tblAreaMitigation | UseLowVOCPaintNonresidentialInteriorValue | 250 | 150 |
| tblConstructionPhase | NumDays | 10.00 | 20.00 |
| tblConstructionPhase | NumDays | 220.00 | 20.00 |
| tblConstructionPhase | NumDays | 6.00 | 20.00 |
| tblConstructionPhase | NumDays | 3.00 | 20.00 |
| tblConstructionPhase | PhaseEndDate | 5/5/2017 | 4/28/2017 |
| tblConstructionPhase | PhaseStartDate | 3/25/2017 | 3/27/2017 |
| tblConstructionPhase | PhaseStartDate | 2/25/2017 | 2/27/2017 |
| tblConstructionPhase | PhaseStartDate | 1/28/2017 | 1/30/2017 |
| tblConstructionPhase | PhaseStartDate | 4/22/2017 | 4/17/2017 |
| tblGrading | AcresOfGrading | 10.00 | 2.11 |
| tblGrading | AcresOfGrading | 30.00 | 2.11 |

# 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2017 | 65.9617 | 28.6643 | 20.0570 | 0.0333 | 6.2458 | 1.5559 | 7.8017 | 3.3520 | 1.4315 | 4.7834 | 0.0000 | 3,072.5560 | 3,072.5560 | 0.7519 | 0.0000 | 3,088.3468 |
| **Total** | **65.9617** | **28.6643** | **20.0570** | **0.0333** | **6.2458** | **1.5559** | **7.8017** | **3.3520** | **1.4315** | **4.7834** | **0.0000** | **3,072.5560** | **3,072.5560** | **0.7519** | **0.0000** | **3,088.3468** |

### Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2017 | 65.9617 | 28.6643 | 20.0570 | 0.0333 | 2.8721 | 1.5559 | 4.4280 | 1.5247 | 1.4315 | 2.9561 | 0.0000 | 3,072.5560 | 3,072.5560 | 0.7519 | 0.0000 | 3,088.3468 |
| **Total** | **65.9617** | **28.6643** | **20.0570** | **0.0333** | **2.8721** | **1.5559** | **4.4280** | **1.5247** | **1.4315** | **2.9561** | **0.0000** | **3,072.5560** | **3,072.5560** | **0.7519** | **0.0000** | **3,088.3468** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **0.00** | **0.00** | **0.00** | **0.00** | **54.02** | **0.00** | **43.24** | **54.51** | **0.00** | **38.20** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.3451 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0149 | 0.0400 | 0.1567 | 2.9000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0200e-003 | | 26.8064 | 26.8064 | 1.2700e-003 | | 26.8330 |
| **Total** | **2.3600** | **0.0400** | **0.1569** | **2.9000e-004** | **0.0205** | **6.0000e-004** | **0.0211** | **5.4600e-003** | **5.5000e-004** | **6.0200e-003** | | **26.8069** | **26.8069** | **1.2700e-003** | **0.0000** | **26.8335** |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.1700 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| Energy | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Mobile | 0.0149 | 0.0400 | 0.1567 | 2.9000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0200e-003 | | 26.8064 | 26.8064 | 1.2700e-003 | | 26.8330 |
| **Total** | **2.1849** | **0.0400** | **0.1569** | **2.9000e-004** | **0.0205** | **6.0000e-004** | **0.0211** | **5.4600e-003** | **5.5000e-004** | **6.0200e-003** | | **26.8069** | **26.8069** | **1.2700e-003** | **0.0000** | **26.8335** |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | **7.42** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 1/2/2017 | 1/27/2017 | 5 | 20 | |
| 2 | Grading | Grading | 1/30/2017 | 2/24/2017 | 5 | 20 | |
| 3 | Building Construction | Building Construction | 2/27/2017 | 3/24/2017 | 5 | 20 | |
| 4 | Architectural Coating | Architectural Coating | 3/27/2017 | 4/21/2017 | 5 | 20 | |
| 5 | Paving | Paving | 4/17/2017 | 4/28/2017 | 5 | 10 | |

**Acres of Grading (Site Preparation Phase): 2.11**

**Acres of Grading (Grading Phase): 2.11**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 137,867; Non-Residential Outdoor: 45,956 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 1 | 8.00 | 174 | 0.41 |
| Site Preparation | Scrapers | 1 | 8.00 | 361 | 0.48 |
| Site Preparation | Tractors/Loaders/Backhoes | 1 | 7.00 | 97 | 0.37 |
| Grading | Graders | 1 | 8.00 | 174 | 0.41 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 2 | 7.00 | 97 | 0.37 |
| Building Construction | Cranes | 1 | 8.00 | 226 | 0.29 |
| Building Construction | Forklifts | 2 | 7.00 | 89 | 0.20 |
| Building Construction | Generator Sets | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | 1 | 6.00 | 97 | 0.37 |
| Building Construction | Welders | 3 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | 1 | 6.00 | 78 | 0.48 |
| Paving | Cement and Mortar Mixers | 1 | 8.00 | 9 | 0.56 |
| Paving | Pavers | 1 | 8.00 | 125 | 0.42 |
| Paving | Paving Equipment | 1 | 8.00 | 130 | 0.36 |
| Paving | Rollers | 2 | 8.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | 1 | 8.00 | 97 | 0.37 |

**Trips and VMT**

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Preparation | 3 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 4 | 10.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 8 | 39.00 | 15.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 8.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 6 | 15.00 | 0.00 | 0.00 | 14.70 | 6.90 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

## 3.2 Site Preparation - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.1119 | 0.0000 | 0.1119 | 0.0121 | 0.0000 | 0.0121 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.5289 | 28.6230 | 17.1310 | 0.0238 | | 1.3967 | 1.3967 | | 1.2850 | 1.2850 | | 2,439.4360 | 2,439.4360 | 0.7474 | | 2,455.1322 |
| **Total** | **2.5289** | **28.6230** | **17.1310** | **0.0238** | **0.1119** | **1.3967** | **1.5086** | **0.0121** | **1.2850** | **1.2971** | | **2,439.4360** | **2,439.4360** | **0.7474** | | **2,455.1322** |

## 3.2 Site Preparation - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0305 | 0.0413 | 0.4314 | 1.0600e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 85.8277 | 85.8277 | 4.5000e-003 | | 85.9222 |
| **Total** | **0.0305** | **0.0413** | **0.4314** | **1.0600e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **85.8277** | **85.8277** | **4.5000e-003** | | **85.9222** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 0.0504 | 0.0000 | 0.0504 | 5.4400e-003 | 0.0000 | 5.4400e-003 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.5289 | 28.6230 | 17.1310 | 0.0238 | | 1.3967 | 1.3967 | | 1.2850 | 1.2850 | 0.0000 | 2,439.4360 | 2,439.4360 | 0.7474 | | 2,455.1322 |
| **Total** | **2.5289** | **28.6230** | **17.1310** | **0.0238** | **0.0504** | **1.3967** | **1.4471** | **5.4400e-003** | **1.2850** | **1.2904** | **0.0000** | **2,439.4360** | **2,439.4360** | **0.7474** | | **2,455.1322** |

## 3.2 Site Preparation - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0305 | 0.0413 | 0.4314 | 1.0600e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 85.8277 | 85.8277 | 4.5000e-003 | | 85.9222 |
| **Total** | **0.0305** | **0.0413** | **0.4314** | **1.0600e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **85.8277** | **85.8277** | **4.5000e-003** | | **85.9222** |

## 3.3 Grading - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.1340 | 0.0000 | 6.1340 | 3.3223 | 0.0000 | 3.3223 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.6973 | 28.1608 | 18.9679 | 0.0206 | | 1.5550 | 1.5550 | | 1.4306 | 1.4306 | | 2,104.5737 | 2,104.5737 | 0.6448 | | 2,118.1153 |
| **Total** | **2.6973** | **28.1608** | **18.9679** | **0.0206** | **6.1340** | **1.5550** | **7.6890** | **3.3223** | **1.4306** | **4.7529** | | **2,104.5737** | **2,104.5737** | **0.6448** | | **2,118.1153** |

## 3.3 Grading - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0382 | 0.0516 | 0.5392 | 1.3300e-003 | 0.1118 | 9.0000e-004 | 0.1127 | 0.0296 | 8.3000e-004 | 0.0305 | | 107.2846 | 107.2846 | 5.6300e-003 | | 107.4028 |
| **Total** | **0.0382** | **0.0516** | **0.5392** | **1.3300e-003** | **0.1118** | **9.0000e-004** | **0.1127** | **0.0296** | **8.3000e-004** | **0.0305** | | **107.2846** | **107.2846** | **5.6300e-003** | | **107.4028** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 2.7603 | 0.0000 | 2.7603 | 1.4950 | 0.0000 | 1.4950 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.6973 | 28.1608 | 18.9679 | 0.0206 | | 1.5550 | 1.5550 | | 1.4306 | 1.4306 | 0.0000 | 2,104.5737 | 2,104.5737 | 0.6448 | | 2,118.1153 |
| **Total** | **2.6973** | **28.1608** | **18.9679** | **0.0206** | **2.7603** | **1.5550** | **4.3153** | **1.4950** | **1.4306** | **2.9257** | **0.0000** | **2,104.5737** | **2,104.5737** | **0.6448** | | **2,118.1153** |

## 3.3 Grading - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0382 | 0.0516 | 0.5392 | 1.3300e-003 | 0.1118 | 9.0000e-004 | 0.1127 | 0.0296 | 8.3000e-004 | 0.0305 | | 107.2846 | 107.2846 | 5.6300e-003 | | 107.4028 |
| **Total** | **0.0382** | **0.0516** | **0.5392** | **1.3300e-003** | **0.1118** | **9.0000e-004** | **0.1127** | **0.0296** | **8.3000e-004** | **0.0305** | | **107.2846** | **107.2846** | **5.6300e-003** | | **107.4028** |

## 3.4 Building Construction - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.3275 | 22.8585 | 16.2492 | 0.0249 | | 1.4621 | 1.4621 | | 1.3998 | 1.3998 | | 2,334.8503 | 2,334.8503 | 0.5189 | | 2,345.7479 |
| **Total** | **3.3275** | **22.8585** | **16.2492** | **0.0249** | | **1.4621** | **1.4621** | | **1.3998** | **1.3998** | | **2,334.8503** | **2,334.8503** | **0.5189** | | **2,345.7479** |

## 3.4 Building Construction - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.1255 | 1.2154 | 1.7049 | 3.2400e-003 | 0.0938 | 0.0191 | 0.1128 | 0.0267 | 0.0175 | 0.0442 | | 319.2958 | 319.2958 | 2.3400e-003 | | 319.3450 |
| Worker | 0.1489 | 0.2014 | 2.1030 | 5.1700e-003 | 0.4359 | 3.5100e-003 | 0.4394 | 0.1156 | 3.2300e-003 | 0.1188 | | 418.4099 | 418.4099 | 0.0220 | | 418.8708 |
| **Total** | **0.2743** | **1.4168** | **3.8078** | **8.4100e-003** | **0.5297** | **0.0226** | **0.5523** | **0.1423** | **0.0208** | **0.1631** | | **737.7057** | **737.7057** | **0.0243** | | **738.2158** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.3275 | 22.8585 | 16.2492 | 0.0249 | | 1.4621 | 1.4621 | | 1.3998 | 1.3998 | 0.0000 | 2,334.8503 | 2,334.8503 | 0.5189 | | 2,345.7479 |
| **Total** | **3.3275** | **22.8585** | **16.2492** | **0.0249** | | **1.4621** | **1.4621** | | **1.3998** | **1.3998** | **0.0000** | **2,334.8503** | **2,334.8503** | **0.5189** | | **2,345.7479** |

## 3.4 Building Construction - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.1255 | 1.2154 | 1.7049 | 3.2400e-003 | 0.0938 | 0.0191 | 0.1128 | 0.0267 | 0.0175 | 0.0442 | | 319.2958 | 319.2958 | 2.3400e-003 | | 319.3450 |
| Worker | 0.1489 | 0.2014 | 2.1030 | 5.1700e-003 | 0.4359 | 3.5100e-003 | 0.4394 | 0.1156 | 3.2300e-003 | 0.1188 | | 418.4099 | 418.4099 | 0.0220 | | 418.8708 |
| **Total** | **0.2743** | **1.4168** | **3.8078** | **8.4100e-003** | **0.5297** | **0.0226** | **0.5523** | **0.1423** | **0.0208** | **0.1631** | | **737.7057** | **737.7057** | **0.0243** | | **738.2158** |

## 3.5 Architectural Coating - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 63.9015 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3323 | 2.1850 | 1.8681 | 2.9700e-003 | | 0.1733 | 0.1733 | | 0.1733 | 0.1733 | | 281.4481 | 281.4481 | 0.0297 | | 282.0721 |
| **Total** | **64.2338** | **2.1850** | **1.8681** | **2.9700e-003** | | **0.1733** | **0.1733** | | **0.1733** | **0.1733** | | **281.4481** | **281.4481** | **0.0297** | | **282.0721** |

## 3.5 Architectural Coating - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0305 | 0.0413 | 0.4314 | 1.0600e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 85.8277 | 85.8277 | 4.5000e-003 | | 85.9222 |
| **Total** | **0.0305** | **0.0413** | **0.4314** | **1.0600e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **85.8277** | **85.8277** | **4.5000e-003** | | **85.9222** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 63.9015 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3323 | 2.1850 | 1.8681 | 2.9700e-003 | | 0.1733 | 0.1733 | | 0.1733 | 0.1733 | 0.0000 | 281.4481 | 281.4481 | 0.0297 | | 282.0721 |
| **Total** | **64.2338** | **2.1850** | **1.8681** | **2.9700e-003** | | **0.1733** | **0.1733** | | **0.1733** | **0.1733** | **0.0000** | **281.4481** | **281.4481** | **0.0297** | | **282.0721** |

## 3.5 Architectural Coating - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0305 | 0.0413 | 0.4314 | 1.0600e-003 | 0.0894 | 7.2000e-004 | 0.0901 | 0.0237 | 6.6000e-004 | 0.0244 | | 85.8277 | 85.8277 | 4.5000e-003 | | 85.9222 |
| **Total** | **0.0305** | **0.0413** | **0.4314** | **1.0600e-003** | **0.0894** | **7.2000e-004** | **0.0901** | **0.0237** | **6.6000e-004** | **0.0244** | | **85.8277** | **85.8277** | **4.5000e-003** | | **85.9222** |

## 3.6 Paving - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6402 | 16.4619 | 12.0566 | 0.0176 | | 1.0230 | 1.0230 | | 0.9423 | 0.9423 | | 1,777.4745 | 1,777.4745 | 0.5344 | | 1,788.6966 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.6402** | **16.4619** | **12.0566** | **0.0176** | | **1.0230** | **1.0230** | | **0.9423** | **0.9423** | | **1,777.4745** | **1,777.4745** | **0.5344** | | **1,788.6966** |

## 3.6 Paving - 2017

### Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0573 | 0.0775 | 0.8088 | 1.9900e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2400e-003 | 0.0457 | | 160.9269 | 160.9269 | 8.4400e-003 | | 161.1042 |
| **Total** | **0.0573** | **0.0775** | **0.8088** | **1.9900e-003** | **0.1677** | **1.3500e-003** | **0.1690** | **0.0445** | **1.2400e-003** | **0.0457** | | **160.9269** | **160.9269** | **8.4400e-003** | | **161.1042** |

### Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6402 | 16.4619 | 12.0566 | 0.0176 | | 1.0230 | 1.0230 | | 0.9423 | 0.9423 | 0.0000 | 1,777.4745 | 1,777.4745 | 0.5344 | | 1,788.6966 |
| Paving | 0.0000 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.6402** | **16.4619** | **12.0566** | **0.0176** | | **1.0230** | **1.0230** | | **0.9423** | **0.9423** | **0.0000** | **1,777.4745** | **1,777.4745** | **0.5344** | | **1,788.6966** |

### 3.6 Paving - 2017

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0573 | 0.0775 | 0.8088 | 1.9900e-003 | 0.1677 | 1.3500e-003 | 0.1690 | 0.0445 | 1.2400e-003 | 0.0457 | | 160.9269 | 160.9269 | 8.4400e-003 | | 161.1042 |
| **Total** | **0.0573** | **0.0775** | **0.8088** | **1.9900e-003** | **0.1677** | **1.3500e-003** | **0.1690** | **0.0445** | **1.2400e-003** | **0.0457** | | **160.9269** | **160.9269** | **8.4400e-003** | | **161.1042** |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 0.0149 | 0.0400 | 0.1567 | 2.9000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0200e-003 | | 26.8064 | 26.8064 | 1.2700e-003 | | 26.8330 |
| Unmitigated | 0.0149 | 0.0400 | 0.1567 | 2.9000e-004 | 0.0205 | 6.0000e-004 | 0.0211 | 5.4600e-003 | 5.5000e-004 | 6.0200e-003 | | 26.8064 | 26.8064 | 1.2700e-003 | | 26.8330 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| City Park | 3.35 | 3.35 | 3.35 | 9,654 | 9,654 |
| Total | 3.35 | 3.35 | 3.35 | 9,654 | 9,654 |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |
| City Park | 16.60 | 8.40 | 6.90 | 33.00 | 48.00 | 19.00 | 66 | 28 | 6 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.516610 | 0.060517 | 0.179979 | 0.140587 | 0.041566 | 0.006616 | 0.015092 | 0.027587 | 0.001923 | 0.002530 | 0.004314 | 0.000602 | 0.002075 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| NaturalGas Unmitigated | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| City Park | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | **0.0000** | **0.0000** | **0.0000** |

# 6.0 Area Detail

## 6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.1700 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| Unmitigated | 2.3451 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5252 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.8199 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| **Total** | **2.3451** | **0.0000** | **2.3000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.6000e-004** | **4.6000e-004** | **0.0000** | | **4.9000e-004** |

### 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.3502 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.8199 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.0000e-005 | 0.0000 | 2.3000e-004 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 4.6000e-004 | 4.6000e-004 | 0.0000 | | 4.9000e-004 |
| **Total** | **2.1700** | **0.0000** | **2.3000e-004** | **0.0000** | | **0.0000** | **0.0000** | | **0.0000** | **0.0000** | | **4.6000e-004** | **4.6000e-004** | **0.0000** | | **4.9000e-004** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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

## 10.0 Vegetation

## Greenhouse Gas Emission Worksheet
### *N20 Mobile Emissions*

**From URBEMIS 2007 Vehicle Fleet Mix Output:**

Annual VMT: 9,654

| Vehicle Type | Percent Type | CH4 Emission Factor (g/mile)* | CH4 Emission (g/mile)** | N2O Emission Factor (g/mile)* | N2O Emission (g/mile)** |
|---|---|---|---|---|---|
| Light Auto | 46.0% | 0.04 | 0.0184 | 0.04 | 0.0184 |
| Light Truck < 3750 lbs | 10.3% | 0.05 | 0.00515 | 0.06 | 0.00618 |
| Light Truck 3751-5750 lbs | 23.2% | 0.05 | 0.0116 | 0.06 | 0.01392 |
| Med Truck 5751-8500 lbs | 12.2% | 0.12 | 0.01464 | 0.2 | 0.0244 |
| Lite-Heavy Truck 8501-10,000 lbs | 2.1% | 0.12 | 0.00252 | 0.2 | 0.0042 |
| Lite-Heavy Truck 10,001-14,000 lbs | 0.5% | 0.09 | 0.00045 | 0.125 | 0.000625 |
| Med-Heavy Truck 14,001-33,000 lbs | 1.0% | 0.06 | 0.0006 | 0.05 | 0.0005 |
| Heavy-Heavy Truck 33,001-60,000 lbs | 2.9% | 0.06 | 0.00174 | 0.05 | 0.00145 |
| Other Bus | 0.1% | 0.06 | 0.00006 | 0.05 | 0.00005 |
| Urban Bus | 0.1% | 0.06 | 0.00006 | 0.05 | 0.00005 |
| Motorcycle | 1.1% | 0.09 | 0.00099 | 0.01 | 0.00011 |
| School Bus | 0.1% | 0.06 | 0.00006 | 0.05 | 0.00005 |
| Motor Home | 0.4% | 0.09 | 0.00036 | 0.125 | 0.0005 |
| **Total** | **100.0%** | | **0.05663** | | **0.070435** |

**Total Emissions (metric tons) =**
**Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g**

**Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)**

| | | |
|---|---|---|
| CH4 | 21 | GWP |
| N2O | 310 | GWP |
| 1 ton (short, US) = | 0.90718474 | metric ton |

**Annual Mobile Emissions:**

| | Total Emissions | | Total CO2e units | |
|---|---|---|---|---|
| N20 Emissions: | 0.0007 | metric tons N2O | **0.21** | metric tons CO2e |
| | ***Project Total:*** | | ***0.21*** | ***metric tons CO2e*** |

**References**

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.
** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
*** From URBEMIS 2007 results for mobile sources