

## Brightwater Ranch

### Air Quality and Greenhouse Gas Analysis Report

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March 2015



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# **Air Quality and Greenhouse Gas Analysis Report**

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PDS 2003-3910-0314007

Assessor's Parcel No. 397-180-13

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## TABLE OF CONTENTS

| <b><u>Section</u></b> | <b><u>Title</u></b>                                                          | <b><u>Page</u></b> |
|-----------------------|------------------------------------------------------------------------------|--------------------|
| ES                    | <b>EXECUTIVE SUMMARY.....</b>                                                | <b>1</b>           |
| <b>1.0</b>            | <b>INTRODUCTION .....</b>                                                    | <b>1</b>           |
|                       | 1.1 Purpose of the Report .....                                              | 1                  |
|                       | 1.2 Project Location and Description .....                                   | 1                  |
|                       | 1.3 Construction Best Management Practices and Project Design Features ..... | 2                  |
|                       | 1.3.1 Construction Measures.....                                             | 2                  |
|                       | 1.3.2 Project Design Features .....                                          | 3                  |
| <b>2.0</b>            | <b>EXISTING CONDITIONS.....</b>                                              | <b>3</b>           |
|                       | 2.1 Existing Setting .....                                                   | 3                  |
|                       | 2.2 Climate and Meteorology .....                                            | 3                  |
|                       | 2.3 Air Pollutants of Concern .....                                          | 4                  |
|                       | 2.3.1 Criteria Pollutants .....                                              | 4                  |
|                       | 2.3.2 Toxic Air Contaminants.....                                            | 5                  |
|                       | 2.4 Regulatory Setting .....                                                 | 5                  |
|                       | 2.5 Background Air Quality .....                                             | 8                  |
| <b>3.0</b>            | <b>SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGIES.....</b>                 | <b>10</b>          |
|                       | 3.1 Significance Criteria.....                                               | 10                 |
|                       | 3.2 Methodology .....                                                        | 11                 |
|                       | 3.2.1 Construction Assumptions.....                                          | 12                 |
|                       | 3.2.2 Operational Assumptions.....                                           | 14                 |
| <b>4.0</b>            | <b>PROJECT IMPACT ANALYSIS .....</b>                                         | <b>14</b>          |
|                       | 4.1 Conformance to the Regional Air Quality Strategy .....                   | 14                 |
|                       | 4.1.1 Guidelines for the Determination of Significance .....                 | 14                 |
|                       | 4.1.2 Significance of Impacts Prior to Mitigation.....                       | 15                 |
|                       | 4.1.3 Mitigation Measures and Design Considerations .....                    | 15                 |
|                       | 4.1.4 Conclusions.....                                                       | 15                 |
|                       | 4.2 Conformance to Federal and State Ambient Air Quality Standards .....     | 15                 |
|                       | 4.2.1 Guidelines for the Determination of Significance .....                 | 15                 |
|                       | 4.2.2 Significance of Impacts Prior to Mitigation.....                       | 15                 |
|                       | 4.3 Cumulatively Considerable Net Increase of Criteria Pollutants .....      | 18                 |
|                       | 4.3.1 Construction Impacts .....                                             | 18                 |
|                       | 4.3.2 Operational Impacts .....                                              | 19                 |
|                       | 4.4 Impacts to Sensitive Receptors.....                                      | 20                 |
|                       | 4.4.1 Guidelines for the Determination of Significance .....                 | 20                 |
|                       | 4.4.2 Significance of Impacts Prior to Mitigation.....                       | 20                 |
|                       | 4.4.3 Mitigation Measures and Design Considerations .....                    | 22                 |
|                       | 4.4.4 Conclusions.....                                                       | 22                 |

## TABLE OF CONTENTS (cont.)

| <b><u>Section</u></b> | <b><u>Title</u></b>                                                        | <b><u>Page</u></b> |
|-----------------------|----------------------------------------------------------------------------|--------------------|
| <b>4.0</b>            | <b>PROJECT IMPACT ANALYSIS (cont.)</b>                                     |                    |
| 4.5                   | Odor Impacts .....                                                         | 22                 |
| 4.5.1                 | Guidelines for the Determination of Significance .....                     | 22                 |
| 4.5.2                 | Significance of Impacts Prior to Mitigation.....                           | 22                 |
| 4.5.3                 | Mitigation Measures and Design Considerations .....                        | 23                 |
| 4.5.4                 | Conclusion .....                                                           | 23                 |
| <b>5.0</b>            | <b>GREENHOUSE GASES.....</b>                                               | <b>23</b>          |
| 5.1                   | Global Climate Change Overview .....                                       | 23                 |
| 5.2                   | GHG Inventories .....                                                      | 24                 |
| 5.3                   | GHG Regulatory Setting .....                                               | 24                 |
| 5.3.1                 | California Greenhouse Gas Regulations .....                                | 24                 |
| 5.3.2                 | Local GHG Policies and Plans.....                                          | 26                 |
| 5.3.3                 | Guidelines for Determining Significance .....                              | 26                 |
| 5.4                   | Methodology and Assumptions.....                                           | 27                 |
| 5.5                   | Emissions of GHGs .....                                                    | 27                 |
| 5.5.1                 | GHG Emissions without Project Design Features (Unmitigated) Emissions..... | 28                 |
| 5.5.2                 | Project Emissions with GHG Reducing Design Features .....                  | 30                 |
| 5.5.3                 | Comparison of GHG Emissions with and without Project .....                 | 34                 |
| 5.6                   | Plans Related to GHGs.....                                                 | 34                 |
| <b>6.0</b>            | <b>REFERENCES .....</b>                                                    | <b>36</b>          |
| <b>7.0</b>            | <b>LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS<br/>CONTACTED .....</b> | <b>38</b>          |

## APPENDICES

- A Air Pollutant Emission Modeling Data
- B GHG Emission Reduction Adjustments

## TABLE OF CONTENTS (cont.)

### LIST OF FIGURES

| <b><u>No.</u></b> | <b><u>Title</u></b>        | <b><u>Follows Page</u></b> |
|-------------------|----------------------------|----------------------------|
| 1                 | Regional Location Map..... | 2                          |
| 2                 | Project Vicinity Map ..... | 2                          |
| 3                 | Site Plan .....            | 2                          |

### LIST OF TABLES

| <b><u>No.</u></b> | <b><u>Title</u></b>                                                                                 | <b><u>Page</u></b> |
|-------------------|-----------------------------------------------------------------------------------------------------|--------------------|
| 1                 | Ambient Air Quality Standards .....                                                                 | 6                  |
| 2                 | Federal and State Air Quality Designation .....                                                     | 8                  |
| 3                 | Ambient Background Concentrations .....                                                             | 9                  |
| 4                 | Screening-level Thresholds for Air Quality Impact Analysis.....                                     | 11                 |
| 5                 | Construction Equipment Assumptions .....                                                            | 12                 |
| 6                 | Anticipated Construction Schedule.....                                                              | 13                 |
| 7                 | Estimated Construction Emissions .....                                                              | 16                 |
| 8                 | Project Operational Emissions at Full Buildout – 2018.....                                          | 17                 |
| 9                 | Health Risk Assessment Results .....                                                                | 21                 |
| 10                | Global Warming Potentials and Atmospheric Lifetimes of Common GHGs.....                             | 24                 |
| 11                | Construction GHG Emissions.....                                                                     | 28                 |
| 12                | Estimated Annual GHG Emissions (Without Project Design Features or State and Federal Mandates)..... | 30                 |
| 13                | Estimated GHG Emissions Reductions from State Measures .....                                        | 32                 |
| 14                | Estimated GHG Emissions Reductions from Project Design Features .....                               | 33                 |
| 15                | Estimated Annual GHG Emissions (Project with Design Features and State and Federal Mandates).....   | 33                 |
| 16                | GHG Emissions Comparison.....                                                                       | 34                 |
| 17                | County General Plan Policies .....                                                                  | 35                 |

## ACRONYMS

|                          |                                                       |
|--------------------------|-------------------------------------------------------|
| $\mu\text{g}/\text{m}^3$ | micrograms per cubic meter                            |
| AB                       | Assembly Bill                                         |
| ADT                      | average daily trips                                   |
| AQIA                     | Air Quality Impact Assessment                         |
| BACT                     | best available control technology                     |
| BMPs                     | best management practices                             |
| CAA                      | Clean Air Act (Federal)                               |
| CAAQS                    | California Ambient Air Quality Standard               |
| CalEEMod                 | California Emission Estimator Model                   |
| CalEPA                   | California Environmental Protection Agency            |
| CalGreen                 | California Green Building                             |
| CAPCOA                   | California Air Pollution Control Officers Association |
| CARB                     | California Air Resources Board                        |
| CCAA                     | California Clean Air Act                              |
| CEQA                     | California Environmental Quality Act                  |
| CFCs                     | chlorofluorocarbons                                   |
| $\text{CH}_4$            | methane                                               |
| CO                       | carbon monoxide                                       |
| $\text{CO}_2$            | carbon dioxide                                        |
| $\text{CO}_2\text{e}$    | carbon dioxide equivalent                             |
| County                   | County of San Diego                                   |
| DPF                      | diesel particulate filters                            |
| DPM                      | diesel particulate matter                             |
| EPIC                     | Energy Policy Initiative Center                       |
| $^{\circ}\text{F}$       | Fahrenheit (degrees)                                  |
| g/L                      | grams per liter                                       |
| GHG                      | greenhouse gas                                        |
| GWP                      | global warming potential                              |
| HFC                      | hydrofluorocarbon                                     |
| HI                       | hazard index                                          |
| HOA                      | homeowner's association                               |
| IPCC                     | Intergovernmental Panel on Climate Change             |

## ACRONYMS (cont.)

|                      |                                                                                                       |
|----------------------|-------------------------------------------------------------------------------------------------------|
| lbs                  | pounds                                                                                                |
| LOS                  | level of service                                                                                      |
| MPO                  | Metropolitan Planning Organization                                                                    |
| MT                   | metric ton                                                                                            |
| MT CO <sub>2</sub> e | metric tons carbon dioxide equivalent                                                                 |
| NAAQS                | National Ambient Air Quality Standard                                                                 |
| NO                   | nitrogen oxide                                                                                        |
| NO <sub>x</sub>      | oxides of nitrogen                                                                                    |
| NO <sub>2</sub>      | nitrogen dioxide                                                                                      |
| N <sub>2</sub> O     | nitrous oxide                                                                                         |
| O <sub>3</sub>       | Ozone                                                                                                 |
| OEHHA                | Office of Environmental Health Hazard Assessment                                                      |
| PFC                  | perfluorocarbon                                                                                       |
| PM <sub>2.5</sub>    | fine particulate matter (particulate matter with an aerodynamic diameter of 2.5 microns or less)      |
| PM <sub>10</sub>     | respirable particulate matter (particulate matter with an aerodynamic diameter of 10 microns or less) |
| ppb                  | parts per billion                                                                                     |
| ppm                  | parts per million                                                                                     |
| Project              | Brightwater Ranch Project                                                                             |
| RAQS                 | San Diego County Regional Air Quality Strategy                                                        |
| Roadway Model        | Road Construction Emissions Model                                                                     |
| RR                   | Rural Residential zoning                                                                              |
| RS                   | Single Family Residential zoning                                                                      |
| RTAC                 | Regional Targets Advisory Committee                                                                   |
| SANDAG               | San Diego Association of Governments                                                                  |
| SB                   | Senate Bill                                                                                           |
| SCAQMD               | South Coast Air Quality Management District                                                           |
| SDAB                 | San Diego Air Basin                                                                                   |
| SDAPCD               | San Diego Air Pollution Control District                                                              |
| sf                   | square feet                                                                                           |
| SF <sub>6</sub>      | Sulfur hexafluoride                                                                                   |
| SR                   | Semi-Rural Residential zoning                                                                         |
| SIP                  | State Implementation Plan                                                                             |
| SO <sub>x</sub>      | oxides of sulfur                                                                                      |

## ACRONYMS (cont.)

|                 |                                          |
|-----------------|------------------------------------------|
| SO <sub>2</sub> | sulfur dioxide                           |
| SR-4            | Semi-Rural land use designation          |
| TACs            | Toxic Air Contaminants                   |
| T-BACT          | Toxics-Best Available Control Technology |
| USEPA           | U.S. Environmental Protection Agency     |
| VMT             | vehicle miles traveled                   |
| VOCs            | volatile organic compounds               |
| VR-4.3          | Village Residential 4.3                  |
| WRCC            | Western Regional Climate Center          |



## EXECUTIVE SUMMARY

This report presents an assessment of potential air quality and greenhouse gas (GHG) impacts associated with construction and operation of the proposed Brightwater Ranch Project (Project).

The Project would result in emissions of air pollutants during both the construction phase and operational phase of the Project. Construction is assumed to begin in September 2015 and continue for approximately 30 months. Construction best management practices (BMPs) would be implemented by the Project, including U.S. Environmental Protection Agency (USEPA) Tier 2 engines for off-road construction equipment, installations of California Air Resources Board-approved diesel particulate filter (DPF) devices, and measures to minimize fugitive dust control emissions, such as watering twice per day during grading and stabilization of storage piles. The Project would comply with Rule 55, which requires that no visible dust is emitted beyond the property line for a period or periods aggregating more than 3 minutes in any 60-minute period, and would incorporate measures to minimize the track-out/carry-out of visible roadway dust. With the inclusion of these BMPs, emissions of all criteria pollutants would be below the daily thresholds during construction, and short-term construction impacts would be less than significant.

Operational emissions associated with the Project would include vehicular traffic and area sources such as energy use, landscaping, and the use of consumer products. The Project would incorporate energy-efficiency features that would exceed 2008 California Title 24 Energy Efficiency Standards by 25 percent and only natural gas fireplaces would be installed.

Criteria pollutant emissions would not exceed the daily screening level thresholds during Project operation.

Development of the Project would be consistent with the County of San Diego's (County) Regional Air Quality Strategy (RAQS) and would not result in any cumulatively considerable emissions of nonattainment air pollutants that would exceed the screening level thresholds.

The Project would not place sensitive receptors near major sources of air pollution or result in the exposure of sensitive receptors to substantial emissions of pollutants or odors. A quantitative screening-level health risk assessment was conducted to assess impacts to sensitive receptors from toxic air contaminants (TACs) during construction activities; impacts were found to be less than significant.

The Project's required compliance with applicable regulations, combined with Project design features, would reduce Project-related emissions by approximately 17 percent, from 1,494 to 1,235 metric tons carbon dioxide equivalent (MT CO<sub>2</sub>e) per year. Thus, the Project would not exceed thresholds pertaining to either project-level or cumulative GHG impacts, and impacts associated with GHG emissions would be less than significant. As no project-level or cumulative significant GHG impacts are anticipated for the Project, no mitigation measures are required.

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## 1.0 INTRODUCTION

### 1.1 Purpose of the Report

This report analyzes potential air quality and greenhouse gas (GHG) impacts associated with the proposed Brightwater Ranch Project (Project), which includes an evaluation of existing conditions in the Project vicinity, an assessment of potential impacts associated with Project construction, and an evaluation of Project operational impacts.

The air quality impact analysis contained in this report was prepared in accordance with the methodologies provided by the County of San Diego Planning & Development Services (PDS) in the *Guidelines for Determining Significance and Report Format and Content Requirements for Air Quality* (County 2007). The climate change analysis was prepared in accordance with the guidance provided in the *2015 GHG Guidance – Recommended Approach to Addressing Climate Change in CEQA Documents* (2015).

### 1.2 Project Location and Description

The Project site is located at the southern end of Wellington Hill Drive in the unincorporated community of Lakeside in San Diego County. The Project's County Assessor Parcel Number is 397-180-13. The County General Plan land use designation for the property is Village Residential 4.3 (VR-4.3), which allows 4.3 dwelling units per acre, and Semi-Rural 4 (SR-4), which allows up to one dwelling unit per four acres. Existing zoning for the parcel is RS (Single Family Residential, minimum 10,000 square feet [sf] lot size) and RR (Rural-Residential, minimum one-acre lot size). Adjacent to the Project site is a mobile home park, single-family homes, and open space (refer to Figure 1, *Regional Location Map*, and Figure 2, *Project Vicinity Map*).

The proposed Project is a residential subdivision that would develop a vacant 76.23-acre with 66 single-family residential lots, along with two Homeowner's Association- (HOA-) maintained lots and an approximately 48-acre biological open space lot. Residential lot sizes would range from approximately 10,000 sf to 35,000 sf, and would only be built within the RS-zoned and VR-4.3 designated portion of the site. The Project retains major landforms and preserves a majority of the site (approximately 63 percent) as open space. To access the proposed residences, Wellington Hill Drive will be extended through a four-way intersection on the Project's east side connecting to a cul-de-sac to the north, a loop road to the southwest, and the proposed Jackson Ridge Parkway to the southeast. Jackson Ridge Parkway will connect with the Interstate 8 business loop. Sewer service will connect through Wellington Hill Drive. A water line and 16-foot wide access road will be extended from the west side of the adjacent trailer park and along the Project's southern boundary. Refer to Figure 3, *Site Plan*.

### **1.3 Construction Best Management Practices and Project Design Features**

#### **1.3.1 Construction Measures**

The Project would incorporate best management practices (BMPs) during construction to reduce emissions of fugitive dust. SDAPCD Rule 55 – Fugitive Dust Control states that no dust and/or dirt shall leave the property line. SDAPCD Rule 55 requires the following:

- (1) **Airborne Dust Beyond the Property Line:** No person shall engage in construction or demolition activity subject to this rule in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than 3 minutes in any 60 minute period.
- (2) **Track-Out/Carry-Out:** Visible roadway dust as a result of active operations, spillage from transport trucks, erosion, or track-out/carry-out shall:
  - (i) be minimized by the use of any of the following or equally effective trackout/carry-out and erosion control measures that apply to the Project or operation:
    - (a) track-out grates or gravel beds at each egress point,
    - (b) wheel-washing at each egress during muddy conditions, soil binders, chemical soil stabilizers, geotextiles, mulching, or seeding; and for outbound transport trucks:
    - (c) using secured tarps or cargo covering, watering, or treating of transported material; and
  - (ii) be removed at the conclusion of each work day when active operations cease, or every 24 hours for continuous operations. If a street sweeper is used to remove any track-out/carry-out, only PM<sub>10</sub>-efficient street sweepers certified to meet the most current South Coast Air Quality Management District (SCAQMD) Rule 1186 requirements shall be used. The use of blowers for removal of track-out/carry-out is prohibited under any circumstances.

The control measures listed below are the BMPs that the Project would incorporate for dust control:

- A minimum of two applications of water during grading between dozer/scrapper passes.
- Paving, chip sealing, or chemical stabilization of internal roadways after completion of grading.
- Termination of grading if winds exceed 25 mph.
- Stabilization of dirt storage piles by chemical binders, tarps, fencing, or other erosion control.
- Hydroseeding of graded residential lots unless lots are developed immediately after grading.

All construction equipment would be required to meet United States Environmental Protection Agency (USEPA)-Certified Tier 2 emissions standards and would be outfitted with best available control technology (BACT) devices certified by the California Air Resources Board (CARB).

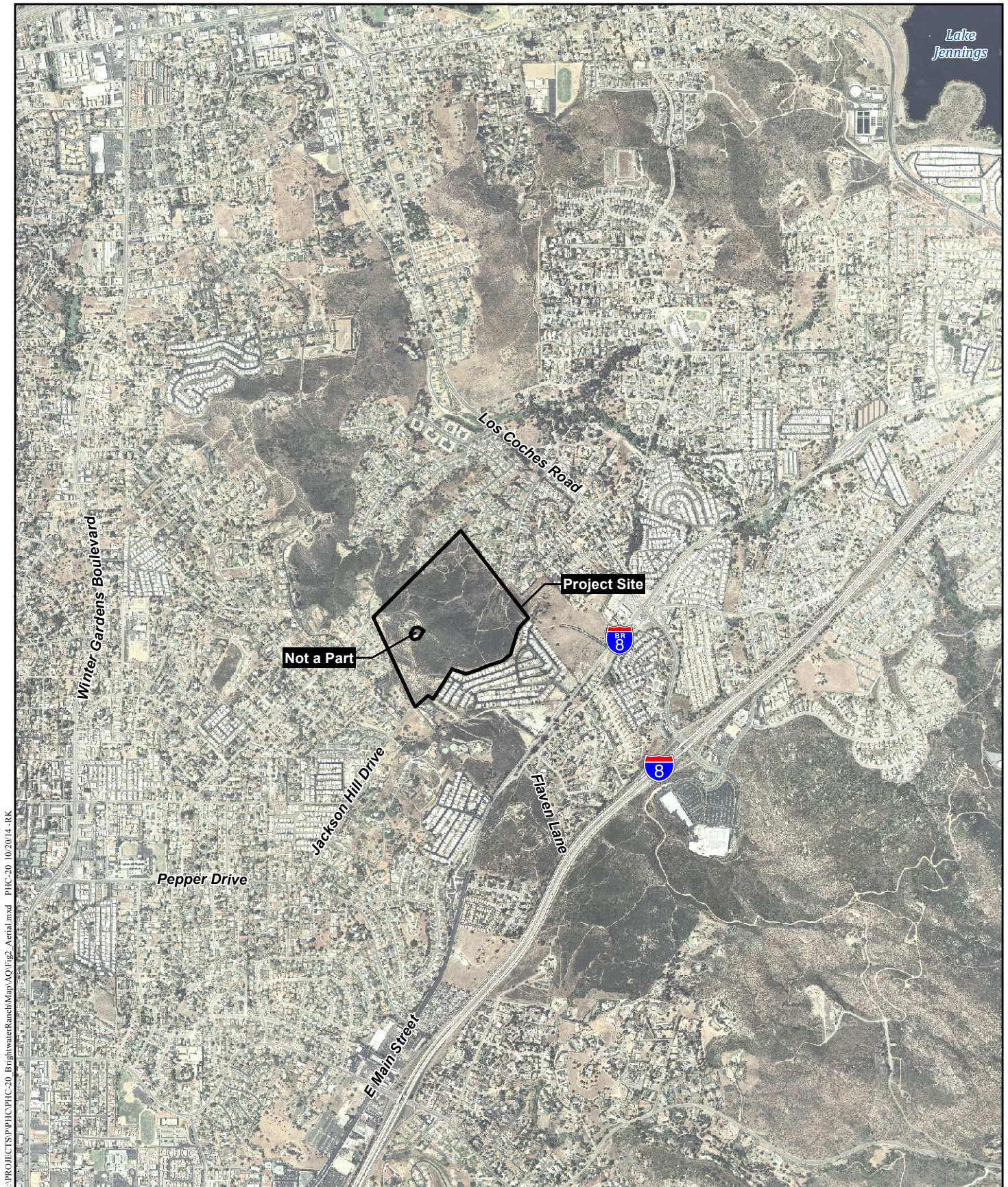


## Regional Location Map

BRIGHTWATER RANCH

Figure 1





## Project Vicinity Map

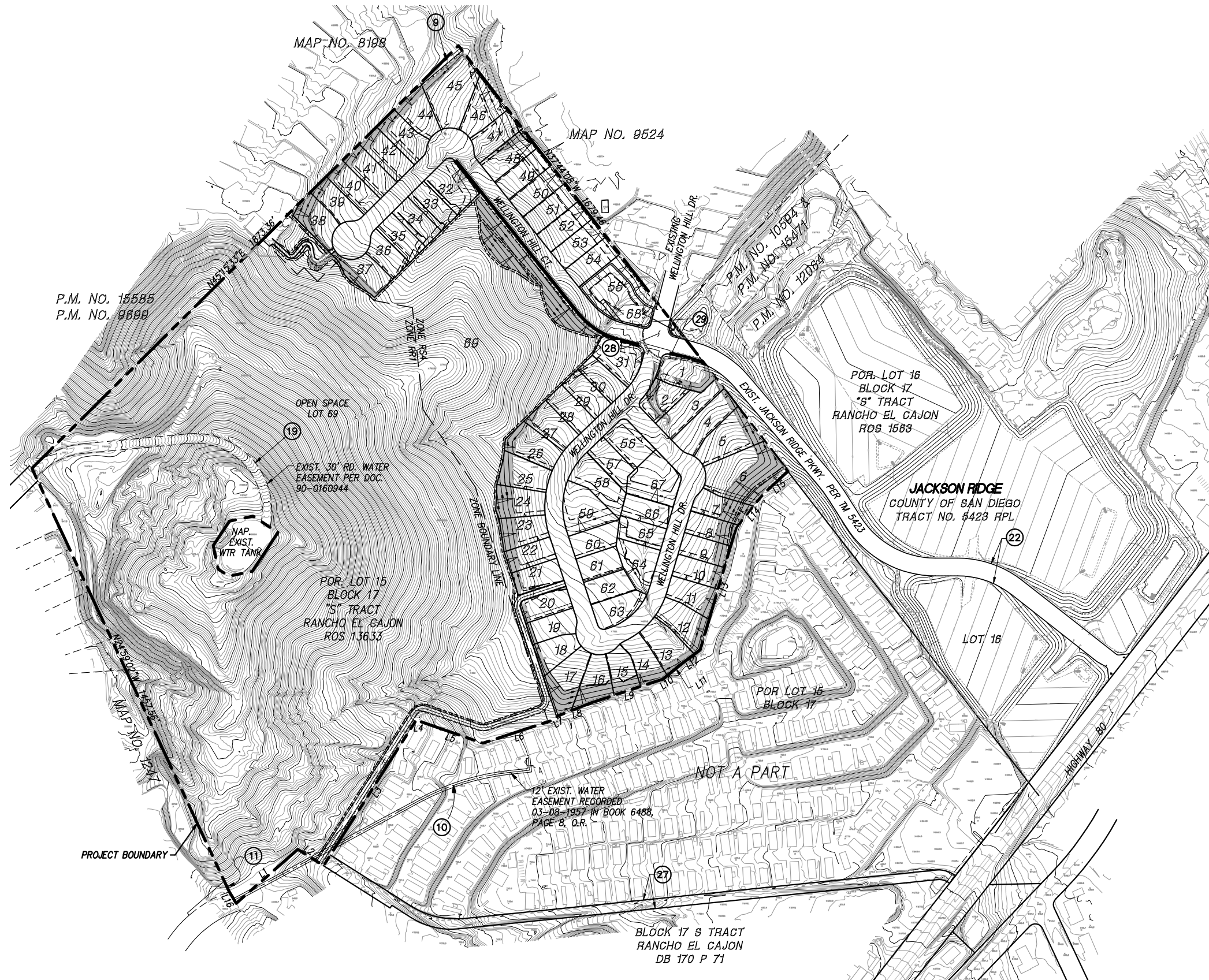
BRIGHTWATER RANCH

Figure 2



I:\PROJECTS\PHC\PHC-20 BrightwaterRanch\MapAQ\Fig3 SitePlan.mxd PHC-01 10/20/14 RK

Source: Project Design Consultants 2014



# Site Plan

BRIGHTWATER RANCH

Figure 3



Emission control devices such as diesel particulate filters (DPF) used by the contractor would achieve emissions reductions that would be equivalent to a minimum of a Level 2 diesel emissions control strategy in accordance with CARB regulations.

### **1.3.2 Project Design Features**

- Only natural gas fireplaces are to be installed in the proposed residences.
- Use of low-volatile organic compound (VOC) coatings in accordance with, or exceeding, proposed SDAPCD Rule 67.01
- Efficiency of at least 25 percent beyond 2008 Title 24 requirements, per the 2013 Title 24 and 2013 CALGreen Standards, including the following features:
  - o Building systems and lighting designed to meet State energy codes for high energy efficiency.
  - o Use of Energy Star appliances.

## **2.0 EXISTING CONDITIONS**

### **2.1 Existing Setting**

The Project site is located at the southern end of Wellington Hill Drive in the unincorporated community of Lakeside in the County. The Project site consists of some hilly terrain with elevations ranging from approximately 620 to 990 feet above mean sea level. The site is currently undeveloped.

Sensitive receptors are people that have an increased sensitivity to air quality contaminants, and sensitive receptor locations can include schools, parks, hospitals, and residential areas. Existing sensitive receptors within 0.25 mile of the Project vicinity include people living in residences surrounding the site. Wellington Hill Drive, Ridgerton Drive, and Melrose Lane end at the Project boundary and are located to the east, north, and west of the Project site; all of the streets are lined with single-family residences. Directly southeast of the site is Terrace View, a mobile-home park.

### **2.2 Climate and Meteorology**

The climate in southern California, including the San Diego Air Basin (SDAB), is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. Areas within 30 miles of the coast experience moderate temperatures and comfortable humidity.

The predominant wind direction in the vicinity of Project site is from the west and the average wind speed is approximately five miles per hour (Iowa Environmental Mesonet [IEM] 2014). The annual maximum temperature in the Project area is approximately 76 degrees Fahrenheit (°F), and the average minimum temperature is approximately 50°F. Total precipitation in the Project area averages approximately 12 inches annually. Precipitation occurs mostly during the



winter and relatively infrequently during the summer (Western Regional Climate Center [WRCC] 2014).

Due to its climate, the SDAB experiences frequent temperature inversions (temperature increases as altitude increases, which is the opposite of general patterns). Temperature inversions prevent air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere, creating a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and nitrogen dioxide (NO<sub>2</sub>) react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland, toward the foothills. During the fall and winter, air quality problems are created due to carbon monoxide (CO) and NO<sub>2</sub> emissions. High NO<sub>2</sub> levels usually occur during autumn or winter, on days with summer-like conditions.

## **2.3 Air Pollutants of Concern**

### **2.3.1 Criteria Pollutants**

Federal and state laws regulate air pollutants emitted into the ambient air by stationary and mobile sources. These regulated air pollutants are known as “criteria air pollutants” and are categorized as primary and secondary standards. Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. Criteria pollutants are defined by state and federal law as a risk to the health and welfare of the general public.

The following specific descriptions of health effects for air pollutants most likely to be associated with the construction and operation of a residential development are based on USEPA (USEPA 2007) and CARB (CARB 2009).

**Ozone.** Ozone (O<sub>3</sub>) is considered a photochemical oxidant, which is a chemical that is formed when VOCs and oxides of nitrogen (NO<sub>x</sub>), both by-products of fuel combustion, react in the presence of ultraviolet light. Ozone is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma, and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to ozone.

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

**Nitrogen Dioxide.** NO<sub>2</sub> is also a byproduct of fuel combustion, and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO<sub>2</sub> is a respiratory irritant and may affect those with

existing respiratory illness, including asthma. NO<sub>2</sub> can also increase the risk of respiratory illness.

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

**Sulfur Dioxide.** Sulfur Dioxide (SO<sub>2</sub>) is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO<sub>2</sub> are found near large industrial sources. SO<sub>2</sub> is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO<sub>2</sub> can cause respiratory illness and aggravate existing cardiovascular disease.

### 2.3.2 Toxic Air Contaminants

The Health and Safety Code (§ 39655, subd. (a).) defines a toxic air contaminant (TAC) as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health.” A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the Federal Clean Air Act (CAA) (42 United States Code Sec. 7412[b]) is a TAC. Under State law, the California Environmental Protection Agency (CalEPA), acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

## 2.4 Regulatory Setting

Air quality is defined by ambient air concentrations of specific pollutants identified by the USEPA to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the Federal CAA of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several criteria pollutants, which are introduced above. Table 1, *Ambient Air Quality Standards*, shows the federal and state ambient air quality standards for these pollutants.

**Table 1**  
**AMBIENT AIR QUALITY STANDARDS**

| Pollutant                                                 | Averaging Time          | California Standards <sup>1</sup>     |                                                        | Federal Standards <sup>2</sup>                                           |                                      |                                                                     |
|-----------------------------------------------------------|-------------------------|---------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------|
|                                                           |                         | Concentration <sup>3</sup>            | Method <sup>4</sup>                                    | Primary <sup>3,5</sup>                                                   | Secondary <sup>3,6</sup>             | Method <sup>7</sup>                                                 |
| Ozone                                                     | 1-Hour                  | 0.09 ppm<br>(180 µg/m <sup>3</sup> )  | Ultraviolet Photometry                                 | -                                                                        | Same as Primary Standard             | Ultraviolet Photometry                                              |
|                                                           | 8-Hour                  | 0.070 ppm<br>(137 µg/m <sup>3</sup> ) |                                                        | 0.075 ppm<br>(147 µg/m <sup>3</sup> )                                    |                                      |                                                                     |
| Respirable Particulate Matter (PM <sub>10</sub> )         | 24-Hour                 | 50 µg/m <sup>3</sup>                  | Gravimetric or Beta Attenuation                        | 150 µg/m <sup>3</sup>                                                    | Same as Primary Standard             | Inertial Separation and Gravimetric Analysis                        |
|                                                           | Annual Arithmetic Mean  | 20 µg/m <sup>3</sup>                  |                                                        | -                                                                        |                                      |                                                                     |
| Fine Particulate Matter (PM <sub>2.5</sub> ) <sup>8</sup> | 24-Hour                 | -                                     | -                                                      | 35 µg/m <sup>3</sup>                                                     | Same as Primary Standard             | Inertial Separation and Gravimetric Analysis                        |
|                                                           | Annual Arithmetic Mean  | 12 µg/m <sup>3</sup>                  | Gravimetric or Beta Attenuation                        | 12 µg/m <sup>3</sup>                                                     |                                      |                                                                     |
| Carbon Monoxide (CO)                                      | 1-Hour                  | 20 ppm<br>(23 mg/m <sup>3</sup> )     | Non-Dispersive Infrared Photometry (NDIR)              | 35 ppm<br>(40 mg/m <sup>3</sup> )                                        | -                                    | Non-Dispersive Infrared Photometry (NDIR)                           |
|                                                           | 8-Hour                  | 9.0 ppm<br>(10 mg/m <sup>3</sup> )    |                                                        | 9 ppm<br>(10 mg/m <sup>3</sup> )                                         | -                                    |                                                                     |
|                                                           | 8-Hour (Lake Tahoe)     | 6 ppm (7 mg/m <sup>3</sup> )          |                                                        | -                                                                        | -                                    |                                                                     |
| Nitrogen Dioxide (NO <sub>2</sub> ) <sup>9</sup>          | 1-Hour                  | 0.18 ppm<br>(339 µg/m <sup>3</sup> )  | Gas Phase Chemiluminescence                            | 0.100 ppm<br>(188 µg/m <sup>3</sup> )                                    | -                                    | Gas Phase Chemiluminescence                                         |
|                                                           | Annual Arithmetic Mean  | 0.030 ppm<br>(57 µg/m <sup>3</sup> )  |                                                        | 0.053 ppm<br>(100 µg/m <sup>3</sup> )                                    | Same as Primary Standard             |                                                                     |
| Sulfur Dioxide (SO <sub>2</sub> ) <sup>10</sup>           | 1-Hour                  | 0.25 ppm<br>(655 µg/m <sup>3</sup> )  | Ultraviolet Fluorescence                               | 75 ppb<br>(196 µg/m <sup>3</sup> )                                       | -                                    | Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method) |
|                                                           | 3-Hour                  | -                                     |                                                        | -                                                                        | 0.5 ppm<br>(1300 µg/m <sup>3</sup> ) |                                                                     |
|                                                           | 24-Hour                 | 0.04 ppm (105 µg/m <sup>3</sup> )     |                                                        | 0.14 ppm<br>(365 µg/m <sup>3</sup> )<br>(for certain areas) <sup>9</sup> | -                                    |                                                                     |
|                                                           | Annual Arithmetic Mean  | -                                     |                                                        | 0.030 ppm<br>(80 µg/m <sup>3</sup> )<br>(for certain areas) <sup>9</sup> | -                                    |                                                                     |
| Lead <sup>11,12</sup>                                     | 30-Day Average          | 1.5 µg/m <sup>3</sup>                 | Atomic Absorption                                      | -                                                                        | -                                    | -<br>High Volume Sampler and Atomic Absorption                      |
|                                                           | Calendar Quarter        | -                                     |                                                        | 1.5 µg/m <sup>3</sup>                                                    | Same as Primary Standard             |                                                                     |
|                                                           | Rolling 3-Month Average | -                                     |                                                        | 0.15 µg/m <sup>3</sup>                                                   |                                      |                                                                     |
| Visibility Reducing Particles <sup>13</sup>               | 8-Hour                  | See footnote 12                       | Beta Attenuation and Transmittance through Filter Tape | No Federal Standards                                                     |                                      |                                                                     |
| Sulfates                                                  | 24-Hour                 | 25 µg/m <sup>3</sup>                  | Ion Chromatography                                     |                                                                          |                                      |                                                                     |
| Hydrogen Sulfide                                          | 1-Hour                  | 0.03 ppm (42 µg/m <sup>3</sup> )      | Ultraviolet Fluorescence                               |                                                                          |                                      |                                                                     |
| Vinyl Chloride <sup>11</sup>                              | 24-Hour                 | 0.01 ppm (26 µg/m <sup>3</sup> )      | Gas Chromatography                                     |                                                                          |                                      |                                                                     |

## Notes for Table 1:

- <sup>1</sup> California standards for ozone, CO (except Lake Tahoe), SO<sub>2</sub> (1 and 24 hour), NO<sub>2</sub>, suspended particulate matter—PM<sub>10</sub>, PM<sub>2.5</sub>, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
- <sup>2</sup> National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM<sub>10</sub>, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact USEPA for further clarification and current federal policies.
- <sup>3</sup> Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- <sup>4</sup> Any equivalent procedure which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
- <sup>5</sup> National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
- <sup>6</sup> National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
- <sup>7</sup> Reference method as described by the USEPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the USEPA.
- <sup>8</sup> On December 14, 2012, the national annual PM<sub>2.5</sub> primary standard was lowered from 15 µg/m<sup>3</sup> to 12.0 µg/m<sup>3</sup>. The existing national 24-hour PM<sub>2.5</sub> standards (primary and secondary) were retained at 35 µg/m<sup>3</sup>, as was the annual secondary standard of 15 µg/m<sup>3</sup>. The existing 24-hour PM<sub>10</sub> standards (primary and secondary) of 150 µg/m<sup>3</sup> also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
- <sup>9</sup> To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards, the units can be converted from ppb to ppm
- <sup>10</sup> On June 2, 2010, a new 1-hour SO<sub>2</sub> standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-hour average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO<sub>2</sub> national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards have been approved.
- <sup>11</sup> CARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
- <sup>12</sup> The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
- <sup>13</sup> In 1989, CARB converted both the general statewide 10-mile visibility standards and the Lake Tahoe 20-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter;  
 mg/m<sup>3</sup> = milligrams per cubic meter  
 Source: CARB 2013

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. CARB has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988 (CCAA), and also has established CAAQS for additional pollutants, including sulfates, H<sub>2</sub>S, vinyl chloride, and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be “nonattainment areas” for that pollutant. On April 30, 2012, the SDAB was classified as a marginal nonattainment area for the 8-hour NAAQS for ozone. The SDAB is an attainment area under the NAAQS for all other criteria pollutants. The SDAB currently falls under a national “maintenance plan” for CO, following a 1998 re-designation as a CO attainment area (SDAPCD 2010). The SDAB is currently classified as a nonattainment area under the CAAQS for ozone (serious nonattainment), PM<sub>10</sub>, and PM<sub>2.5</sub>.



The SDAPCD is the local agency responsible for the administration and enforcement of air quality regulations for the County. The SDAPCD and San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The County's RAQS was initially adopted in 1991, and is updated on a triennial basis. The most recent version of the RAQS was adopted by the SDAPCD in 2009. The local RAQS, in combination with those from all other California nonattainment areas with serious (or worse) air quality problems, is submitted to CARB, which develops the California State Implementation Plan (SIP). The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The current federal and state attainment status (Table 2, *Federal and State Air Quality Designation*) for San Diego County is as follows:

| <b>Table 2<br/>FEDERAL AND STATE AIR QUALITY DESIGNATION</b> |                            |                          |
|--------------------------------------------------------------|----------------------------|--------------------------|
| <b>Criteria Pollutant</b>                                    | <b>Federal Designation</b> | <b>State Designation</b> |
| O <sub>3</sub> (1-hour)                                      | (No federal standard)      | Nonattainment            |
| O <sub>3</sub> (8-hour)                                      | Nonattainment              | Nonattainment            |
| CO                                                           | Maintenance                | Attainment               |
| PM <sub>10</sub>                                             | Unclassifiable             | Nonattainment            |
| PM <sub>2.5</sub>                                            | Attainment                 | Nonattainment            |
| NO <sub>2</sub>                                              | Attainment                 | Attainment               |
| SO <sub>2</sub>                                              | Attainment                 | Attainment               |
| Lead                                                         | Attainment                 | Attainment               |
| Sulfates                                                     | (No federal standard)      | Attainment               |
| Hydrogen Sulfide                                             | (No federal standard)      | Unclassifiable           |
| Visibility                                                   | (No federal standard)      | Unclassifiable           |

Source: SDAPCD 2012 and USEPA 2013a

## 2.5 Background Air Quality

The SDAPCD operates a network of ambient air monitoring stations throughout the County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest ambient monitoring stations to the Project site is the El Cajon monitoring station located at 1145 Redwood Avenue. Air quality data for this monitoring station are shown in Table 3, *Ambient Background Concentrations*.

Monitoring data at the El Cajon station has had acceptable levels of the criteria air pollutants CO (8-hour), NO<sub>2</sub>, SO<sub>2</sub>, and PM<sub>10</sub> for 2011 to 2013. One violation of the state 1-hour standard for ozone occurred in 2011. Violations of the state and federal 8-hour standards for ozone have occurred in 2011 to 2013 (up to three days for state and one for federal). One violation of the

federal PM<sub>2.5</sub> standard occurred during 2012. Two violations of the state 1-hour CO standard occurred in 2013.

| <b>Table 3</b>                               |             |             |             |
|----------------------------------------------|-------------|-------------|-------------|
| <b>AMBIENT BACKGROUND CONCENTRATIONS</b>     |             |             |             |
| <b>Air Pollutant</b>                         | <b>2011</b> | <b>2012</b> | <b>2013</b> |
| <b>Ozone</b>                                 |             |             |             |
| Max 1-hour (ppm)                             | 0.105       | 0.086       | 0.090       |
| Days > CAAQS (0.09 ppm)                      | 1           | 0           | 0           |
| Max 8-hour (ppm)                             | 0.087       | 0.074       | 0.078       |
| Days > NAAQS (0.075 ppm)                     | 1           | 0           | 1           |
| Days > CAAQS (0.070 ppm)                     | 1           | 1           | 3           |
| <b>Particulate Matter (PM<sub>10</sub>)</b>  |             |             |             |
| Max Daily (µg/m <sup>3</sup> )               | 41.9        | 47.2        | 41.1        |
| Days > NAAQS (150 µg/m <sup>3</sup> )        | 0           | 0           | 0           |
| Days > CAAQS (50 µg/m <sup>3</sup> )         | 0           | 0           | 0           |
| <b>Particulate Matter (PM<sub>2.5</sub>)</b> |             |             |             |
| Max Daily (µg/m <sup>3</sup> )               | 29.7        | 37.7        | 23.1        |
| Days > NAAQS (35 µg/m <sup>3</sup> )         | 0           | 1           | 0           |
| <b>Nitrogen Dioxide (NO<sub>2</sub>)</b>     |             |             |             |
| Max 1-hour (ppm)                             | 0.046       | 0.045       | 0.045       |
| Days > NAAQS (0.10 ppm)                      | 0           | 0           | 0           |
| Days > CAAQS (0.18 ppm)                      | 0           | 0           | 0           |
| <b>Carbon Monoxide (CO)</b>                  |             |             |             |
| Max 8-hour (ppm)                             | 1.46        | 1.86        | No data     |
| Days > NAAQS (9 ppm)                         | 0           | 0           | 0           |
| Days > CAAQS (9 ppm)                         | 0           | 0           | 0           |
| Max 1-hour (ppm)                             | 7.7         | 4.4         | 25.6        |
| Days > NAAQS (35 ppm)                        | 0           | 0           | 0           |
| Days > CAAQS (20 ppm)                        | 0           | 0           | 2           |
| <b>Sulfur Dioxide (SO<sub>2</sub>)</b>       |             |             |             |
| Max Daily Measurement (ppm)                  | 0.001       | 0.001       | 0.001       |
| Days > CAAQS (0.04 ppm)                      | 0           | 0           | 0           |

Sources: CARB 2014 ([www.arb.ca.gov](http://www.arb.ca.gov)) (all pollutants except 1-hour CO),

USEPA 2014b ([http://www.epa.gov/airdata/ad\\_rep\\_con.html](http://www.epa.gov/airdata/ad_rep_con.html)) (1-hour CO)

Notes: > = exceeding; ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter; Standard Mean = Annual Arithmetic Mean

## 3.0 SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGIES

### 3.1 Significance Criteria

The County has approved guidelines for determining significance for Air Quality impacts (County 2007), based on Appendix G.III of the State California Environmental Quality Act (CEQA) Guidelines. The County guidelines state that a project would have a significant air quality impact if it would:

1. Conflict with or obstruct the implementation of the San Diego RAQS or applicable portions of the SIP;
2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation;
3. Result in a cumulatively considerable net increase for which the SDAB is in nonattainment of NAAQS or CAAQS;
4. Expose sensitive receptors (including, but not limited to, residences, schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations;
5. Create objectionable odors affecting a substantial number of people.

To determine whether a project would (a) result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, or (b) result in a cumulatively considerable net increase of  $PM_{10}$  or exceed quantitative thresholds for ozone precursors (i.e., oxides of  $NO_x$  and VOCs), project emissions may be evaluated based on the quantitative emission thresholds established by the SDAPCD. As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 for the preparation of Air Quality Impact Assessments (AQIAs). The County has also adopted the SCAQMD's screening threshold of 55 pounds per day or 10 tons per year as a significance threshold for  $PM_{2.5}$ .

For CEQA purposes, these screening criteria can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality. The screening thresholds are included in Table 4, *Screening-level Thresholds for Air Quality Impact Analysis*.

**Table 4**  
**SCREENING-LEVEL THRESHOLDS FOR AIR QUALITY IMPACT ANALYSIS**

| Pollutant                                         | Total Emissions                               |                |               |
|---------------------------------------------------|-----------------------------------------------|----------------|---------------|
| Construction Emissions (Pounds per Day)           |                                               |                |               |
| Respirable Particulate Matter (PM <sub>10</sub> ) | 100                                           |                |               |
| Fine Particulate Matter (PM <sub>2.5</sub> )      | 55                                            |                |               |
| Oxides of Nitrogen (NO <sub>x</sub> )             | 250                                           |                |               |
| Oxides of Sulfur (SO <sub>x</sub> )               | 250                                           |                |               |
| Carbon Monoxide (CO)                              | 550                                           |                |               |
| Volatile Organic Compounds (VOCs)                 | 75                                            |                |               |
| Operational Emissions                             |                                               |                |               |
|                                                   | Pounds Per Hour                               | Pounds per Day | Tons per Year |
| Respirable Particulate Matter (PM <sub>10</sub> ) | ---                                           | 100            | 15            |
| Fine Particulate Matter (PM <sub>2.5</sub> )      | ---                                           | 55             | 10            |
| Oxides of Nitrogen (NO <sub>x</sub> )             | 25                                            | 250            | 40            |
| Oxides of Sulfur (SO <sub>x</sub> )               | 25                                            | 250            | 40            |
| Carbon Monoxide (CO)                              | 100                                           | 550            | 100           |
| Lead and Lead Compounds                           | ---                                           | 3.2            | 0.6           |
| Volatile Organic Compounds (VOC)                  | ---                                           | 75             | 13.7          |
| Toxic Air Contaminant Emissions                   |                                               |                |               |
| Excess Cancer Risk                                | 1 in 1 million<br>10 in 1 million with T-BACT |                |               |
| Non-Cancer Hazard                                 | 1.0                                           |                |               |

Source: SDACPD Rule 20.2 and Rule 1210.

T-BACT = Toxics-Best Available Control Technology

### 3.2 Methodology

The air quality impact analysis contained in this report was prepared in accordance with the methodologies provided by the County in the *Guidelines for Determining Significance and Report Format and Content Requirements for Air Quality* (County 2007).

Criteria pollutant and ozone precursor emissions from Project construction and operation are assessed using the California Emission Estimator Model (CalEEMod), Version 2013.2.2 (SCAQMD 2013). CalEEMod is a computer model developed by SCAQMD with the input of several air quality management and pollution control districts to estimate criteria air pollutant emissions from various urban land uses (SCAQMD 2013). CalEEMod has the ability to calculate both mobile (i.e., vehicular) and area or stationary source emissions. CalEEMod allows land use selections that include project land use types, sizes, and metric specifics.

### 3.2.1 Construction Assumptions

CalEEMod incorporates CARB's EMFAC2011 model for on-road vehicle emissions and the OFFROAD2011 model for off-road vehicle emissions (CARB 2012 and 2011). CalEEMod is designed to model construction emissions for land development projects and allows for the input of project-specific information, such as the number of equipment, hours of operations, duration of construction activities, and selection of emission control measures. The analysis assessed maximum daily emissions from individual construction activities, including site preparation, grading, backbone infrastructure (i.e., utility installation), building construction, paving, and architectural coating.

The Project would include the construction of 66 new residential units and associated roadways within the development.

Construction would require heavy equipment during mass grading, backbone infrastructure installations, building construction, and paving. Construction equipment estimates are based on default values in CalEEMod, Version 2013.2.2 model, as well as typical equipment used for the backbone infrastructure phase. Table 5, *Construction Equipment Assumptions*, presents a summary of the assumed equipment that would be involved in each stage of construction.

| <b>Table 5<br/>CONSTRUCTION EQUIPMENT ASSUMPTIONS</b> |                           |               |
|-------------------------------------------------------|---------------------------|---------------|
| <b>Construction Phase</b>                             | <b>Equipment</b>          | <b>Number</b> |
| Site Preparation                                      | Rubber Tired Dozers       | 3             |
|                                                       | Tractors/Loaders/Backhoes | 4             |
| Grading                                               | Excavators                | 2             |
|                                                       | Graders                   | 1             |
|                                                       | Rubber Tired Dozers       | 1             |
|                                                       | Scrapers                  | 2             |
|                                                       | Tractors/Loaders/Backhoes | 2             |
|                                                       | Off-Highway Trucks        | 1             |
| Backbone Infrastructure                               | Tractors/Loaders/Backhoes | 1             |
|                                                       | Trenchers                 | 1             |
|                                                       | Pavers                    | 2             |
| Paving                                                | Paving Equipment          | 2             |
|                                                       | Rollers                   | 2             |
| Building Construction                                 | Cranes                    | 1             |
|                                                       | Forklifts                 | 3             |
|                                                       | Generator sets            | 1             |
|                                                       | Tractors/Loaders/Backhoes | 3             |
|                                                       | Welders                   | 1             |
| Architectural Coating                                 | Air Compressors           | 1             |

Source: CalEEMod and Roadway Model (output data, including equipment horsepower, is provided in Appendix A).

Note: All equipment was assumed to operate 8 hours a day, with the exception of cranes and tractors/loaders/backhoes during building construction (7 hours per day) and air compressors (6 hours per day).



All Project-related construction equipment associated with the Project shall meet USEPA-Certified Tier 2 emissions standards. In addition, all construction equipment would be outfitted with BACT devices certified by CARB. Any emissions control device (e.g., DPFs) used by the contractor would achieve emissions reductions that are no less than what could be achieved by a Level 2 diesel emissions control strategy in accordance with CARB regulations. These Project design features are incorporated into the modeling for the unmitigated construction analysis.

The construction schedule was provided by the Project developers. A backbone infrastructure phase, which was not included as a default, was added to the model to account for necessary Project trenching and utility installation. Modeling assumed Project construction would begin in the September 2015 and continue for approximately 30 months (refer to Table 6, *Anticipated Construction Schedule*). A complete listing of the assumptions used in the analysis and model output is provided in Appendix A of this report.

| <b>Table 6</b><br><b>ANTICIPATED CONSTRUCTION SCHEDULE</b> |                     |           |                        |
|------------------------------------------------------------|---------------------|-----------|------------------------|
| Construction Activity                                      | Construction Period |           |                        |
|                                                            | Start               | End       | Number of Working Days |
| Site Preparation                                           | 09/01/2015          | 9/15/2015 | 11                     |
| Grading                                                    | 09/16/2015          | 1/1/2016  | 78                     |
| Backbone Infrastructure                                    | 01/02/2016          | 4/1/2016  | 65                     |
| Paving                                                     | 01/02/2016          | 4/1/2016  | 65                     |
| Building Construction                                      | 04/02/2016          | 3/30/2018 | 520                    |
| Architectural Coating                                      | 03/05/2018          | 3/30/2018 | 20                     |

Source: Project Design Consultants

Although it was assumed that all of the dust control measures listed in Section 1.3 of this report would be implemented, to model the most conservative construction estimates only application of water during grading was taken into consideration. Based on CalEEMod, Version 2013.2.2, the control efficiency for watering two times daily is 55 percent. The Project proposes balanced grading activity, which means that no soil would be transported off site for disposal nor would soil be transported on site for use in construction activities.

### 3.2.1.1 Health Risks from Diesel Particulate Matter

To evaluate whether Project construction activities could pose a significant impact to nearby sensitive receptors, a health risk evaluation of diesel PM was conducted using the USEPA SCREEN3 model. The risks associated with exposure to substances with carcinogenic effects are typically evaluated based on a lifetime of chronic exposure, which is defined in the California Office of Environmental Health Hazard Assessment (OEHHA) guidelines, *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, as 24 hours per day, 7 days per week, 365 days per year, for 70 years. Diesel exhaust particulate matter would be emitted during construction due to the operation of heavy equipment at the site. The

USEPA's approved air dispersion model, SCREEN3, was used to estimate the downwind impacts at the closest receptors to the construction site. The model was run using worst case meteorological conditions. Risks were estimated using the OEHHA unit risk factor for diesel PM, which is an upper-bound cancer risk estimate based on 70 years of exposure. Because the unit risk factor is based on 70 years (25,550 days) of exposure for 24 hours per day, 365 days per year, the diesel PM results of the analysis were scaled down to 30 months to account for exposure for the duration of the total construction duration period. Further details relative to the health risk methodology are included in Appendix A.

### **3.2.2 Operational Assumptions**

The model estimates Project-generated, long-term regional area-source and mobile-source emissions of criteria air pollutants and ozone precursors. Operational emissions from area sources include the combustion of natural gas for heating and hot water, engine emissions from landscape maintenance equipment, and VOC emissions from repainting of buildings. Residential units would only have natural gas fireplaces.

Operational emissions from mobile-source emissions are associated with Project-related vehicle trip generation. It is estimated for the proposed Project that approximately 792 average daily trips (ADT) would be generated based upon SANDAG traffic generation rates of 12 ADT per dwelling unit for an "Estate, Urban or Rural" land use (SANDAG 2002).

CalEEMod default motor vehicle emission rates are based on CARB's EMFAC statewide emission factors for the San Diego County region which are incorporated into CalEEMod. Default vehicle speeds, trip lengths, trip purpose, and trip type percentages for single family homes were used. Model output data sheets are included in Appendix A.

## **4.0 PROJECT IMPACT ANALYSIS**

The Project would result in both construction and operational emissions. Construction emissions include short-term emissions associated with mass grading, infrastructure installation, roadways, and structure development from the Project. Operational emissions include long-term emissions associated with the Project, including stationary and mobile sources.

### **4.1 Conformance to the Regional Air Quality Strategy**

*Would the Project conflict with or obstruct the implementation of the San Diego RAQS or applicable portions of the SIP?*

#### **4.1.1 Guidelines for the Determination of Significance**

Projects within the County that propose development consistent with the growth anticipated by the County General Plan (County 2011) would be consistent with the RAQS. In the event that a project proposes development that is less dense than anticipated within the General Plan, the project would likewise be consistent with the RAQS. If a project proposes development that is

greater than that anticipated in the County General Plan and SANDAG's growth projections upon which the RAQS is based, the project would be in conflict with the RAQS and SIP, and could have a potentially significant impact on air quality.

#### **4.1.2 Significance of Impacts Prior to Mitigation**

The proposed Project would conform with applicable requirements related to the County General Plan land use designations and zoning categories as the Project's described lot sizes and densities would be consistent with RS zoning and VR-4.3 land use designation requirements. Based on the described conformance with applicable land use and zoning criteria, the proposed Project would be in conformance with the County General Plan (2011) and would therefore be consistent with the RAQS. Impacts associated with the RAQS would not be significant.

#### **4.1.3 Mitigation Measures and Design Considerations**

No additional design consideration or mitigation is required.

#### **4.1.4 Conclusions**

The proposed Project would not conflict with or obstruct implementation of the RAQS or SIP. Therefore, no impact would occur.

### **4.2 Conformance to Federal and State Ambient Air Quality Standards**

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

#### **4.2.1 Guidelines for the Determination of Significance**

To determine whether a project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, project emissions may be evaluated based on the quantitative emission thresholds established by the SDAPCD (as shown in Table 4).

#### **4.2.2 Significance of Impacts Prior to Mitigation**

##### **4.2.2.1 Construction Impacts**

Emissions related to the construction of the Project would be temporary. Table 7, *Estimated Construction Emissions*, provides a summary of the daily construction emission estimates by calendar year. As noted above, it was assumed that dust control measures (watering a minimum of two times daily) would be employed to reduce emissions of fugitive dust during site grading. Per the Project developer, construction is assumed to begin in the September 2015 and continue for approximately 30 months, with some construction activities occurring sequentially (site preparation, grading) and some simultaneously (backbone infrastructure and paving, building

construction and architectural coating). The resultant emissions from each activity are compared to the daily emission thresholds to determine significance.

| <b>Table 7</b>                          |                         |                       |           |                       |                        |                         |
|-----------------------------------------|-------------------------|-----------------------|-----------|-----------------------|------------------------|-------------------------|
| <b>ESTIMATED CONSTRUCTION EMISSIONS</b> |                         |                       |           |                       |                        |                         |
| <b>Construction Year</b>                | <b>VOC</b>              | <b>NO<sub>x</sub></b> | <b>CO</b> | <b>SO<sub>2</sub></b> | <b>PM<sub>10</sub></b> | <b>PM<sub>2.5</sub></b> |
|                                         | <b>Pounds (lbs)/day</b> |                       |           |                       |                        |                         |
| 2015                                    | 1.97                    | 51.05                 | 38.93     | 0.06                  | 8.76                   | 4.99                    |
| 2016                                    | 1.97                    | 51.04                 | 38.84     | 0.06                  | 4.76                   | 2.35                    |
| 2017                                    | 1.61                    | 26.02                 | 24.36     | 0.04                  | 1.26                   | 0.69                    |
| 2018                                    | 38.90                   | 28.19                 | 26.29     | 0.05                  | 1.43                   | 0.77                    |
| Screening-Level Thresholds              | 75                      | 250                   | 550       | 250                   | 100                    | 55                      |
| Exceedance?                             | <b>No</b>               | <b>No</b>             | <b>No</b> | <b>No</b>             | <b>No</b>              | <b>No</b>               |

Notes:

1. Emissions were calculated for both summer and winter months; the highest value is shown here.
2. USEPA Tier 2 off-road equipment and Level 2 DPFs were assumed to be utilized for Project construction, per Project design feature.
3. Fugitive dust measures were applied to control PM<sub>10</sub> and PM<sub>2.5</sub> dust emissions.
4. Full CalEEMod model outputs are presented in Appendix A; Project unmitigated emissions are shown under the subheadings for Mitigated Construction Emissions in this appendix as CalEEMod results include all manually entered Project design features and regulatory requirements as mitigation.

As shown in Table 7, with implementation of construction BMPs, emissions of all criteria pollutants would be below the daily thresholds during construction. Therefore, construction of the Project would not conflict with the NAAQS or CAAQS, and impacts would be less than significant.

#### **4.2.2.2 Operational Impacts**

The main operational emissions sources associated with the Project are associated with traffic; emissions associated with area sources such as energy use, landscaping, and the use of fireplaces at the residences also would be generated.

Table 8 (*Project Operational Emissions At Full Buildout – 2018*) presents a summary of maximum daily operational emissions for the proposed Project at full buildout, and compares these emissions with the County significance criteria. The full CalEEMod model outputs are presented in Appendix A.

| <b>Table 8</b><br><b>PROJECT OPERATIONAL EMISSIONS AT FULL BUILDOUT – 2018</b> |              |                 |               |                 |                  |                   |
|--------------------------------------------------------------------------------|--------------|-----------------|---------------|-----------------|------------------|-------------------|
| Category                                                                       | VOC          | NO <sub>x</sub> | CO            | SO <sub>2</sub> | PM <sub>10</sub> | PM <sub>2.5</sub> |
|                                                                                | lbs/day      |                 |               |                 |                  |                   |
| Area                                                                           | 5.564        | 0.064           | 5.503         | 0.000           | 0.119            | 0.118             |
| Energy                                                                         | 0.043        | 0.370           | 0.157         | 0.002           | 0.030            | 0.030             |
| Mobile                                                                         | 2.804        | 6.260           | 28.592        | 0.071           | 4.868            | 1.354             |
| <b>TOTAL</b>                                                                   | <b>8.411</b> | <b>6.694</b>    | <b>34.252</b> | <b>0.074</b>    | <b>5.017</b>     | <b>1.502</b>      |
| Screening-Level Thresholds                                                     | 75           | 250             | 550           | 250             | 100              | 55                |
| Exceedance?                                                                    | <b>No</b>    | <b>No</b>       | <b>No</b>     | <b>No</b>       | <b>No</b>        | <b>No</b>         |

Notes: (1) Emissions were calculated for both summer and winter months; the highest value is shown here.

(2) The total presented is the sum of the unrounded values. The CalEEMod model outputs are presented in Appendix A.

Operational emissions for the proposed Project would be substantially below the significance threshold for all criteria pollutants. Therefore, no significant air quality impact is anticipated, and mitigation measures are not required.

#### 4.2.2.3 Mitigation Measures and Design Considerations

As described in Section 1.3, all off-road construction equipment associated with Project construction would be required to meet the minimum application of USEPA Tier 2 engines, install CARB-approved DPF devices, and apply BMPs to control and minimize emissions. The Project would incorporate measures to minimize fugitive dust control emissions, such as watering twice per day during grading and stabilization of storage piles. The Project would comply with Rule 55, which requires that no visible dust is emitted beyond the property line for a period or periods aggregating more than 3 minutes in any 60 minute period, and would incorporate measures to minimize the track-out/carry-out of visible roadway dust.

The Project would incorporate energy-efficiency features that would exceed 2008 California Title 24 Energy Efficiency Standards by 25 percent. The installation of natural gas fireplaces would prevent residences from using wood as fuel for fire that would reduce the generation of particulate emissions in the area.

In addition, the Project would comply with the VOC content limits in the proposed SDAPCD Rule 67.01, including a 50 grams per liter (g/L) VOC limit for residential interior coatings.

Given the result of a less than significant impact during operation, no additional mitigation measures would be required.

#### **4.2.2.4 Conclusions**

With implementation of the design considerations noted above, the proposed Project would result in construction-related emissions and operation-related emissions that are less than significant.

### **4.3 Cumulatively Considerable Net Increase of Criteria Pollutants**

*Would the Project result in a cumulatively considerable net increase for which the SDAB is in nonattainment of NAAQS or CAAQS?*

#### **4.3.1 Construction Impacts**

##### **4.3.1.1 Guidelines for the Determination of Significance**

Based on the County Guidelines (2007), a project would result in a cumulatively significant impact if the project results in a significant contribution to the cumulative increase in pollutants for which the SDAB is listed as nonattainment for the CAAQS and NAAQS. As discussed in Section 2.0, the SDAB is considered a nonattainment area for the NAAQS for ozone and the CAAQS for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>.

A project that has a significant direct impact on air quality with regard to emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, or VOCs during construction would also have a significant cumulatively considerable net increase. In the event that direct impacts from a proposed project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions of concern from a proposed project combine with the emissions of concern from other proposed or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern to generate excess air quality emissions.

The following thresholds are used for the assessment of cumulative construction impacts:

*Would the project result in emissions that exceed 250 pounds per day of NO<sub>x</sub> or 75 pounds per day of VOCs?*

*Would the project result in emissions of PM<sub>2.5</sub> that exceed 55 pounds per day?*

*Would the project result in emissions of PM<sub>10</sub> that exceed 100 pounds per day and increase the ambient PM<sub>10</sub> concentration by 5 micrograms per cubic meter (5.0 µg/m<sup>3</sup>) or greater at the maximum exposed individual?*

##### **4.3.1.2 Significance of Impacts Prior to Mitigation**

*With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations maintained and operated by the SDAPCD, measures the concentrations of pollutants from existing sources. Past and present project impacts are therefore included in the background ambient air quality data.*



Short-term emissions associated with construction generally result in near-field impacts. As shown in the Project construction emissions evaluation, the emissions of NO<sub>x</sub>, VOCs, PM<sub>10</sub>, and PM<sub>2.5</sub> would be below significance levels. It is unlikely that all construction for the Project and other cumulative projects would be occurring at the same time. Project construction would be temporary and emissions would cease at full buildout. Further, any cumulative projects would also need to comply with SDAPCD Rules for dust control and construction equipment, which would further reduce the likelihood of a cumulatively considerable construction air quality impact. Therefore, Project construction is not anticipated to result in a cumulatively significant impact on air quality.

Section 4.1 concludes that the Project conforms to the RAQS; Section 4.2 concludes that the Project would not result in a direct impact to air quality during operation; and as discussed in Section 4.4 below, the Project would not have significant impacts to sensitive receptors. Therefore, operation of the Project would not result in a cumulatively considerable contribution to a significant air quality impact pertaining to NO<sub>x</sub>, VOCs, PM<sub>10</sub>, and PM<sub>2.5</sub>.

#### **4.3.1.3 Mitigation Measures and Design Considerations**

Control measures for construction are discussed in Section 1.3. As discussed in that section, air quality impacts from construction activities would be minimized by implementation of standard construction mitigation measures to control fugitive dust. No other mitigation measures would be required.

#### **4.3.1.4 Conclusions**

Cumulative impacts associated with Project construction would be less than significant.

### **4.3.2 Operational Impacts**

#### **4.3.2.1 Guidelines for the Determination of Significance**

The following thresholds are used for the assessment of cumulatively considerable net increases in air pollutants during the operational phase:

*Would the project conform to the RAQS and/or have a significant direct impact on air quality with regard to operational emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, and/or VOCs, which would also have a significant cumulatively considerable net increase in these emissions?*

*Would the project cause road intersections or roadway segments to operate at or below LOS E and create a CO hotspot that would result in a cumulatively considerable net increase of CO?*

#### **4.3.2.2 Significance of Impacts Prior to Mitigation**

As described in Sections 4.1 and 4.2, the proposed Project would be consistent with the General Plan and the RAQS, and would not exceed the County's screening-level thresholds. As discussed in Section 4.4.2, the Project would not create a CO hotspot that would result in a

cumulatively considerable net increase of CO. Therefore, the Project would not create a cumulatively considerable net increase in criteria pollutants and impacts would be less than significant.

#### **4.3.2.3 Mitigation Measures and Design Considerations**

The Project would incorporate the design features described in Section 1.3. No further mitigation would be required.

#### **4.3.2.4 Conclusions**

The Project would be consistent with the General Plan and the RAQS, and would not result in a significant cumulative impact for CO. Therefore, the Project would result in a less than significant cumulatively considerable impact.

### **4.4 Impacts to Sensitive Receptors**

*Would the project expose sensitive receptors to substantial pollutant concentrations?*

#### **4.4.1 Guidelines for the Determination of Significance**

The guidelines of significance listed below are used by the County to address the above question:

- *Would the project place sensitive receptors near CO "hotspots" or create CO "hotspots" near sensitive receptors?*
- *Would project implementation result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics-Best Available Control Technology or a health hazard index (HI) greater than 1, and thus be deemed as having a potentially significant impact?*

#### **4.4.2 Significance of Impacts Prior to Mitigation**

##### **4.4.2.1 CO Concentrations**

CO hotspots are most likely to occur at heavily congested intersections where idling vehicles increase localized CO concentrations. The County guidelines call for a CO hotspot analysis if the Project would:

- place sensitive receptors within 500 feet of a signalized intersection with a level of service (LOS) of E or F, with peak-hour trips exceeding 3,000 vehicles; or
- cause intersections to operate at LOS E or F, with peak-hour trips exceeding 3,000 vehicles.

LOS is a measure of traffic delay, rated A-F, with F indicating the worst delay. The Traffic Impact Analysis for the Project (LLG 2014) identified one intersection that would be

cumulatively impacted by the Project, Woodside Avenue and Maine Avenue, by reducing the intersection's LOS from E to F. However, the total peak-hour trips for this intersection would only be 1,951 vehicles; therefore, it would not exceed the 3,000 vehicle threshold set by the County. In addition, the Project would not place sensitive receptors within 500 feet of an intersection with a LOS of E or F. Therefore, impacts sensitive receptors by CO hotspots would be less than significant.

#### 4.4.2.2 Exposure to Toxic Air Contaminants (TACs)

##### Construction-related Diesel Health Risk

Diesel Particulate Matter (DPM) emissions would be released from the on-site construction equipment associated with the Project. The CARB has declared that DPM from diesel engine exhaust is a TAC. Additionally, the OEHHA has determined that chronic exposure to DPM can cause carcinogenic and non-carcinogenic health effects.

The USEPA SCREEN3 model, the screening air dispersion modeling method approved by the CARB for such assessments was used to estimate concentrations of DPM from the construction of the Project. The DPM construction equipment emissions were estimated using CalEEMod as described above and amount to an average of 0.3692 pounds per day of DPM (as PM<sub>10</sub> exhaust). The emissions were represented in the model as an area source equal to the size of the Project's construction area. An emission release height of 10 feet (3 meters) was also assumed. Receptor locations where construction impacts were calculated focused on the residential receptors located on the perimeter of the Project site. The SCREEN3 model output, along with the detailed calculations and methods, are provided in Appendix A.

Table 9, *Health Risk Assessment Results*, provides the results of the health risk assessment along with the County's significance thresholds for cancer and non-cancer health risks. As shown in the table, the Project would not exceed the significance thresholds for cancer risk and chronic non-cancer hazard.

| <b>Table 9</b><br><b>HEALTH RISK ASSESSMENT RESULTS</b> |                                              |                               |                           |
|---------------------------------------------------------|----------------------------------------------|-------------------------------|---------------------------|
| <b>Metric</b>                                           | <b>Dispersion Model Estimate<sup>1</sup></b> | <b>Significance Threshold</b> | <b>Exceeds Threshold?</b> |
| Cancer Risk                                             | 0.37 in 1 million                            | 1 in 1 million                | No                        |
| Chronic Non-Cancer HI                                   | 0.00849                                      | 1.0                           | No                        |

Notes:

<sup>1</sup> Computed at the sensitive receptor exposed to the highest DPM concentration based on meteorology and other dispersion factors.

## **Operational Health Risk**

The CARB *Air Quality and Land Use Handbook* (CARB 2005) provides recommendations on siting new sensitive land uses near sources of air pollution. The list of air pollution sources includes: high traffic freeways and roads; distribution centers; rail yards; ports; refineries; chrome plating facilities; dry cleaners; and large gas dispensing facilities. The proposed Project would develop residential uses, and would not include any of the types of uses that have been identified as sources of air pollution by CARB. In addition, the Project would not place sensitive receptors within the CARB siting distances of the listed air pollutant sources. Further, Project emissions of PM<sub>10</sub> and PM<sub>2.5</sub> during operation would be below screening level thresholds.

Air quality impacts related to exposure of sensitive receptors to substantial pollutant concentrations would be less than significant.

### **4.4.3 Mitigation Measures and Design Considerations**

Impacts are less than significant, therefore no mitigation measures are required.

### **4.4.4 Conclusions**

Impacts to sensitive receptors from the proposed Project would be less than significant.

## **4.5 Odor Impacts**

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

### **4.5.1 Guidelines for the Determination of Significance**

Based on the County Guidelines (2007), a project would have a significant impact if it would generate objectionable odors or place sensitive receptors next to existing objectionable odors that would affect a considerable number of persons or the public.

SDAPCD Rule 51 (Public Nuisance) and California Health & Safety Code, Division 26, Part 4, Chapter 3, Section 541700, prohibit the emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of the public. Projects required to obtain permits from the SDAPCD, typically industrial and some commercial projects, are evaluated by SDAPCD staff for potential odor nuisance and conditions may be applied (or control equipment required), where necessary, to prevent occurrence of public nuisance.

### **4.5.2 Significance of Impacts Prior to Mitigation**

Project construction could result in minor amounts of odor compounds associated with diesel heavy equipment exhaust. Diesel exhaust and VOCs would be emitted during construction of the Project. The odor of these emissions are objectionable to some; however, emissions would disperse rapidly from the Project site and therefore should not be at a level that would affect a

substantial number of people. Further, construction operations would be temporary. As a result, impacts associated with odors during construction are not considered significant.

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations. The Project would not place sensitive receptors within a close proximity to the listed odor sources. In addition, the residential development would not be a source of odor impacts, as the operation of residential uses are not generally associated with odors. Impacts associated with odor sources are considered less than significant.

#### **4.5.3 Mitigation Measures and Design Considerations**

Because the Project would not generate objectionable odors or place sensitive receptors near existing odor sources that would affect a considerable number of persons or the public, no mitigation measures or additional design considerations are required.

#### **4.5.4 Conclusion**

Due to the nature of the development, there are no significant odorous air emissions anticipated from construction or operation; therefore, impacts are anticipated to be less than significant.

## **5.0 GREENHOUSE GASES**

### **5.1 Global Climate Change Overview**

Climate change refers to any significant change in measures of climate, such as average temperature, precipitation, or wind patterns over a period of time. Climate change may result from natural factors, natural processes, and human activities that change the composition of the atmosphere and alter the surface and features of the land. Significant changes in global climate patterns have recently been associated with global warming, which is an average increase in the temperature of the atmosphere near the Earth's surface; this is attributed to an accumulation of greenhouse gas (GHG) emissions in the atmosphere. GHGs trap heat in the atmosphere which, in turn, increases the Earth's surface temperature. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, while others are created and emitted solely through human activities.

GHGs, as defined under California's Assembly Bill 32 (AB 32), include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). GHGs vary widely in the power of their climatic effects; therefore, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO<sub>2</sub>. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO<sub>2</sub>e. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 10, *Global Warming Potentials and Atmospheric Lifetimes*.

**Table 10**  
**GLOBAL WARMING POTENTIALS AND ATMOSPHERIC**  
**LIFETIMES OF COMMON GHGs**

| Gas                                                    | Atmospheric<br>Lifetime (Years) | 100-year GWP <sup>a</sup> |
|--------------------------------------------------------|---------------------------------|---------------------------|
| Carbon Dioxide (CO <sub>2</sub> )                      | 50.0–200.0                      | 1                         |
| Methane (CH <sub>4</sub> )                             | 12.0                            | 25                        |
| Nitrous Oxide (N <sub>2</sub> O)                       | 114.0                           | 298                       |
| HFC-134a                                               | 14                              | 1,430                     |
| PFC: Tetrafluoromethane (CF <sub>4</sub> )             | 50,000.0                        | 7,390                     |
| PFC: Hexafluoroethane (C <sub>2</sub> F <sub>6</sub> ) | 10,000.0                        | 12,200                    |
| Sulfur Hexafluoride (SF <sub>6</sub> )                 | 3,200.0                         | 22,800                    |

Source: Intergovernmental Panel on Climate Change (IPCC) 2007.

<sup>a</sup> GWPs used here are calculated over 100-year time horizon.

HFC: hydrofluorocarbons; PFC: perfluorocarbons

## 5.2 GHG Inventories

In 2011, total GHG emissions worldwide were estimated at 43,646 million MT CO<sub>2</sub>e (World Resources Institute 2014). In 2012, the total U.S. GHGs were 6,526 million MT CO<sub>2</sub>e (USEPA 2014a).

According to the San Diego County GHG Inventory that was prepared by the School of Law Energy Policy Initiative Center (EPIC) at the University of San Diego in 2013, San Diego County emitted 32.1 million MT CO<sub>2</sub>e in 2010 (EPIC 2013). The largest contributor of GHGs in San Diego County was the on-road transportation category, which comprised 14 million MT CO<sub>2</sub>e, or 43 percent, of the total.

## 5.3 GHG Regulatory Setting

The following regulations apply specifically to GHGs; other regulations that apply to both criteria pollutant emissions and GHGs are outlined in Section 2.4.

### 5.3.1 California Greenhouse Gas Regulations

#### California Code of Regulations, Title 24, Part 6

California Code of Regulations, Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. Energy-efficient buildings require less electricity, natural gas, and other fuels. The Title 24 standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. The 2013 update to the 2008 standards went into effect in July 2014.

## California Code of Regulations, Title 24, Part 11 (CALGreen)

California Code of Regulations, Title 24, Part 11, outlines the CALGreen code. The 2013 California Green Building Standards Code, referred to as CALGreen, went into effect in July 2014. California requires new buildings to reduce water consumption, employ building commissioning to increase building system efficiencies, divert construction waste from landfills, and to install low pollutant-emitting finish materials.

## Senate Bill 375

Senate Bill (SB) 375 was signed and passed into law on September 30, 2008. SB 375 enhances the CARB's ability to reach AB 32 goals. Specifically, SB 375 requires CARB to set regional targets for the purpose of reducing GHG emissions from passenger vehicles for years 2020 and 2035. If regions develop integrated land use, housing, and transportation plans that meet the SB 375 targets, new projects in these regions can be relieved of certain review requirements of CEQA. The targets apply to the regions in the state covered by 18 Metropolitan Planning Organizations (MPOs).

Per SB 375, CARB appointed a Regional Targets Advisory Committee (RTAC) on January 23, 2009 to provide recommendations on factors to be considered and methodologies to be used in the CARB target setting process. The RTAC provided its recommendations in a report to the CARB on September 29, 2009. The CARB released its draft targets on June 30, 2010, and adopted its final targets on September 23, 2010. For the San Diego area, the CARB and SANDAG agreed to adopt 7 percent and 13 percent in per capita GHG emission reductions from passenger vehicles by the years 2020 and 2035, respectively.

## Executive Order S-3-05

Executive Order S-3-05 proclaims that California is vulnerable to the impacts of climate change, including increased temperatures that could reduce the Sierra Nevada's snowpack, further exacerbation of California's air quality problems, and a potential rise in sea levels. To combat those concerns, the executive order established targets for emissions reductions to 2000 levels by 2010, to 1990 levels by 2020, and to eighty percent below 1990 levels by 2050.

## Assembly Bill 32 – Global Warming Solutions Act of 2006

The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) enacted Sections 38500–38599 of the California Health and Safety Code. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions.



### 5.3.2 Local GHG Policies and Plans

#### County of San Diego General Plan

The County 2011 General Plan includes a plan to balance population growth and development with infrastructure needs and resource protection. The current General Plan is based on smart growth and land planning principles that will reduce vehicle miles traveled (VMT), and thus result in a reduction of GHGs. This will be accomplished by locating future development within and near existing infrastructure. The General Plan includes a number of policies in the Conservation Element that encourage the design of new buildings that incorporate principles of sustainability and reduce vehicle and utility usage.

### 5.3.3 Guidelines for Determining Significance

The assessment of climate change impacts is by its nature a cumulative impact, as no individual project has the ability to affect the climate on a global scale. Based on Appendix G.VII of the State CEQA Guidelines, a project would have a significant environmental impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

The County of San Diego, in its memorandum entitled “*2015 GHG Guidance – Recommended Approach to Addressing Climate Change in CEQA Documents*” (County 2015) recommends the following guideline to determine the significance of impacts:

- A proposed project would have a cumulatively considerable contribution to climate change impacts if it would result in a net increase of construction and operational GHG emissions, either directly or indirectly, and if the project would incorporate mitigation that achieves less than a 16 percent total reduction compared to unmitigated conditions.

The County utilizes a screening-level emission level of 900 MT CO<sub>2</sub>e to evaluate whether a project must conduct further analysis. This screening threshold is based on a report by the California Air Pollution Control Officers Association (CAPCOA) entitled “CEQA & Climate Change,” dated January 2008. The 900 MT CO<sub>2</sub>e per year screening threshold was developed by analyzing the capture of 90 percent or more of future discretionary development for residential and commercial projects. County guidance also recommends including construction emissions (amortized over a typical duration of 20 years) in the screening threshold.

If a project generates more than 900 MT CO<sub>2</sub>e per year, the significance of the GHG emissions are evaluated against the reductions from the “unmitigated” condition. The unmitigated scenario represent a proposed project as described in the application, in compliance with any applicable

standards and regulations.<sup>1</sup> The County has proposed a threshold of 16 percent below unmitigated conditions to evaluate the significance of GHG emissions attributable to a project. If, compared to the unmitigated project, proposed mitigation would reduce GHG emissions by at least 16 percent, this level of mitigation would represent a fair share of what is necessary statewide to achieve AB 32 target.

## **5.4 Methodology and Assumptions**

The GHG impact analysis contained in this report was prepared in accordance with the methodologies provided by the County as included in the *2015 GHG Guidance – Recommended Approach to Addressing Climate Change in CEQA Documents* (County 2015).

GHG emissions from Project construction and operation are assessed (as the air quality emissions were) using CalEEMod, Version 2013.2.2 (SCAQMD 2013). Refer to Section 3.2 for more details regarding analysis methodology and assumptions.

## **5.5 Emissions of GHGs**

### **5.5.1 GHG Emissions without Project Design Features (Unmitigated) Emissions**

#### **Construction Emissions**

The proposed Project's construction-related contribution to GHG emissions would primarily result from fuel combustion in construction equipment, construction worker commute trips, and hauling/delivery truck trips. Construction-related GHG emissions result from CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O that is released during the combustion of gasoline or diesel fuel in on- and off-road vehicles and equipment. Table 11, *Construction GHG Emissions*, presents a summary of construction-related GHG emissions.

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<sup>1</sup> For the purposes of the analysis in this report, the unmitigated condition also represents the Project's GHG emissions without consideration of Project design features or statewide measures that are allowed to be counted towards the 16 percent reduction target per County guidelines.

| <b>Table 11</b><br><b>CONSTRUCTION GHG EMISSIONS</b> |                                          |
|------------------------------------------------------|------------------------------------------|
| <b>Source</b>                                        | <b>Emissions<br/>(MTCO<sub>2</sub>e)</b> |
| Site Preparation                                     | 21.41                                    |
| Grading                                              | 236.94                                   |
| Backbone Infrastructure                              | 36.37                                    |
| Paving                                               | 72.37                                    |
| Building Construction                                | 909.55                                   |
| Architectural Coating                                | 3.60                                     |
| <b>TOTAL<sup>1</sup></b>                             | <b>1,280.24</b>                          |
| Amortized Construction Emissions <sup>2</sup>        | 64.01                                    |

Source: CalEEMod (output data is provided in Appendix A)

<sup>1</sup> The total presented is the sum of the unrounded values.

<sup>2</sup> Construction emissions are amortized over 20 years in accordance with County guidance.

Note: Totals may not add up exactly due to rounding.

The results from the CalEEMod model predict estimated total construction CO<sub>2</sub>e emissions of approximately 1,280 MT. For construction emissions, County guidance recommends that the emissions be amortized (i.e., averaged) over 20 years and added to operational emissions. Averaged over 20 years, the proposed construction activities would contribute approximately 64 MT CO<sub>2</sub>e emissions per year.

### Operational Emissions

Operational sources of GHG emissions include: (1) energy use (electricity and natural gas) and area sources (landscaping equipment); (2) vehicle use; (3) solid waste generation; and (4) water conveyance and treatment.

#### ***Energy Use and Area Sources***

Projects that increase electricity consumption also result in an indirect increase in GHG emissions. The generation of electricity through the combustion of fossil fuels typically yields CO<sub>2</sub>, and to a much smaller extent, methane and nitrous oxide. The electricity use associated with the Project was estimated using CalEEMod defaults. The annual GHG emissions from energy usage is estimated to be 252 MT CO<sub>2</sub>e per year. Approximately 101 MT CO<sub>2</sub>e per year would result from area sources (primarily wood burning hearths).

#### ***Vehicular (Mobile) Sources***

Mobile-source GHG emissions were based on the projected trip generation rates. Using the projected ADT and CalEEMod defaults for trip lengths, the total annual VMT was estimated to be 2.26 million miles, and vehicle-related GHG emissions were estimated to be 1,009 MT CO<sub>2</sub>e per year.

## ***Solid Waste Sources***

Solid waste generated by the Project would also contribute to GHG emissions. Treatment and disposal of solid waste produces significant amounts of methane. Using CalEEMod defaults, GHG emissions from Project-related solid waste would be 35 MT CO<sub>2</sub>e per year.

## ***Water Sources***

Water-related GHG emissions are from the conveyance and treatment of water. The California Energy Commission's 2006 Refining Estimates of Water-Related Energy Use in California defines average energy values for water in Southern California. These values are used in CalEEMod to establish default water-related emission factors. Using these defaults, the Project's estimated GHG emissions related to water treatment and conveyance would be 34 MT CO<sub>2</sub>e per year.

## **Other GHG Emissions**

Ozone is also a GHG; however, unlike the other GHGs, ozone in the troposphere is relatively short lived and therefore is not global in nature. According to the CARB, it is difficult to make an accurate determination of the contribution of ozone precursors (NO<sub>x</sub> and volatile organic compounds [VOCs]) to global warming (CARB 2004). Therefore, it is assumed that emission of ozone precursors associated with the Project would not significantly contribute to climate change.

At present, there is a federal ban on chlorofluorocarbons (CFCs); therefore, it is assumed that the Project would not generate emissions of this GHG. Implementation of the Project may emit a small amount of HFC emissions from leakage, service of, and from disposal at the end of the life of refrigeration and air conditioning equipment. However, details regarding refrigerants to be used at future development are unknown at this time. PFCs and sulfur hexafluoride are typically used in industrial applications. No industrial applications would occur from the Project. Therefore, it is not anticipated that the Project would contribute significant emissions of these GHGs.

## **Summary**

Unmitigated GHG emissions represent the Proposed Project in compliance with any applicable standards and regulations that are already included in the calculations that support the 16 percent mitigation requirement. This includes effects on vehicle emissions due to Pavley I, and reductions applied to energy emissions due to current energy code enforcements such as the 2008 Title 24 and the Renewable Portfolio Standard (to 20 percent). Unmitigated Project emissions do not include reductions from project design features, or state and federal mandates such as LCFS, Pavley II, AB75 solid waste diversion rates, and the Renewable Electricity Standard, among others. As illustrated in Table 12, *Estimated Annual GHG Emissions (Without Project Design Features or State and Federal Mandates)*, without emission reduction measures, the Project would result in 1,494 MT CO<sub>2</sub>e per year.

| <b>Table 12</b><br><b>ESTIMATED ANNUAL GHG EMISSIONS</b><br><b>(WITHOUT PROJECT DESIGN FEATURES OR</b><br><b>STATE AND FEDERAL MANDATES)</b> |                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Source</b>                                                                                                                                | <b>Emissions<br/>(MT CO<sub>2</sub>e)</b> |
| Area                                                                                                                                         | 100.57                                    |
| Energy                                                                                                                                       | 252.18                                    |
| Mobile                                                                                                                                       | 1,008.65                                  |
| Waste                                                                                                                                        | 35.25                                     |
| Water                                                                                                                                        | 33.57                                     |
| <b>Operational Subtotal</b>                                                                                                                  | <b>1,430.22</b>                           |
| Amortized Construction (Table 11)                                                                                                            | <b>64.01</b>                              |
| <b>TOTAL PROJECT</b>                                                                                                                         | <b>1,494.24</b>                           |

Source: CalEEMod (output data is provided in Appendix A)

## 5.5.2 Project Emissions with GHG-Reducing Design Features

### Construction Emissions

Although the Project would divert waste produced during pre-construction and construction, the reduction in GHGs from diversion during construction is not quantifiable in CalEEMod. Therefore, to be conservative it is assumed that construction-related emissions would be the same as unmitigated conditions.

### Operational Emissions

#### ***Energy Use and Area Sources***

The Project would incorporate energy-efficiency features that would exceed 2008 California Title 24 Energy Efficiency Standards by 25 percent. According to CAPCOA Guidance, the reduction in energy use associated with this efficiency is based on building type, size, and climate zone. CalEEMod estimated this efficiency to result in a 8.6 percent reduction in GHG emissions. As detailed in Appendix B, achieving California's Renewable Electricity Standard would result in an 11 percent reduction in electricity-related emissions when compared to the RPS applied to the unmitigated scenario.

Energy efficiency and conservation both have the effect of reducing the need for energy generation and fuel use, to the extent that they outweigh increased demand due to population and economic growth. Whereas energy efficiency is accomplished through better technology, conservation refers to changes in behavior. A reduction of 11.75 percent attributable to Scoping Plan measures E-1 (electricity) and CR-1 (natural gas), focusing on Energy Efficiency and Conservation, was also applied towards the Project. These projected electricity and natural gas savings are based on the joint California Public Utilities Commission – California Energy Commission goal of achieving “all cost-effective energy efficiency”.

With the incorporation of these measures, the Project's annual GHG emissions from energy use are estimated to be reduced to 184 MT CO<sub>2</sub>e per year.

As described in Section 1.3.2, Project Design Features, the Project requires that only natural gas fireplaces be installed in the proposed residences. The removal of wood burning hearths would result area source emissions of 48 MT CO<sub>2</sub> per year.

### ***Mobile Sources***

The effect of California-mandated programs (Pavley II, and LCFS) to reduce vehicle-related GHG emissions was applied toward the Project's reduction target (see Appendix B of this report for assumptions and calculations). These reductions would reduce the Project's vehicle-related annual GHG emissions to 881 MT CO<sub>2</sub>e per year.

### ***Waste Sources***

The AB 32 Scoping Plan Landfill Methane Control Measure would reduce solid waste-related emissions by 19.8 percent. This would reduce the Project's solid waste-related emissions to 28 MT CO<sub>2</sub>e per year.

### ***Water Sources***

As discussed above, the RPS would reduce electricity-related emissions by 11 percent. Water-related emissions are due to the electricity used to convey and treat water; therefore, the RPS reduction can also be applied to water-related emissions. This would decrease the Project's water-related GHG emissions to 30 MT CO<sub>2</sub>e per year.

### **Other GHG Emissions**

Other GHG emissions would be the same for the Project with design features as for the unmitigated condition.

### **Summary**

The state of California has mandated a number of GHG reduction measures as part of the CARB Scoping Plan for achieving the goals of AB 32. As identified in Table 13, *Estimated GHG Emissions Reductions from State Measures*, state mandated Scoping Plan measures would result in GHG emissions reductions of approximately 1,477.38 MT CO<sub>2</sub>e per year.

**Table 13**  
**ESTIMATED GHG EMISSIONS REDUCTIONS**  
**FROM STATE MEASURES**  
**(MT/YEAR)**

| Measure                                           | Source      | Percent Reduction from Unmitigated <sup>1</sup> | Unmitigated CO <sub>2</sub> e <sup>2</sup> | CO <sub>2</sub> e Reduced <sup>3</sup> |
|---------------------------------------------------|-------------|-------------------------------------------------|--------------------------------------------|----------------------------------------|
| Executive Order S-1-07 (Low Carbon Fuel Standard) | Mobile      | 9.01                                            | 1,008.65                                   | 90.88                                  |
| Assembly Bill 1493 (Pavley II Standards)          | Mobile      | 1.84                                            | 1,008.65                                   | 18.53                                  |
| SB375                                             | Mobile      | 1.78                                            | 1,008.65                                   | 17.94                                  |
| Renewables Portfolio Standard                     | Energy      | 11.08                                           | 154.19                                     | 17.08                                  |
| Energy Efficiency and Conservation                | Energy      | 11.75                                           | 252.18                                     | 29.64                                  |
| Landfill Methane Control Measure                  | Solid Waste | 19.78                                           | 35.25                                      | 6.97                                   |
| Renewables Portfolio Standard                     | Water       | 11.08                                           | 33.57                                      | 3.72                                   |
| <b>Subtotal – MT CO<sub>2</sub>e Reduced</b>      |             |                                                 |                                            | <b>184.77</b>                          |

<sup>1</sup> Source: CARB 2008 and 2010b

<sup>2</sup> Emissions available from Table 12, *Estimated Annual GHG Emissions (Without Project Design Features or State and Federal Mandates)*, by source.

<sup>3</sup> CO<sub>2</sub>e Reduction is quantified by multiplying the Percent Reduction from Unmitigated by the Unmitigated CO<sub>2</sub>e value.

In addition to reductions from state mandates, the Project has incorporated several measures that would further reduce GHG emissions. As discussed above, these Project design features would result in GHG emission reductions of approximately 8.6 percent for energy and 52.4 percent for area sources. As identified in Table 14, *Estimated GHG Emissions Reductions from Project Design Features*, the proposed Project design features would result in GHG emissions reductions of 74.32 MT CO<sub>2</sub>e per year.

**Table 14**  
**ESTIMATED GHG EMISSIONS REDUCTIONS**  
**FROM PROJECT DESIGN FEATURES**  
**(MT/YEAR)**

| Feature                                      | Source      | Percent Reduction from Unmitigated | Unmitigated CO <sub>2</sub> e | CO <sub>2</sub> e Reduced |
|----------------------------------------------|-------------|------------------------------------|-------------------------------|---------------------------|
| Energy Efficient Features                    | Energy      | 8.6                                | 252.18                        | 21.65                     |
| Natural Gas Hearths                          | Area Source | 52.4                               | 100.57                        | 52.68                     |
| <b>Subtotal – MT CO<sub>2</sub>e Reduced</b> |             |                                    |                               | <b>74.32</b>              |

Source: CalEEMod (output data is provided in Appendix A)

As shown in Table 15, *Estimated Annual GHG Emissions (Project with Design Features and State and Federal Mandates)*, with reductions associated with state mandates and implementation of the proposed design features, the Project would result in GHG emissions of 1,235 MT CO<sub>2</sub>e per year.

**Table 15**  
**ESTIMATED ANNUAL GHG EMISSIONS**  
**(PROJECT WITH DESIGN FEATURES AND**  
**STATE AND FEDERAL MANDATES)**

| Source                            | Emissions (MT CO <sub>2</sub> e) |
|-----------------------------------|----------------------------------|
| Area                              | 47.89                            |
| Energy                            | 183.81                           |
| Mobile                            | 881.30                           |
| Waste                             | 28.28                            |
| Water                             | 29.85                            |
| <b>Operational Subtotal</b>       | <b>1,117.13</b>                  |
| Amortized Construction (Table 11) | <b>64.01</b>                     |
| <b>TOTAL PROJECT</b>              | <b>1,235.14</b>                  |

Source: CalEEMod (output data is provided in Appendix A)



### 5.5.3 Comparison of GHG Emissions with and without Project

#### Design Features and State and Federal Mandates

Per the County's GHG guidelines, unmitigated GHG emissions attributable to the Project at full buildout in 2020 are compared to Project GHG emissions with Project design features. As illustrated in Table 16, *GHG Emissions Comparison*, the total GHG emission reductions related to state mandated Scoping Plan Measures and proposed design features equals 259 MT CO<sub>2</sub>e per year. This amount subtracted from the Project unmitigated GHG emissions results in net GHG emissions of 1,235 MT CO<sub>2</sub>e per year for the proposed Project.

| <b>Table 16</b><br><b>GHG EMISSIONS COMPARISON</b> |                                        |                |                         |          |
|----------------------------------------------------|----------------------------------------|----------------|-------------------------|----------|
| Emission Sources                                   | Annual Emissions (MTCO <sub>2</sub> e) |                |                         |          |
|                                                    | Unmitigated                            | Reductions     |                         | Project  |
|                                                    |                                        | State Measures | Project Design Features |          |
| Area Sources                                       | 100.57                                 | -              | (52.68)                 | 47.89    |
| Energy Sources                                     | 252.18                                 | (46.72)        | (21.65)                 | 183.81   |
| Mobile Sources                                     | 1,008.65                               | (127.35)       | -                       | 881.30   |
| Waste Sources                                      | 35.25                                  | (6.97)         | -                       | 28.28    |
| Water Sources                                      | 33.57                                  | (3.72)         | -                       | 29.85    |
| Construction (Annualized over 20 years)            | 64.01                                  | -              | -                       | 64.01    |
| <b>TOTAL</b>                                       | 1,494.24                               | (184.77)       | (74.32)                 | 1,235.14 |
| Total Reduced Emissions                            | (259.09)                               |                |                         |          |
| Percent Reduction                                  | 17.34%                                 |                |                         |          |
| Greater than 16 Percent Reduction?                 | Yes                                    |                |                         |          |
| <b>Significant Impact?</b>                         | <b>No</b>                              |                |                         |          |

Source: CalEEMod (output data is provided in Appendix A)

As required by the County of San Diego, a reduction of at least 16 percent below the unmitigated condition is necessary to demonstrate that a project would be consistent with the goals of AB 32. Table 16 shows that the reductions from state-mandated measures and Project design features would result in a GHG emissions reduction of 17.34 percent. Because this reduction is greater than the 16 percent required by the County of San Diego, no mitigation measures are required and impacts are less than significant.

### 5.6 Plans Related to GHGs

EO S-3-05 established GHG emission reduction targets for the state, and AB 32 launched the Climate Change Scoping Plan that outlined the reduction measures needed to reach these targets. The Scoping Plan and its implementing and complementary regulations are discussed in Section 5.3. As described in Section 5.3.2, the County's Performance Threshold target of a

16 percent reduction in GHG emissions goal relative to an unmitigated Project is derived from CARB's 2010 updated 2020 emissions projections and revised 2011 Scoping Plan. The revised 2011 projections and Scoping Plan account for less overall growth and less energy/fuel consumption due to the long-term dampened economic conditions. The Project, by achieving a 17.34 percent reduction relative to an unmitigated Project, is considered consistent with the revised 2011 Scoping Plan and AB 32's 2020 reduction target.

As discussed in Section 1.3, the Project would achieve some GHG reductions through green building design that includes improved energy efficiency. Verification and commissioning of these features would occur through independent third-party inspection and diagnostics. The Project, as evaluated in accordance with the Performance Threshold goal of a 16 percent reduction from the unmitigated scenario, would meet the reduction goal, and would thus be consistent with the County's General Plan goals for private land use development. The Project's consistency with specific General Plan Conservation Element policies is analyzed in Table 17, *County General Plan Policies*.

| <b>Table 17</b><br><b>COUNTY GENERAL PLAN POLICIES</b>                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Policy</b>                                                                                                                                                                                                                                                                                                                                                          | <b>Project Consistency</b>                                                                                                                                                                                                                                   |
| <i>COS-14.10 Low-Emission Construction Vehicles and Equipment.</i> Require County contractors and encourage other developers to use low-emission construction vehicles and equipment to improve air quality and reduce GHG emissions.                                                                                                                                  | <i>Consistent.</i> All Project-related construction equipment would be required to meet USEPA-Certified Tier 2 emissions standards.                                                                                                                          |
| <i>COS-15.1 Design and Construction of New Buildings.</i> Require that new buildings be designed and constructed in accordance with "green building" programs that incorporate techniques and materials that maximize energy efficiency, incorporate the use of sustainable resources and recycled materials, and reduce emissions of GHGs and toxic air contaminants. | <i>Consistent.</i> The Project proposes sustainability and efficiency features consistent with the California Green Building Code.                                                                                                                           |
| <i>COS-15.4 Title 24 Energy Standards.</i> Require development to minimize energy impacts from new buildings in accordance with or exceeding Title 24 energy standards.                                                                                                                                                                                                | <i>Consistent.</i> The Project proposes implementing energy efficiency features that would achieve 2013 Title 24 requirements.                                                                                                                               |
| <i>COS-17.2 Construction and Demolition Waste.</i> Require recycling, reduction and reuse of construction and demolition debris.                                                                                                                                                                                                                                       | <i>Consistent.</i> The Project would comply with 2010 CALGreen criteria and state and local laws, and would divert 90 percent of inert construction materials and 70 percent of all other construction materials from landfills through reuse and recycling. |
| <i>COS-17.6 Recycling Containers.</i> Require that all new land development projects include space for recycling containers.                                                                                                                                                                                                                                           | <i>Consistent.</i> The Project would provide areas for storage and collection of recyclables and yard waste.                                                                                                                                                 |

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## Appendix A

# AIR POLLUTANT EMISSION MODELING DATA



## Cancer Health Risk Assessment Methodology

The cancer risk is calculated by multiplying the annual average concentrations calculated using the SCREEN3 model and an inhalation exposure factor as in Equation 1 below (Office of Environmental Health Hazard Assessment 2003).

$$\text{Cancer Risk} = \text{CPF} \times \text{Dose-inhalation}$$

Where:

Cancer Risk = Total individual lifetime excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular facility; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population contributed by emission sources not related to the Project; cancer risk is expressed in terms of risk per million exposed individuals.

$$\text{CPF} = \text{Cancer Potency Factor (1.1 mg/kg-day)}$$

$$\text{Dose-inhalation} = (\text{Cair} \times \text{DBR} \times \text{A} \times \text{EF} \times \text{ED}) / \text{AT}$$

Where:

Cair = annual average concentration

DBR = daily breathing rate (302 liters/kg-day),

A = inhalation absorption factor (1)

EF = exposure frequency (350 days/year)

ED = exposure duration (70 years)

AT = average time period over which the exposure is averaged (25,550 days).

Cair is the annual average concentration at the receptor calculated from SCREEN3 in  $\mu\text{g}/\text{m}^3$ . With the worst-case meteorological condition under SCREEN3, the highest 1-hour DPM concentration value at a residential receptor located 300 feet from the transit station was calculated to be  $0.4246 \mu\text{g}/\text{m}^3$ . The SCREEN3 model outputs and screening health risk calculations are provided in Appendix A of this report

## Non-Cancer Health Risk Characterization

Exposures to TACs such as DPM can also cause chronic (long-term) and acute (short-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health risks is expressed as Hazard Index (HI). The HI is a ratio of the predicted concentration of a project's emissions to a concentration considered acceptable to public health professionals, termed the REL. When

evaluating chronic non-cancer effects due to TAC exposures, a hazard quotient (HQ) is established for each individual TAC as follows and for each target organ affected by the individual TAC:

$$HI = C_{air}/REL_i$$

Where:

HI = chronic hazard index

$C_{air}$  = Annual average concentration ( $\mu\text{g}/\text{m}^3$ )

REL = Chronic Reference Exposure Level ( $\mu\text{g}/\text{m}^3$ )

To evaluate the potential for adverse non-cancer health effects from simultaneous exposure to multiple TACs, the HQs for all TACs that affect the same target organ are summed yielding an HI as follows:

$$HI_{to} = \sum_{i=1}^n HQ_{tac}$$

Where:

$HI_{to}$  = sum of the hazard quotients for all TACs affecting the same target organ

$HQ_{tac}$  = hazard quotient for TAC and target organ.

OEHHA has assigned a chronic non-cancer REL of  $5 \mu\text{g}/\text{m}^3$  for DPM (OEHHA 2012). DPM has effects on the respiratory system, which accounts for essentially all of the potential chronic non-cancer hazards from DPM. Therefore, the only HI calculated was for the respiratory system. The detailed calculations follow.



## Screening HRA Heath Risk Inputs and Calculations for Project-related Construction DPM

1 24 hrs/24 hrs

\*assume all PM10 exhaust is DPM

\*assumption is that emissions are constant over the acres disturbed

### Emission Calcs

0.369247 Average Daily CalEEMod Exhaust PM10 emissions in lbs/day

453.6 grams/pound

3600 seconds/hour

24 hours/day

100% percent of day

0.001938547 grams/second

### Area Calcs

76.23 Max area disturbed (acres)

4046.825 meters<sup>2</sup>/acre

308489.4698 meters<sup>2</sup>

555.4182836 meters x meters

### Screen 3 assumptions

1.5 m receptor height

3.0 m stack height

use automated distances array from 0 to 5,000 m rural setting

### SCREEN3 Emission Rate

6.284E-09 grams/second\*meter<sup>2</sup>

0.00000000628 value inserted in SCREEN3 model

0.3048 conversion factor from ft to m

| ft       | m      | SCREEN3 Distances     |
|----------|--------|-----------------------|
| 9.84     | 3.00   | receptor 1            |
| 328.08   | 100.00 | receptor 2            |
| 656.17   | 200.00 | receptor 3            |
| 984.25   | 300.00 | receptor 4            |
| 1,312.34 | 400.00 | receptor 5            |
| 1,640.42 | 500.00 | receptor 6            |
| 997.38   | 304.00 | highest concentration |

\* project boundary

\* 100 meter (328 ft) from project boundary

\* 200 meter (656 ft) from project boundary

\* 300 meter (984 ft) from project boundary

\* 400 meter (1,312 ft) from project boundary

\* 500 meter (1,640 ft) from project boundary

\* highest receptor location

0.3048 conversion factor from ft to m

|                               |                                                  |                                                       |                        |
|-------------------------------|--------------------------------------------------|-------------------------------------------------------|------------------------|
| Highest Concentration (304 m) |                                                  |                                                       |                        |
| HRA Calcs                     |                                                  |                                                       |                        |
| 0.42460                       | SCREEN3 1-hour concentration (micrograms/meter3) | Value obtained from SCREEN3 output file               |                        |
| 0.1                           | 1-hour --> annual conversion                     | From June 2007 BAAQMD PERMIT MODELING GUIDANCE, pg. 4 |                        |
| 4.25E-02                      | SCREEN3 annual concentration (micrograms/meter3) |                                                       |                        |
| 3.37E-07                      | Calculated dose (mg/kg-day)                      |                                                       |                        |
|                               |                                                  |                                                       |                        |
| 0.370                         | Cancer risk (per million)                        |                                                       |                        |
|                               |                                                  |                                                       |                        |
| 0.00849                       | Hazard Index                                     |                                                       |                        |
|                               |                                                  |                                                       |                        |
| 5                             | Chronic inhalation REL (micrograms/meter3)       |                                                       |                        |
| 365                           | days of construction                             |                                                       |                        |
| 100%                          | (% of day)                                       |                                                       |                        |
| 260                           | Exposure frequency (EF)                          | days/year                                             | # of construction days |
| 2.58                          | Exposure duration (ED)                           | Years                                                 | # of days/365          |
| 25550                         | Averaging time (AT)                              | days                                                  |                        |
| 302                           | Daily breathing rate (DBR)                       | L/kg body weight                                      |                        |
| 1                             | Inhalation absorption factor (A)                 | None                                                  |                        |
| 1.00E-03                      | Micrograms to milligrams conversion              | 1 microgram                                           |                        |
| 1.00E-03                      | liters to cubic meters conversion                | liters                                                |                        |
| 1.1                           | Cancer potency factor                            | mg/kg-day                                             |                        |
| 1.00E+06                      | risk per million people                          | None                                                  |                        |

#### Project Boundary

|                                 |                                                   |                                         |
|---------------------------------|---------------------------------------------------|-----------------------------------------|
| 10 feet (3m)                    |                                                   |                                         |
| HRA Calcs                       |                                                   |                                         |
| 0.24870                         | SCREEN3 1-hour concentration (micrograms/meter3)  | Value obtained from SCREEN3 output file |
| 0.1 1-hour --> 24-hr conversion |                                                   |                                         |
| 2.49E-02                        | SCREEN3 24-hour concentration (micrograms/meter3) |                                         |
| 1.97E-07                        | Calculated dose (mg/kg-day)                       |                                         |
| 0.217 Cancer risk (per million) |                                                   |                                         |
| 0.00497 Hazard Index            |                                                   |                                         |

|                                 |                                                   |                                         |
|---------------------------------|---------------------------------------------------|-----------------------------------------|
| 328 feet (100m)                 |                                                   |                                         |
| HRA Calcs                       |                                                   |                                         |
| 0.31110                         | SCREEN3 1-hour concentration (micrograms/meter3)  | Value obtained from SCREEN3 output file |
| 0.1 1-hour --> 24-hr conversion |                                                   |                                         |
| 3.11E-02                        | SCREEN3 24-hour concentration (micrograms/meter3) |                                         |
| 2.47E-07                        | Calculated dose (mg/kg-day)                       |                                         |
| 0.271 Cancer risk (per million) |                                                   |                                         |
| 0.00622 Hazard Index            |                                                   |                                         |

|                                 |                                                            |                                         |
|---------------------------------|------------------------------------------------------------|-----------------------------------------|
| 656 feet (200m)                 |                                                            |                                         |
|                                 | HRA Calcs                                                  |                                         |
| 0.37640                         | SCREEN3 1-hour concentration (micrograms/meter3)           | Value obtained from SCREEN3 output file |
|                                 | 0.1 1-hour --> 24-hr conversion                            |                                         |
|                                 | 3.76E-02 SCREEN3 24-hour concentration (micrograms/meter3) |                                         |
|                                 | 2.98E-07 Calculated dose (mg/kg-day)                       |                                         |
| 0.328 Cancer risk (per million) |                                                            |                                         |
| 0.00753 Hazard Index            |                                                            |                                         |

|                                 |                                                            |                                         |
|---------------------------------|------------------------------------------------------------|-----------------------------------------|
| 984 feet (300m)                 |                                                            |                                         |
|                                 | HRA Calcs                                                  |                                         |
| 0.42440                         | SCREEN3 1-hour concentration (micrograms/meter3)           | Value obtained from SCREEN3 output file |
|                                 | 0.1 1-hour --> 24-hr conversion                            |                                         |
|                                 | 4.24E-02 SCREEN3 24-hour concentration (micrograms/meter3) |                                         |
|                                 | 3.36E-07 Calculated dose (mg/kg-day)                       |                                         |
| 0.370 Cancer risk (per million) |                                                            |                                         |
| 0.00849 Hazard Index            |                                                            |                                         |

|                                 |                                                            |                                         |
|---------------------------------|------------------------------------------------------------|-----------------------------------------|
| 1,312 feet (400m)               |                                                            |                                         |
|                                 | HRA Calcs                                                  |                                         |
| 0.37650                         | SCREEN3 1-hour concentration (micrograms/meter3)           | Value obtained from SCREEN3 output file |
|                                 | 0.1 1-hour --> 24-hr conversion                            |                                         |
|                                 | 3.77E-02 SCREEN3 24-hour concentration (micrograms/meter3) |                                         |
|                                 | 2.99E-07 Calculated dose (mg/kg-day)                       |                                         |
| 0.328 Cancer risk (per million) |                                                            |                                         |
| 0.00753 Hazard Index            |                                                            |                                         |

|                                 |                                                            |                                         |
|---------------------------------|------------------------------------------------------------|-----------------------------------------|
| 1,640 feet (500m)               |                                                            |                                         |
|                                 | HRA Calcs                                                  |                                         |
| 0.32390                         | SCREEN3 1-hour concentration (micrograms/meter3)           | Value obtained from SCREEN3 output file |
|                                 | 0.1 1-hour --> 24-hr conversion                            |                                         |
|                                 | 3.24E-02 SCREEN3 24-hour concentration (micrograms/meter3) |                                         |
|                                 | 2.57E-07 Calculated dose (mg/kg-day)                       |                                         |
| 0.282 Cancer risk (per million) |                                                            |                                         |
| 0.00648 Hazard Index            |                                                            |                                         |

10/21/14

16:46:17

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

Brightwater Construction DPM

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = AREA  
EMISSION RATE (G/(S-M\*\*2)) = 0.628400E-08  
SOURCE HEIGHT (M) = 3.0000  
LENGTH OF LARGER SIDE (M) = 555.4200  
LENGTH OF SMALLER SIDE (M) = 555.4200  
RECEPTOR HEIGHT (M) = 1.5000  
URBAN/RURAL OPTION = RURAL

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS  
ENTERED.

ANGLE RELATIVE TO LONG AXIS = 5.0000

BUOY. FLUX = 0.000 M\*\*4/S\*\*3; MOM. FLUX = 0.000 M\*\*4/S\*\*  
2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN AUTOMATED DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR  
FOLLOWING DISTANCES \*\*\*

| DIST<br>(M) | CONC<br>(UG/M**3) | STAB | U10M<br>(M/S) | USTK<br>(M/S) | MIX HT<br>(M) | PLUME<br>HT (M) | MAX DIR<br>(DEG) |
|-------------|-------------------|------|---------------|---------------|---------------|-----------------|------------------|
| 3.          | 0.2487            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 100.        | 0.3111            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 200.        | 0.3764            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 300.        | 0.4244            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 400.        | 0.3765            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 500.        | 0.3239            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 600.        | 0.2837            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 700.        | 0.2535            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 800.        | 0.2303            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 900.        | 0.2121            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 1000.       | 0.1979            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 1100.       | 0.1861            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |
| 1200.       | 0.1761            | 6    | 1.0           | 1.0           | 10000.0       | 3.00            | 5.               |

|       |        |   |     |     |         |      |    |
|-------|--------|---|-----|-----|---------|------|----|
| 1300. | 0.1675 | 6 | 1.0 | 1.0 | 10000.0 | 3.00 | 5. |
| 1400. | 0.1600 | 6 | 1.0 | 1.0 | 10000.0 | 3.00 | 5. |
| 1500. | 0.1532 | 6 | 1.0 | 1.0 | 10000.0 | 3.00 | 5. |

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 3. M:  
 304. 0.4246 6 1.0 1.0 10000.0 3.00 5.

\*\*\*\*\*  
 \*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
 \*\*\*\*\*

| CALCULATION<br>PROCEDURE | MAX CONC<br>(UG/M**3) | DIST TO<br>MAX (M) | TERRAIN<br>HT (M) |
|--------------------------|-----------------------|--------------------|-------------------|
| -----                    | -----                 | -----              | -----             |
| SIMPLE TERRAIN           | 0.4246                | 304.               | 0.                |

\*\*\*\*\*  
 \*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
 \*\*\*\*\*



# CALEEMOD EMISSION DATA



**Brightwater Ranch**  
**San Diego County, Summer**

## 1.0 Project Characteristics

---

### 1.1 Land Usage

| Land Uses              | Size   | Metric        | Lot Acreage | Floor Surface Area | Population |
|------------------------|--------|---------------|-------------|--------------------|------------|
| Other Asphalt Surfaces | 117.72 | 1000sqft      | 2.70        | 117,720.00         | 0          |
| Single Family Housing  | 66.00  | Dwelling Unit | 21.43       | 118,800.00         | 189        |

### 1.2 Other Project Characteristics

|                                    |                          |                                    |       |                                    |       |
|------------------------------------|--------------------------|------------------------------------|-------|------------------------------------|-------|
| <b>Urbanization</b>                | Urban                    | <b>Wind Speed (m/s)</b>            | 2.6   | <b>Precipitation Freq (Days)</b>   | 40    |
| <b>Climate Zone</b>                | 13                       |                                    |       | <b>Operational Year</b>            | 2018  |
| <b>Utility Company</b>             | San Diego Gas & Electric |                                    |       |                                    |       |
| <b>CO2 Intensity<br/>(lb/MWhr)</b> | 720.49                   | <b>CH4 Intensity<br/>(lb/MWhr)</b> | 0.029 | <b>N2O Intensity<br/>(lb/MWhr)</b> | 0.006 |

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

## Project Characteristics -

Land Use - Other asphalt surfaces are new roads to be constructed on site. The roads' acreage and square footage were estimated from the Project's Tentative Map.

Construction Phase - Backbone infrastructure added as existing site does not contain utility installations; project schedule and total days changed from CalEEMod default to actual project schedule.

## Off-road Equipment -

Off-road Equipment - Added in the Backbone Infrastructure phase, as there are no current utilities underlying the new proposed lots. The commonly used construction equipment list from similarly sized projects was utilized for this phase.

## Off-road Equipment -

## Off-road Equipment -

## Off-road Equipment -

## Off-road Equipment -

Area Coating - Non-residential square footages reduced to 0 as this field was populated by CalEEMod due to the land use of Other Asphalt Surfaces, which does not apply to architectural coatings.

Construction Off-road Equipment Mitigation - All construction equipment shall be at minimum Tier 2, with level 2 diesel particulate filters.

Area Mitigation - Residential Interior and Exterior VOC in accordance with proposed SDAPCD rule 67.01.

Grading - Total acres grading changed to equal the total lot acreage.

Architectural Coating - Residential Interior and Exterior VOC in accordance with the proposed SDAPCD Rule 67.01; non-residential square footages reduced to 0 as this field was populated by CalEEMod due to the land use of Other Asphalt Surfaces, which does not apply to architectural coatings.

Vehicle Trips - The rate of 12 weekday trips per dwelling unit is based upon SANDAG's Traffic Generation Rates for Estate, Urban, or Rural Residential land uses, and is applied to both weekdays and weekends.

Woodstoves - Assumed no wood fireplaces and conservatively assumed all 66 residences would have natural gas fireplaces. Due to no wood fireplaces, wood mass is set to zero.

| Table Name              | Column Name                            | Default Value | New Value |
|-------------------------|----------------------------------------|---------------|-----------|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior      | 58,860.00     | 0.00      |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior      | 176,580.00    | 0.00      |
| tblArchitecturalCoating | EF_Residential_Exterior                | 250.00        | 50.00     |
| tblArchitecturalCoating | EF_Residential_Interior                | 250.00        | 50.00     |
| tblAreaCoating          | Area_Nonresidential_Exterior           | 58860         | 0         |
| tblAreaCoating          | Area_Nonresidential_Interior           | 176580        | 0         |
| tblAreaMitigation       | UseLowVOCPaintResidentialExteriorValue | 250           | 50        |



|                         |                                        |           |         |
|-------------------------|----------------------------------------|-----------|---------|
| tblAreaMitigation       | UseLowVOCPaintResidentialInteriorValue | 250       | 50      |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 3.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 4.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |

|                         |                            |           |          |
|-------------------------|----------------------------|-----------|----------|
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00      | 10.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00      | 1.00     |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00      | 1.00     |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstructionPhase    | NumDays                    | 370.00    | 520.00   |
| tblConstructionPhase    | NumDays                    | 35.00     | 78.00    |
| tblConstructionPhase    | NumDays                    | 20.00     | 65.00    |
| tblConstructionPhase    | NumDays                    | 10.00     | 11.00    |
| tblConstructionPhase    | PhaseEndDate               | 4/27/2018 | 4/1/2018 |
| tblConstructionPhase    | PhaseEndDate               | 3/30/2018 | 4/1/2018 |
| tblConstructionPhase    | PhaseEndDate               | 7/1/2016  | 4/1/2016 |
| tblConstructionPhase    | PhaseStartDate             | 4/2/2018  | 3/5/2018 |
| tblConstructionPhase    | PhaseStartDate             | 4/2/2016  | 1/2/2016 |
| tblFireplaces           | FireplaceWoodMass          | 3,078.40  | 0.00     |

|                           |                            |          |                         |
|---------------------------|----------------------------|----------|-------------------------|
| tblFireplaces             | NumberGas                  | 36.30    | 66.00                   |
| tblFireplaces             | NumberNoFireplace          | 6.60     | 0.00                    |
| tblFireplaces             | NumberWood                 | 23.10    | 0.00                    |
| tblOffRoadEquipment       | HorsePower                 | 400.00   | 122.00                  |
| tblOffRoadEquipment       | LoadFactor                 | 0.38     | 0.44                    |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0.00     | 1.00                    |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0.00     | 1.00                    |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0.00     | 1.00                    |
| tblOffRoadEquipment       | PhaseName                  |          | Backbone Infrastructure |
| tblOffRoadEquipment       | PhaseName                  |          | Backbone Infrastructure |
| tblOffRoadEquipment       | PhaseName                  |          | Backbone Infrastructure |
| tblProjectCharacteristics | OperationalYear            | 2014     | 2018                    |
| tblVehicleTrips           | ST_TR                      | 10.08    | 12.00                   |
| tblVehicleTrips           | SU_TR                      | 8.77     | 12.00                   |
| tblVehicleTrips           | WD_TR                      | 9.57     | 12.00                   |
| tblWoodstoves             | WoodstoveWoodMass          | 3,019.20 | 0.00                    |

## 2.0 Emissions Summary

---

**2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

|              | ROG            | NOx             | CO              | SO2           | Fugitive PM10  | Exhaust PM10   | PM10 Total     | Fugitive PM2.5 | Exhaust PM2.5  | PM2.5 Total    | Bio- CO2      | NBio- CO2          | Total CO2          | CH4           | N2O           | CO2e               |
|--------------|----------------|-----------------|-----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|--------------------|---------------|---------------|--------------------|
| Year         | lb/day         |                 |                 |               |                |                |                |                |                |                | lb/day        |                    |                    |               |               |                    |
| 2015         | 6.8518         | 79.1371         | 51.8288         | 0.0638        | 18.2141        | 3.8035         | 21.3036        | 9.9699         | 3.4992         | 12.8122        | 0.0000        | 6,666.2450         | 6,666.2450         | 1.9459        | 0.0000        | 6,707.1078         |
| 2016         | 6.5494         | 74.8958         | 50.0322         | 0.0638        | 8.8376         | 3.5855         | 12.4231        | 3.6401         | 3.2986         | 6.9387         | 0.0000        | 6,588.6871         | 6,588.6871         | 1.9437        | 0.0000        | 6,629.5046         |
| 2017         | 3.5829         | 28.8813         | 23.7978         | 0.0406        | 0.7723         | 1.8179         | 2.5902         | 0.2083         | 1.7067         | 1.9150         | 0.0000        | 3,859.2186         | 3,859.2186         | 0.6836        | 0.0000        | 3,873.5746         |
| 2018         | 40.6243        | 27.5564         | 25.2060         | 0.0451        | 0.8955         | 1.6800         | 2.5755         | 0.2410         | 1.5877         | 1.8287         | 0.0000        | 4,198.0185         | 4,198.0185         | 0.7028        | 0.0000        | 4,212.7783         |
| <b>Total</b> | <b>57.6083</b> | <b>210.4705</b> | <b>150.8648</b> | <b>0.2133</b> | <b>28.7195</b> | <b>10.8869</b> | <b>38.8923</b> | <b>14.0593</b> | <b>10.0923</b> | <b>23.4947</b> | <b>0.0000</b> | <b>21,312.1692</b> | <b>21,312.1692</b> | <b>5.2760</b> | <b>0.0000</b> | <b>21,422.9653</b> |

**2.1 Overall Construction (Maximum Daily Emission)****Mitigated Construction**

|       | ROG     | NOx      | CO       | SO2    | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2   | Total CO2   | CH4    | N2O    | CO2e        |
|-------|---------|----------|----------|--------|---------------|--------------|------------|----------------|---------------|-------------|----------|-------------|-------------|--------|--------|-------------|
| Year  | lb/day  |          |          |        |               |              |            |                |               |             | lb/day   |             |             |        |        |             |
| 2015  | 1.9688  | 51.0369  | 38.9321  | 0.0638 | 8.2777        | 0.6904       | 8.7594     | 4.5080         | 0.6903        | 4.9896      | 0.0000   | 6,666.2450  | 6,666.2450  | 1.9459 | 0.0000 | 6,707.1078  |
| 2016  | 1.9621  | 51.0285  | 38.8380  | 0.0638 | 4.0673        | 0.6904       | 4.7577     | 1.6620         | 0.6903        | 2.3523      | 0.0000   | 6,588.6871  | 6,588.6871  | 1.9437 | 0.0000 | 6,629.5046  |
| 2017  | 1.5587  | 25.9372  | 23.4842  | 0.0406 | 0.7723        | 0.4875       | 1.2598     | 0.2083         | 0.4846        | 0.6929      | 0.0000   | 3,859.2186  | 3,859.2186  | 0.6836 | 0.0000 | 3,873.5746  |
| 2018  | 38.8491 | 28.1037  | 25.4672  | 0.0451 | 0.8955        | 0.5335       | 1.4290     | 0.2410         | 0.5307        | 0.7717      | 0.0000   | 4,198.0185  | 4,198.0185  | 0.7028 | 0.0000 | 4,212.7783  |
| Total | 44.3387 | 156.1063 | 126.7214 | 0.2133 | 14.0127       | 2.4018       | 16.2058    | 6.6193         | 2.3959        | 8.8065      | 0.0000   | 21,312.1692 | 21,312.1692 | 5.2760 | 0.0000 | 21,422.9653 |

|                   | 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 |
|-------------------|-------|-------|-------|------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|------|------|------|
| Percent Reduction | 23.03 | 25.83 | 16.00 | 0.00 | 51.21         | 77.94        | 58.33      | 52.92          | 76.26         | 62.52       | 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         | 6.3782        | 0.0638        | 5.5028         | 2.9000e-004   |               | 0.1185        | 0.1185        |                | 0.1176        | 0.1176        | 0.0000        | 1,407.4773        | 1,407.4773        | 0.0366        | 0.0256        | 1,416.1887        |
| Energy       | 0.0539        | 0.4608        | 0.1961         | 2.9400e-003   |               | 0.0373        | 0.0373        |                | 0.0373        | 0.0373        |               | 588.2773          | 588.2773          | 0.0113        | 0.0108        | 591.8575          |
| Mobile       | 2.6412        | 5.8927        | 27.3119        | 0.0709        | 4.7849        | 0.0829        | 4.8678        | 1.2773         | 0.0764        | 1.3537        |               | 5,794.1190        | 5,794.1190        | 0.2239        |               | 5,798.8198        |
| <b>Total</b> | <b>9.0733</b> | <b>6.4173</b> | <b>33.0108</b> | <b>0.0742</b> | <b>4.7849</b> | <b>0.2387</b> | <b>5.0236</b> | <b>1.2773</b>  | <b>0.2312</b> | <b>1.5085</b> | <b>0.0000</b> | <b>7,789.8736</b> | <b>7,789.8736</b> | <b>0.2717</b> | <b>0.0364</b> | <b>7,806.8659</b> |

### 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         | 5.5635        | 0.0638        | 5.5028         | 2.9000e-004   |               | 0.1185        | 0.1185        |                | 0.1176        | 0.1176        | 0.0000        | 1,407.4773        | 1,407.4773        | 0.0366        | 0.0256        | 1,416.1887        |
| Energy       | 0.0433        | 0.3699        | 0.1574         | 2.3600e-003   |               | 0.0299        | 0.0299        |                | 0.0299        | 0.0299        |               | 472.1551          | 472.1551          | 9.0500e-003   | 8.6600e-003   | 475.0286          |
| Mobile       | 2.6412        | 5.8927        | 27.3119        | 0.0709        | 4.7849        | 0.0829        | 4.8678        | 1.2773         | 0.0764        | 1.3537        |               | 5,794.1190        | 5,794.1190        | 0.2239        |               | 5,798.8198        |
| <b>Total</b> | <b>8.2480</b> | <b>6.3263</b> | <b>32.9721</b> | <b>0.0736</b> | <b>4.7849</b> | <b>0.2313</b> | <b>5.0162</b> | <b>1.2773</b>  | <b>0.2239</b> | <b>1.5012</b> | <b>0.0000</b> | <b>7,673.7514</b> | <b>7,673.7514</b> | <b>0.2695</b> | <b>0.0343</b> | <b>7,690.0371</b> |

|                   | 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 |
|-------------------|------|------|------|------|---------------|--------------|------------|----------------|---------------|-------------|----------|----------|-----------|------|------|------|
| Percent Reduction | 9.10 | 1.42 | 0.12 | 0.78 | 0.00          | 3.08         | 0.15       | 0.00           | 3.18          | 0.49        | 0.00     | 1.49     | 1.49      | 0.82 | 5.85 | 1.50 |

### 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      | 9/1/2015   | 9/15/2015 | 5             | 11       |                   |
| 2            | Grading                 | Grading               | 9/16/2015  | 1/1/2016  | 5             | 78       |                   |
| 3            | Backbone Infrastructure | Trenching             | 1/2/2016   | 4/1/2016  | 5             | 65       |                   |
| 4            | Paving                  | Paving                | 1/2/2016   | 4/1/2016  | 5             | 65       |                   |
| 5            | Building Construction   | Building Construction | 4/2/2016   | 4/1/2018  | 5             | 520      |                   |
| 6            | Architectural Coating   | Architectural Coating | 3/5/2018   | 4/1/2018  | 5             | 20       |                   |

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 195

Acres of Paving: 0

Residential Indoor: 240,570; Residential Outdoor: 80,190; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

| Phase Name              | Offroad Equipment Type    | Amount | Usage Hours | Horse Power | Load Factor |
|-------------------------|---------------------------|--------|-------------|-------------|-------------|
| Site Preparation        | Rubber Tired Dozers       | 3      | 8.00        | 255         | 0.40        |
| Site Preparation        | Tractors/Loaders/Backhoes | 4      | 8.00        | 97          | 0.37        |
| Grading                 | Excavators                | 2      | 8.00        | 162         | 0.38        |
| Grading                 | Graders                   | 1      | 8.00        | 174         | 0.41        |
| Grading                 | Rubber Tired Dozers       | 1      | 8.00        | 255         | 0.40        |
| Grading                 | Scrapers                  | 2      | 8.00        | 361         | 0.48        |
| Grading                 | Tractors/Loaders/Backhoes | 2      | 8.00        | 97          | 0.37        |
| Backbone Infrastructure | Off-Highway Trucks        | 1      | 8.00        | 122         | 0.44        |
| Backbone Infrastructure | Tractors/Loaders/Backhoes | 1      | 8.00        | 97          | 0.37        |
| Backbone Infrastructure | Trenchers                 | 1      | 8.00        | 80          | 0.50        |
| Paving                  | Pavers                    | 2      | 8.00        | 125         | 0.42        |
| Paving                  | Paving Equipment          | 2      | 8.00        | 130         | 0.36        |
| Paving                  | Rollers                   | 2      | 8.00        | 80          | 0.38        |
| Building Construction   | Cranes                    | 1      | 7.00        | 226         | 0.29        |
| Building Construction   | Forklifts                 | 3      | 8.00        | 89          | 0.20        |
| Building Construction   | Generator Sets            | 1      | 8.00        | 84          | 0.74        |
| Building Construction   | Tractors/Loaders/Backhoes | 3      | 7.00        | 97          | 0.37        |
| Building Construction   | Welders                   | 1      | 8.00        | 46          | 0.45        |
| Architectural Coating   | Air Compressors           | 1      | 6.00        | 78          | 0.48        |

**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        | 7                       | 18.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Grading                 | 8                       | 20.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Backbone Infrastructure | 3                       | 8.00               | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Paving                  | 6                       | 15.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Building Construction   | 9                       | 73.00              | 26.00              | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Architectural Coating   | 1                       | 15.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |

### 3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Clean Paved Roads

### 3.2 Site Preparation - 2015

#### Unmitigated Construction On-Site

|               | ROG           | NOx            | CO             | SO2           | Fugitive PM10  | Exhaust PM10  | PM10 Total     | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total    | Bio- CO2 | NBio- CO2              | Total CO2              | CH4           | N2O | CO2e                   |
|---------------|---------------|----------------|----------------|---------------|----------------|---------------|----------------|----------------|---------------|----------------|----------|------------------------|------------------------|---------------|-----|------------------------|
| Category      | lb/day        |                |                |               |                |               |                |                |               |                | lb/day   |                        |                        |               |     |                        |
| Fugitive Dust |               |                |                |               | 18.0663        | 0.0000        | 18.0663        | 9.9307         | 0.0000        | 9.9307         |          |                        | 0.0000                 |               |     | 0.0000                 |
| Off-Road      | 5.2609        | 56.8897        | 42.6318        | 0.0391        |                | 3.0883        | 3.0883         |                | 2.8412        | 2.8412         |          | 4,111.744<br>4         | 4,111.744<br>4         | 1.2275        |     | 4,137.522<br>5         |
| <b>Total</b>  | <b>5.2609</b> | <b>56.8897</b> | <b>42.6318</b> | <b>0.0391</b> | <b>18.0663</b> | <b>3.0883</b> | <b>21.1545</b> | <b>9.9307</b>  | <b>2.8412</b> | <b>12.7719</b> |          | <b>4,111.744<br/>4</b> | <b>4,111.744<br/>4</b> | <b>1.2275</b> |     | <b>4,137.522<br/>5</b> |

**3.2 Site Preparation - 2015****Unmitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0690        | 0.0814        | 0.8900        | 1.8700e-003        | 0.1479        | 1.1600e-003        | 0.1490        | 0.0392         | 1.0600e-003        | 0.0403        |          | 162.0015        | 162.0015        | 8.4900e-003        |     | 162.1798        |
| <b>Total</b> | <b>0.0690</b> | <b>0.0814</b> | <b>0.8900</b> | <b>1.8700e-003</b> | <b>0.1479</b> | <b>1.1600e-003</b> | <b>0.1490</b> | <b>0.0392</b>  | <b>1.0600e-003</b> | <b>0.0403</b> |          | <b>162.0015</b> | <b>162.0015</b> | <b>8.4900e-003</b> |     | <b>162.1798</b> |

**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 |               |                |                |               | 8.1298        | 0.0000        | 8.1298        | 4.4688         | 0.0000        | 4.4688        |               |                        | 0.0000                 |               |     | 0.0000                 |
| Off-Road      | 1.2300        | 34.4240        | 23.4003        | 0.0391        |               | 0.4805        | 0.4805        |                | 0.4805        | 0.4805        | 0.0000        | 4,111.744<br>4         | 4,111.744<br>4         | 1.2275        |     | 4,137.522<br>4         |
| <b>Total</b>  | <b>1.2300</b> | <b>34.4240</b> | <b>23.4003</b> | <b>0.0391</b> | <b>8.1298</b> | <b>0.4805</b> | <b>8.6104</b> | <b>4.4688</b>  | <b>0.4805</b> | <b>4.9493</b> | <b>0.0000</b> | <b>4,111.744<br/>4</b> | <b>4,111.744<br/>4</b> | <b>1.2275</b> |     | <b>4,137.522<br/>4</b> |

**3.2 Site Preparation - 2015****Mitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0690        | 0.0814        | 0.8900        | 1.8700e-003        | 0.1479        | 1.1600e-003        | 0.1490        | 0.0392         | 1.0600e-003        | 0.0403        |          | 162.0015        | 162.0015        | 8.4900e-003        |     | 162.1798        |
| <b>Total</b> | <b>0.0690</b> | <b>0.0814</b> | <b>0.8900</b> | <b>1.8700e-003</b> | <b>0.1479</b> | <b>1.1600e-003</b> | <b>0.1490</b> | <b>0.0392</b>  | <b>1.0600e-003</b> | <b>0.0403</b> |          | <b>162.0015</b> | <b>162.0015</b> | <b>8.4900e-003</b> |     | <b>162.1798</b> |

**3.3 Grading - 2015****Unmitigated Construction On-Site**

|               | ROG           | NOx            | CO             | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total     | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2 | NBio- CO2         | Total CO2         | CH4           | N2O | CO2e              |
|---------------|---------------|----------------|----------------|---------------|---------------|---------------|----------------|----------------|---------------|---------------|----------|-------------------|-------------------|---------------|-----|-------------------|
| Category      | lb/day        |                |                |               |               |               |                |                |               |               | lb/day   |                   |                   |               |     |                   |
| Fugitive Dust |               |                |                |               | 8.6733        | 0.0000        | 8.6733         | 3.5965         | 0.0000        | 3.5965        |          |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 6.7751        | 79.0467        | 50.8400        | 0.0618        |               | 3.8022        | 3.8022         |                | 3.4980        | 3.4980        |          | 6,486.2433        | 6,486.2433        | 1.9364        |     | 6,526.9080        |
| <b>Total</b>  | <b>6.7751</b> | <b>79.0467</b> | <b>50.8400</b> | <b>0.0618</b> | <b>8.6733</b> | <b>3.8022</b> | <b>12.4755</b> | <b>3.5965</b>  | <b>3.4980</b> | <b>7.0945</b> |          | <b>6,486.2433</b> | <b>6,486.2433</b> | <b>1.9364</b> |     | <b>6,526.9080</b> |

**3.3 Grading - 2015****Unmitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0767        | 0.0904        | 0.9888        | 2.0800e-003        | 0.1643        | 1.2900e-003        | 0.1656        | 0.0436         | 1.1800e-003        | 0.0448        |          | 180.0017        | 180.0017        | 9.4300e-003        |     | 180.1998        |
| <b>Total</b> | <b>0.0767</b> | <b>0.0904</b> | <b>0.9888</b> | <b>2.0800e-003</b> | <b>0.1643</b> | <b>1.2900e-003</b> | <b>0.1656</b> | <b>0.0436</b>  | <b>1.1800e-003</b> | <b>0.0448</b> |          | <b>180.0017</b> | <b>180.0017</b> | <b>9.4300e-003</b> |     | <b>180.1998</b> |

**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 |               |                |                |               | 3.9030        | 0.0000        | 3.9030        | 1.6184         | 0.0000        | 1.6184        |               |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 1.8922        | 50.9465        | 37.9432        | 0.0618        |               | 0.6891        | 0.6891        |                | 0.6891        | 0.6891        | 0.0000        | 6,486.2433        | 6,486.2433        | 1.9364        |     | 6,526.9080        |
| <b>Total</b>  | <b>1.8922</b> | <b>50.9465</b> | <b>37.9432</b> | <b>0.0618</b> | <b>3.9030</b> | <b>0.6891</b> | <b>4.5921</b> | <b>1.6184</b>  | <b>0.6891</b> | <b>2.3076</b> | <b>0.0000</b> | <b>6,486.2433</b> | <b>6,486.2433</b> | <b>1.9364</b> |     | <b>6,526.9080</b> |

**3.3 Grading - 2015****Mitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0767        | 0.0904        | 0.9888        | 2.0800e-003        | 0.1643        | 1.2900e-003        | 0.1656        | 0.0436         | 1.1800e-003        | 0.0448        |          | 180.0017        | 180.0017        | 9.4300e-003        |     | 180.1998        |
| <b>Total</b> | <b>0.0767</b> | <b>0.0904</b> | <b>0.9888</b> | <b>2.0800e-003</b> | <b>0.1643</b> | <b>1.2900e-003</b> | <b>0.1656</b> | <b>0.0436</b>  | <b>1.1800e-003</b> | <b>0.0448</b> |          | <b>180.0017</b> | <b>180.0017</b> | <b>9.4300e-003</b> |     | <b>180.1998</b> |

**3.3 Grading - 2016****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 |               |                |                |               | 8.6733        | 0.0000        | 8.6733         | 3.5965         | 0.0000        | 3.5965        |          |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 6.4795        | 74.8137        | 49.1374        | 0.0617        |               | 3.5842        | 3.5842         |                | 3.2975        | 3.2975        |          | 6,414.9807        | 6,414.9807        | 1.9350        |     | 6,455.6154        |
| <b>Total</b>  | <b>6.4795</b> | <b>74.8137</b> | <b>49.1374</b> | <b>0.0617</b> | <b>8.6733</b> | <b>3.5842</b> | <b>12.2576</b> | <b>3.5965</b>  | <b>3.2975</b> | <b>6.8940</b> |          | <b>6,414.9807</b> | <b>6,414.9807</b> | <b>1.9350</b> |     | <b>6,455.6154</b> |

### 3.3 Grading - 2016

#### 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       | 0.0699        | 0.0820        | 0.8948        | 2.0800e-003        | 0.1643        | 1.2300e-003        | 0.1655        | 0.0436         | 1.1300e-003        | 0.0447        |          | 173.7064        | 173.7064        | 8.7000e-003        |     | 173.8892        |
| <b>Total</b> | <b>0.0699</b> | <b>0.0820</b> | <b>0.8948</b> | <b>2.0800e-003</b> | <b>0.1643</b> | <b>1.2300e-003</b> | <b>0.1655</b> | <b>0.0436</b>  | <b>1.1300e-003</b> | <b>0.0447</b> |          | <b>173.7064</b> | <b>173.7064</b> | <b>8.7000e-003</b> |     | <b>173.8892</b> |

#### 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 |               |                |                |               | 3.9030        | 0.0000        | 3.9030        | 1.6184         | 0.0000        | 1.6184        |               |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 1.8922        | 50.9465        | 37.9432        | 0.0617        |               | 0.6891        | 0.6891        |                | 0.6891        | 0.6891        | 0.0000        | 6,414.9807        | 6,414.9807        | 1.9350        |     | 6,455.6154        |
| <b>Total</b>  | <b>1.8922</b> | <b>50.9465</b> | <b>37.9432</b> | <b>0.0617</b> | <b>3.9030</b> | <b>0.6891</b> | <b>4.5921</b> | <b>1.6184</b>  | <b>0.6891</b> | <b>2.3076</b> | <b>0.0000</b> | <b>6,414.9807</b> | <b>6,414.9807</b> | <b>1.9350</b> |     | <b>6,455.6154</b> |

### 3.3 Grading - 2016

#### 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       | 0.0699        | 0.0820        | 0.8948        | 2.0800e-003        | 0.1643        | 1.2300e-003        | 0.1655        | 0.0436         | 1.1300e-003        | 0.0447        |          | 173.7064        | 173.7064        | 8.7000e-003        |     | 173.8892        |
| <b>Total</b> | <b>0.0699</b> | <b>0.0820</b> | <b>0.8948</b> | <b>2.0800e-003</b> | <b>0.1643</b> | <b>1.2300e-003</b> | <b>0.1655</b> | <b>0.0436</b>  | <b>1.1300e-003</b> | <b>0.0447</b> |          | <b>173.7064</b> | <b>173.7064</b> | <b>8.7000e-003</b> |     | <b>173.8892</b> |

### 3.4 Backbone Infrastructure - 2016

#### 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     | 1.3442        | 12.5240        | 8.5009        | 0.0112        |               | 0.8765        | 0.8765        |                | 0.8064        | 0.8064        |          | 1,160.1420        | 1,160.1420        | 0.3499        |     | 1,167.4907        |
| <b>Total</b> | <b>1.3442</b> | <b>12.5240</b> | <b>8.5009</b> | <b>0.0112</b> |               | <b>0.8765</b> | <b>0.8765</b> |                | <b>0.8064</b> | <b>0.8064</b> |          | <b>1,160.1420</b> | <b>1,160.1420</b> | <b>0.3499</b> |     | <b>1,167.4907</b> |

**3.4 Backbone Infrastructure - 2016****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       | 0.0280        | 0.0328        | 0.3579        | 8.3000e-004        | 0.0657        | 4.9000e-004        | 0.0662        | 0.0174         | 4.5000e-004        | 0.0179        |          | 69.4826        | 69.4826        | 3.4800e-003        |     | 69.5557        |
| <b>Total</b> | <b>0.0280</b> | <b>0.0328</b> | <b>0.3579</b> | <b>8.3000e-004</b> | <b>0.0657</b> | <b>4.9000e-004</b> | <b>0.0662</b> | <b>0.0174</b>  | <b>4.5000e-004</b> | <b>0.0179</b> |          | <b>69.4826</b> | <b>69.4826</b> | <b>3.4800e-003</b> |     | <b>69.5557</b> |

**Mitigated Construction On-Site**

|              | ROG           | NOx            | CO            | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2         | Total CO2         | CH4           | N2O | CO2e              |
|--------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|-------------------|-------------------|---------------|-----|-------------------|
| Category     | lb/day        |                |               |               |               |               |               |                |               |               | lb/day        |                   |                   |               |     |                   |
| Off-Road     | 0.4877        | 10.3057        | 8.4553        | 0.0112        |               | 0.1891        | 0.1891        |                | 0.1891        | 0.1891        | 0.0000        | 1,160.1420        | 1,160.1420        | 0.3499        |     | 1,167.4907        |
| <b>Total</b> | <b>0.4877</b> | <b>10.3057</b> | <b>8.4553</b> | <b>0.0112</b> |               | <b>0.1891</b> | <b>0.1891</b> |                | <b>0.1891</b> | <b>0.1891</b> | <b>0.0000</b> | <b>1,160.1420</b> | <b>1,160.1420</b> | <b>0.3499</b> |     | <b>1,167.4907</b> |



**3.4 Backbone Infrastructure - 2016****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       | 0.0280        | 0.0328        | 0.3579        | 8.3000e-004        | 0.0657        | 4.9000e-004        | 0.0662        | 0.0174         | 4.5000e-004        | 0.0179        |          | 69.4826        | 69.4826        | 3.4800e-003        |     | 69.5557        |
| <b>Total</b> | <b>0.0280</b> | <b>0.0328</b> | <b>0.3579</b> | <b>8.3000e-004</b> | <b>0.0657</b> | <b>4.9000e-004</b> | <b>0.0662</b> | <b>0.0174</b>  | <b>4.5000e-004</b> | <b>0.0179</b> |          | <b>69.4826</b> | <b>69.4826</b> | <b>3.4800e-003</b> |     | <b>69.5557</b> |

**3.5 Paving - 2016****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     | 2.0898        | 22.3859        | 14.8176        | 0.0223        |               | 1.2610        | 1.2610        |                | 1.1601        | 1.1601        |          | 2,316.3767        | 2,316.3767        | 0.6987        |     | 2,331.0495        |
| Paving       | 0.1088        |                |                |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          |                   | 0.0000            |               |     | 0.0000            |
| <b>Total</b> | <b>2.1986</b> | <b>22.3859</b> | <b>14.8176</b> | <b>0.0223</b> |               | <b>1.2610</b> | <b>1.2610</b> |                | <b>1.1601</b> | <b>1.1601</b> |          | <b>2,316.3767</b> | <b>2,316.3767</b> | <b>0.6987</b> |     | <b>2,331.0495</b> |

**3.5 Paving - 2016****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       | 0.0524        | 0.0615        | 0.6711        | 1.5600e-003        | 0.1232        | 9.2000e-004        | 0.1242        | 0.0327         | 8.5000e-004        | 0.0335        |          | 130.2798        | 130.2798        | 6.5300e-003        |     | 130.4169        |
| <b>Total</b> | <b>0.0524</b> | <b>0.0615</b> | <b>0.6711</b> | <b>1.5600e-003</b> | <b>0.1232</b> | <b>9.2000e-004</b> | <b>0.1242</b> | <b>0.0327</b>  | <b>8.5000e-004</b> | <b>0.0335</b> |          | <b>130.2798</b> | <b>130.2798</b> | <b>6.5300e-003</b> |     | <b>130.4169</b> |

**Mitigated Construction On-Site**

|              | ROG           | NOx            | CO             | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2         | Total CO2         | CH4           | N2O | CO2e              |
|--------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|-------------------|-------------------|---------------|-----|-------------------|
| Category     | lb/day        |                |                |               |               |               |               |                |               |               | lb/day        |                   |                   |               |     |                   |
| Off-Road     | 0.9122        | 19.6998        | 16.9276        | 0.0223        |               | 0.3271        | 0.3271        |                | 0.3271        | 0.3271        | 0.0000        | 2,316.3767        | 2,316.3767        | 0.6987        |     | 2,331.0495        |
| Paving       | 0.1088        |                |                |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                   | 0.0000            |               |     | 0.0000            |
| <b>Total</b> | <b>1.0210</b> | <b>19.6998</b> | <b>16.9276</b> | <b>0.0223</b> |               | <b>0.3271</b> | <b>0.3271</b> |                | <b>0.3271</b> | <b>0.3271</b> | <b>0.0000</b> | <b>2,316.3767</b> | <b>2,316.3767</b> | <b>0.6987</b> |     | <b>2,331.0495</b> |

### 3.5 Paving - 2016

#### 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       | 0.0524        | 0.0615        | 0.6711        | 1.5600e-003        | 0.1232        | 9.2000e-004        | 0.1242        | 0.0327         | 8.5000e-004        | 0.0335        |          | 130.2798        | 130.2798        | 6.5300e-003        |     | 130.4169        |
| <b>Total</b> | <b>0.0524</b> | <b>0.0615</b> | <b>0.6711</b> | <b>1.5600e-003</b> | <b>0.1232</b> | <b>9.2000e-004</b> | <b>0.1242</b> | <b>0.0327</b>  | <b>8.5000e-004</b> | <b>0.0335</b> |          | <b>130.2798</b> | <b>130.2798</b> | <b>6.5300e-003</b> |     | <b>130.4169</b> |

### 3.6 Building Construction - 2016

#### 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     | 3.4062        | 28.5063        | 18.5066        | 0.0268        |               | 1.9674        | 1.9674        |                | 1.8485        | 1.8485        |          | 2,669.2864        | 2,669.2864        | 0.6620        |     | 2,683.1890        |
| <b>Total</b> | <b>3.4062</b> | <b>28.5063</b> | <b>18.5066</b> | <b>0.0268</b> |               | <b>1.9674</b> | <b>1.9674</b> |                | <b>1.8485</b> | <b>1.8485</b> |          | <b>2,669.2864</b> | <b>2,669.2864</b> | <b>0.6620</b> |     | <b>2,683.1890</b> |

**3.6 Building Construction - 2016****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       | 0.2712        | 2.4641        | 2.8923        | 6.1900e-003   | 0.1726        | 0.0373        | 0.2098        | 0.0492         | 0.0343        | 0.0835        |          | 620.3300          | 620.3300          | 4.7900e-003   |     | 620.4306          |
| Worker       | 0.2552        | 0.2995        | 3.2659        | 7.6000e-003   | 0.5997        | 4.5000e-003   | 0.6042        | 0.1591         | 4.1400e-003   | 0.1632        |          | 634.0283          | 634.0283          | 0.0318        |     | 634.6954          |
| <b>Total</b> | <b>0.5264</b> | <b>2.7636</b> | <b>6.1582</b> | <b>0.0138</b> | <b>0.7723</b> | <b>0.0418</b> | <b>0.8140</b> | <b>0.2083</b>  | <b>0.0384</b> | <b>0.2467</b> |          | <b>1,254.3583</b> | <b>1,254.3583</b> | <b>0.0366</b> |     | <b>1,255.1261</b> |

**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     | 1.0782        | 23.4615        | 17.8156        | 0.0268        |               | 0.4508        | 0.4508        |                | 0.4508        | 0.4508        | 0.0000        | 2,669.2864        | 2,669.2864        | 0.6620        |     | 2,683.1890        |
| <b>Total</b> | <b>1.0782</b> | <b>23.4615</b> | <b>17.8156</b> | <b>0.0268</b> |               | <b>0.4508</b> | <b>0.4508</b> |                | <b>0.4508</b> | <b>0.4508</b> | <b>0.0000</b> | <b>2,669.2864</b> | <b>2,669.2864</b> | <b>0.6620</b> |     | <b>2,683.1890</b> |

**3.6 Building Construction - 2016****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       | 0.2712        | 2.4641        | 2.8923        | 6.1900e-003   | 0.1726        | 0.0373        | 0.2098        | 0.0492         | 0.0343        | 0.0835        |          | 620.3300          | 620.3300          | 4.7900e-003   |     | 620.4306          |
| Worker       | 0.2552        | 0.2995        | 3.2659        | 7.6000e-003   | 0.5997        | 4.5000e-003   | 0.6042        | 0.1591         | 4.1400e-003   | 0.1632        |          | 634.0283          | 634.0283          | 0.0318        |     | 634.6954          |
| <b>Total</b> | <b>0.5264</b> | <b>2.7636</b> | <b>6.1582</b> | <b>0.0138</b> | <b>0.7723</b> | <b>0.0418</b> | <b>0.8140</b> | <b>0.2083</b>  | <b>0.0384</b> | <b>0.2467</b> |          | <b>1,254.3583</b> | <b>1,254.3583</b> | <b>0.0366</b> |     | <b>1,255.1261</b> |

**3.6 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     | 3.1024        | 26.4057        | 18.1291        | 0.0268        |               | 1.7812        | 1.7812        |                | 1.6730        | 1.6730        |          | 2,639.8053        | 2,639.8053        | 0.6497        |     | 2,653.4490        |
| <b>Total</b> | <b>3.1024</b> | <b>26.4057</b> | <b>18.1291</b> | <b>0.0268</b> |               | <b>1.7812</b> | <b>1.7812</b> |                | <b>1.6730</b> | <b>1.6730</b> |          | <b>2,639.8053</b> | <b>2,639.8053</b> | <b>0.6497</b> |     | <b>2,653.4490</b> |

### 3.6 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       | 0.2486        | 2.2035        | 2.7148        | 6.1800e-003   | 0.1726        | 0.0323        | 0.2049        | 0.0492         | 0.0298        | 0.0790        |          | 609.8505          | 609.8505          | 4.5300e-003   |     | 609.9457          |
| Worker       | 0.2319        | 0.2722        | 2.9539        | 7.6000e-003   | 0.5997        | 4.3600e-003   | 0.6040        | 0.1591         | 4.0200e-003   | 0.1631        |          | 609.5627          | 609.5627          | 0.0294        |     | 610.1800          |
| <b>Total</b> | <b>0.4805</b> | <b>2.4757</b> | <b>5.6686</b> | <b>0.0138</b> | <b>0.7723</b> | <b>0.0367</b> | <b>0.8090</b> | <b>0.2083</b>  | <b>0.0338</b> | <b>0.2421</b> |          | <b>1,219.4132</b> | <b>1,219.4132</b> | <b>0.0339</b> |     | <b>1,220.1256</b> |

#### 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     | 1.0782        | 23.4615        | 17.8156        | 0.0268        |               | 0.4508        | 0.4508        |                | 0.4508        | 0.4508        | 0.0000        | 2,639.8053        | 2,639.8053        | 0.6497        |     | 2,653.4490        |
| <b>Total</b> | <b>1.0782</b> | <b>23.4615</b> | <b>17.8156</b> | <b>0.0268</b> |               | <b>0.4508</b> | <b>0.4508</b> |                | <b>0.4508</b> | <b>0.4508</b> | <b>0.0000</b> | <b>2,639.8053</b> | <b>2,639.8053</b> | <b>0.6497</b> |     | <b>2,653.4490</b> |

**3.6 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       | 0.2486        | 2.2035        | 2.7148        | 6.1800e-003   | 0.1726        | 0.0323        | 0.2049        | 0.0492         | 0.0298        | 0.0790        |          | 609.8505          | 609.8505          | 4.5300e-003   |     | 609.9457          |
| Worker       | 0.2319        | 0.2722        | 2.9539        | 7.6000e-003   | 0.5997        | 4.3600e-003   | 0.6040        | 0.1591         | 4.0200e-003   | 0.1631        |          | 609.5627          | 609.5627          | 0.0294        |     | 610.1800          |
| <b>Total</b> | <b>0.4805</b> | <b>2.4757</b> | <b>5.6686</b> | <b>0.0138</b> | <b>0.7723</b> | <b>0.0367</b> | <b>0.8090</b> | <b>0.2083</b>  | <b>0.0338</b> | <b>0.2421</b> |          | <b>1,219.4132</b> | <b>1,219.4132</b> | <b>0.0339</b> |     | <b>1,220.1256</b> |

**3.6 Building Construction - 2018****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     | 2.6687        | 23.2608        | 17.5327        | 0.0268        |               | 1.4943        | 1.4943        |                | 1.4048        | 1.4048        |          | 2,609.9390        | 2,609.9390        | 0.6387        |     | 2,623.3517        |
| <b>Total</b> | <b>2.6687</b> | <b>23.2608</b> | <b>17.5327</b> | <b>0.0268</b> |               | <b>1.4943</b> | <b>1.4943</b> |                | <b>1.4048</b> | <b>1.4048</b> |          | <b>2,609.9390</b> | <b>2,609.9390</b> | <b>0.6387</b> |     | <b>2,623.3517</b> |

**3.6 Building Construction - 2018****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       | 0.2340        | 1.9904        | 2.5869        | 6.1700e-003   | 0.1726        | 0.0300        | 0.2026        | 0.0492         | 0.0276        | 0.0769        |          | 599.3783          | 599.3783          | 4.4400e-003   |     | 599.4716          |
| Worker       | 0.2114        | 0.2484        | 2.6813        | 7.6000e-003   | 0.5997        | 4.2800e-003   | 0.6040        | 0.1591         | 3.9600e-003   | 0.1630        |          | 586.6983          | 586.6983          | 0.0273        |     | 587.2724          |
| <b>Total</b> | <b>0.4454</b> | <b>2.2387</b> | <b>5.2682</b> | <b>0.0138</b> | <b>0.7722</b> | <b>0.0343</b> | <b>0.8066</b> | <b>0.2083</b>  | <b>0.0316</b> | <b>0.2399</b> |          | <b>1,186.0766</b> | <b>1,186.0766</b> | <b>0.0318</b> |     | <b>1,186.7440</b> |

**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     | 1.0782        | 23.4615        | 17.8156        | 0.0268        |               | 0.4508        | 0.4508        |                | 0.4508        | 0.4508        | 0.0000        | 2,609.9389        | 2,609.9389        | 0.6387        |     | 2,623.3517        |
| <b>Total</b> | <b>1.0782</b> | <b>23.4615</b> | <b>17.8156</b> | <b>0.0268</b> |               | <b>0.4508</b> | <b>0.4508</b> |                | <b>0.4508</b> | <b>0.4508</b> | <b>0.0000</b> | <b>2,609.9389</b> | <b>2,609.9389</b> | <b>0.6387</b> |     | <b>2,623.3517</b> |



### 3.6 Building Construction - 2018

#### 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       | 0.2340        | 1.9904        | 2.5869        | 6.1700e-003   | 0.1726        | 0.0300        | 0.2026        | 0.0492         | 0.0276        | 0.0769        |          | 599.3783          | 599.3783          | 4.4400e-003   |     | 599.4716          |
| Worker       | 0.2114        | 0.2484        | 2.6813        | 7.6000e-003   | 0.5997        | 4.2800e-003   | 0.6040        | 0.1591         | 3.9600e-003   | 0.1630        |          | 586.6983          | 586.6983          | 0.0273        |     | 587.2724          |
| <b>Total</b> | <b>0.4454</b> | <b>2.2387</b> | <b>5.2682</b> | <b>0.0138</b> | <b>0.7722</b> | <b>0.0343</b> | <b>0.8066</b> | <b>0.2083</b>  | <b>0.0316</b> | <b>0.2399</b> |          | <b>1,186.0766</b> | <b>1,186.0766</b> | <b>0.0318</b> |     | <b>1,186.7440</b> |

### 3.7 Architectural Coating - 2018

#### 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 | 37.1681        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          |                 | 0.0000          |               |     | 0.0000          |
| Off-Road        | 0.2986         | 2.0058        | 1.8542        | 2.9700e-003        |               | 0.1506        | 0.1506        |                | 0.1506        | 0.1506        |          | 281.4485        | 281.4485        | 0.0267        |     | 282.0102        |
| <b>Total</b>    | <b>37.4667</b> | <b>2.0058</b> | <b>1.8542</b> | <b>2.9700e-003</b> |               | <b>0.1506</b> | <b>0.1506</b> |                | <b>0.1506</b> | <b>0.1506</b> |          | <b>281.4485</b> | <b>281.4485</b> | <b>0.0267</b> |     | <b>282.0102</b> |

### 3.7 Architectural Coating - 2018

#### 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       | 0.0435        | 0.0510        | 0.5510        | 1.5600e-003        | 0.1232        | 8.8000e-004        | 0.1241        | 0.0327         | 8.1000e-004        | 0.0335        |          | 120.5544        | 120.5544        | 5.6200e-003        |     | 120.6724        |
| <b>Total</b> | <b>0.0435</b> | <b>0.0510</b> | <b>0.5510</b> | <b>1.5600e-003</b> | <b>0.1232</b> | <b>8.8000e-004</b> | <b>0.1241</b> | <b>0.0327</b>  | <b>8.1000e-004</b> | <b>0.0335</b> |          | <b>120.5544</b> | <b>120.5544</b> | <b>5.6200e-003</b> |     | <b>120.6724</b> |

#### 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 | 37.1681        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                 | 0.0000          |               |     | 0.0000          |
| Off-Road        | 0.1139         | 2.3524        | 1.8324        | 2.9700e-003        |               | 0.0475        | 0.0475        |                | 0.0475        | 0.0475        | 0.0000        | 281.4485        | 281.4485        | 0.0267        |     | 282.0102        |
| <b>Total</b>    | <b>37.2820</b> | <b>2.3524</b> | <b>1.8324</b> | <b>2.9700e-003</b> |               | <b>0.0475</b> | <b>0.0475</b> |                | <b>0.0475</b> | <b>0.0475</b> | <b>0.0000</b> | <b>281.4485</b> | <b>281.4485</b> | <b>0.0267</b> |     | <b>282.0102</b> |

### 3.7 Architectural Coating - 2018

#### 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       | 0.0435        | 0.0510        | 0.5510        | 1.5600e-003        | 0.1232        | 8.8000e-004        | 0.1241        | 0.0327         | 8.1000e-004        | 0.0335        |          | 120.5544        | 120.5544        | 5.6200e-003        |     | 120.6724        |
| <b>Total</b> | <b>0.0435</b> | <b>0.0510</b> | <b>0.5510</b> | <b>1.5600e-003</b> | <b>0.1232</b> | <b>8.8000e-004</b> | <b>0.1241</b> | <b>0.0327</b>  | <b>8.1000e-004</b> | <b>0.0335</b> |          | <b>120.5544</b> | <b>120.5544</b> | <b>5.6200e-003</b> |     | <b>120.6724</b> |

### 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   | 2.6412 | 5.8927 | 27.3119 | 0.0709 | 4.7849        | 0.0829       | 4.8678     | 1.2773         | 0.0764        | 1.3537      |          | 5,794.1190 | 5,794.1190 | 0.2239 |     | 5,798.8198 |
| Unmitigated | 2.6412 | 5.8927 | 27.3119 | 0.0709 | 4.7849        | 0.0829       | 4.8678     | 1.2773         | 0.0764        | 1.3537      |          | 5,794.1190 | 5,794.1190 | 0.2239 |     | 5,798.8198 |

## 4.2 Trip Summary Information

| Land Use               | Average Daily Trip Rate |          |        | Unmitigated | Mitigated  |
|------------------------|-------------------------|----------|--------|-------------|------------|
|                        | Weekday                 | Saturday | Sunday | Annual VMT  | Annual VMT |
| Other Asphalt Surfaces | 0.00                    | 0.00     | 0.00   |             |            |
| Single Family Housing  | 792.00                  | 792.00   | 792.00 | 2,261,400   | 2,261,400  |
| Total                  | 792.00                  | 792.00   | 792.00 | 2,261,400   | 2,261,400  |

## 4.3 Trip Type Information

| Land Use               | Miles      |            |             | Trip %     |            |             | Trip Purpose % |          |         |
|------------------------|------------|------------|-------------|------------|------------|-------------|----------------|----------|---------|
|                        | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary        | Diverted | Pass-by |
| Other Asphalt Surfaces | 9.50       | 7.30       | 7.30        | 0.00       | 0.00       | 0.00        | 0              | 0        | 0       |
| Single Family Housing  | 10.80      | 7.30       | 7.50        | 41.60      | 18.80      | 39.60       | 86             | 11       | 3       |

| LDA      | LDT1     | LDT2     | MDV      | LHD1     | LHD2     | MHD      | HHD      | OBUS     | UBUS     | MCY      | SBUS     | MH       |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 0.511818 | 0.073499 | 0.191840 | 0.131575 | 0.036332 | 0.005186 | 0.012677 | 0.022513 | 0.001864 | 0.002072 | 0.006564 | 0.000601 | 0.003458 |

## 5.0 Energy Detail

### 4.4 Fleet Mix

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

Exceed Title 24

|                        | 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   | 0.0433 | 0.3699 | 0.1574 | 2.3600e-003 |               | 0.0299       | 0.0299     |                | 0.0299        | 0.0299      |          | 472.1551  | 472.1551  | 9.0500e-003 | 8.6600e-003 | 475.0286 |
| NaturalGas Unmitigated | 0.0539 | 0.4608 | 0.1961 | 2.9400e-003 |               | 0.0373       | 0.0373     |                | 0.0373        | 0.0373      |          | 588.2773  | 588.2773  | 0.0113      | 0.0108      | 591.8575 |

## 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   |                 |                 |               |               |                 |
| Single Family Housing  | 5000.36        | 0.0539        | 0.4608        | 0.1961        | 2.9400e-003        |               | 0.0373        | 0.0373        |                | 0.0373        | 0.0373        |          | 588.2773        | 588.2773        | 0.0113        | 0.0108        | 591.8575        |
| Other Asphalt Surfaces | 0              | 0.0000        | 0.0000        | 0.0000        | 0.0000             |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          | 0.0000          | 0.0000          | 0.0000        | 0.0000        | 0.0000          |
| <b>Total</b>           |                | <b>0.0539</b> | <b>0.4608</b> | <b>0.1961</b> | <b>2.9400e-003</b> |               | <b>0.0373</b> | <b>0.0373</b> |                | <b>0.0373</b> | <b>0.0373</b> |          | <b>588.2773</b> | <b>588.2773</b> | <b>0.0113</b> | <b>0.0108</b> | <b>591.8575</b> |

## 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        | lb/day        |               |               |                    |               |               |               |                |               |               | lb/day   |                 |                 |                    |                    |                 |
| Single Family Housing  | 4.01332        | 0.0433        | 0.3699        | 0.1574        | 2.3600e-003        |               | 0.0299        | 0.0299        |                | 0.0299        | 0.0299        |          | 472.1551        | 472.1551        | 9.0500e-003        | 8.6600e-003        | 475.0286        |
| Other Asphalt Surfaces | 0              | 0.0000        | 0.0000        | 0.0000        | 0.0000             |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             | 0.0000             | 0.0000          |
| <b>Total</b>           |                | <b>0.0433</b> | <b>0.3699</b> | <b>0.1574</b> | <b>2.3600e-003</b> |               | <b>0.0299</b> | <b>0.0299</b> |                | <b>0.0299</b> | <b>0.0299</b> |          | <b>472.1551</b> | <b>472.1551</b> | <b>9.0500e-003</b> | <b>8.6600e-003</b> | <b>475.0286</b> |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - 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   | 5.5635 | 0.0638 | 5.5028 | 2.9000e-004 |               | 0.1185       | 0.1185     |                | 0.1176        | 0.1176      | 0.0000   | 1,407.4773 | 1,407.4773 | 0.0366 | 0.0256 | 1,416.1887 |
| Unmitigated | 6.3782 | 0.0638 | 5.5028 | 2.9000e-004 |               | 0.1185       | 0.1185     |                | 0.1176        | 0.1176      | 0.0000   | 1,407.4773 | 1,407.4773 | 0.0366 | 0.0256 | 1,416.1887 |

**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 | 1.0183        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Consumer Products     | 5.0615        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Hearth                | 0.1281        | 1.0000e-005   | 6.9900e-003   | 0.0000             |               | 0.0885        | 0.0885        |                | 0.0876        | 0.0876        | 0.0000        | 1,397.647<br>1         | 1,397.647<br>1         | 0.0268        | 0.0256        | 1,406.152<br>9         |
| Landscaping           | 0.1702        | 0.0638        | 5.4958        | 2.9000e-004        |               | 0.0300        | 0.0300        |                | 0.0300        | 0.0300        |               | 9.8302                 | 9.8302                 | 9.7900e-003   |               | 10.0358                |
| <b>Total</b>          | <b>6.3782</b> | <b>0.0638</b> | <b>5.5028</b> | <b>2.9000e-004</b> |               | <b>0.1185</b> | <b>0.1185</b> |                | <b>0.1176</b> | <b>0.1176</b> | <b>0.0000</b> | <b>1,407.477<br/>3</b> | <b>1,407.477<br/>3</b> | <b>0.0366</b> | <b>0.0256</b> | <b>1,416.188<br/>7</b> |

## 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 | 0.2037        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Consumer Products     | 5.0615        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Hearth                | 0.1281        | 1.0000e-005   | 6.9900e-003   | 0.0000             |               | 0.0885        | 0.0885        |                | 0.0876        | 0.0876        | 0.0000        | 1,397.647<br>1         | 1,397.647<br>1         | 0.0268        | 0.0256        | 1,406.152<br>9         |
| Landscaping           | 0.1702        | 0.0638        | 5.4958        | 2.9000e-004        |               | 0.0300        | 0.0300        |                | 0.0300        | 0.0300        |               | 9.8302                 | 9.8302                 | 9.7900e-003   |               | 10.0358                |
| <b>Total</b>          | <b>5.5635</b> | <b>0.0638</b> | <b>5.5028</b> | <b>2.9000e-004</b> |               | <b>0.1185</b> | <b>0.1185</b> |                | <b>0.1176</b> | <b>0.1176</b> | <b>0.0000</b> | <b>1,407.477<br/>3</b> | <b>1,407.477<br/>3</b> | <b>0.0366</b> | <b>0.0256</b> | <b>1,416.188<br/>7</b> |

## 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



**Brightwater Ranch**  
**San Diego County, Winter**

## 1.0 Project Characteristics

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### 1.1 Land Usage

| Land Uses              | Size   | Metric        | Lot Acreage | Floor Surface Area | Population |
|------------------------|--------|---------------|-------------|--------------------|------------|
| Other Asphalt Surfaces | 117.72 | 1000sqft      | 2.70        | 117,720.00         | 0          |
| Single Family Housing  | 66.00  | Dwelling Unit | 21.43       | 118,800.00         | 189        |

### 1.2 Other Project Characteristics

|                                |                          |                                |       |                                  |       |
|--------------------------------|--------------------------|--------------------------------|-------|----------------------------------|-------|
| <b>Urbanization</b>            | Urban                    | <b>Wind Speed (m/s)</b>        | 2.6   | <b>Precipitation Freq (Days)</b> | 40    |
| <b>Climate Zone</b>            | 13                       |                                |       | <b>Operational Year</b>          | 2018  |
| <b>Utility Company</b>         | San Diego Gas & Electric |                                |       |                                  |       |
| <b>CO2 Intensity (lb/MWhr)</b> | 720.49                   | <b>CH4 Intensity (lb/MWhr)</b> | 0.029 | <b>N2O Intensity (lb/MWhr)</b>   | 0.006 |

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

## Project Characteristics -

Land Use - Other asphalt surfaces are new roads to be constructed on site. The roads' acreage and square footage were estimated from the Project's Tentative Map.

Construction Phase - Backbone infrastructure added as existing site does not contain utility installations; project schedule and total days changed from CalEEMod default to actual project schedule.

## Off-road Equipment -

Off-road Equipment - Added in the Backbone Infrastructure phase, as there are no current utilities underlying the new proposed lots. The commonly used construction equipment list from similarly sized projects was utilized for this phase.

## Off-road Equipment -

## Off-road Equipment -

## Off-road Equipment -

## Off-road Equipment -

Area Coating - Non-residential square footages reduced to 0 as this field was populated by CalEEMod due to the land use of Other Asphalt Surfaces, which does not apply to architectural coatings.

Construction Off-road Equipment Mitigation - All construction equipment shall be at minimum Tier 2, with level 2 diesel particulate filters.

Area Mitigation - Residential Interior and Exterior VOC in accordance with proposed SDAPCD rule 67.01.

Grading - Total acres grading changed to equal the total lot acreage.

Architectural Coating - Residential Interior and Exterior VOC in accordance with the proposed SDAPCD Rule 67.01; non-residential square footages reduced to 0 as this field was populated by CalEEMod due to the land use of Other Asphalt Surfaces, which does not apply to architectural coatings.

Vehicle Trips - The rate of 12 weekday trips per dwelling unit is based upon SANDAG's Traffic Generation Rates for Estate, Urban, or Rural Residential land uses, and is applied to both weekdays and weekends.

Woodstoves - Assumed no wood fireplaces and conservatively assumed all 66 residences would have natural gas fireplaces. Due to no wood fireplaces, wood mass is set to zero.

| Table Name              | Column Name                            | Default Value | New Value |
|-------------------------|----------------------------------------|---------------|-----------|
| tblArchitecturalCoating | ConstArea_Nonresidential_Exterior      | 58,860.00     | 0.00      |
| tblArchitecturalCoating | ConstArea_Nonresidential_Interior      | 176,580.00    | 0.00      |
| tblArchitecturalCoating | EF_Residential_Exterior                | 250.00        | 50.00     |
| tblArchitecturalCoating | EF_Residential_Interior                | 250.00        | 50.00     |
| tblAreaCoating          | Area_Nonresidential_Exterior           | 58860         | 0         |
| tblAreaCoating          | Area_Nonresidential_Interior           | 176580        | 0         |
| tblAreaMitigation       | UseLowVOCPaintResidentialExteriorValue | 250           | 50        |

|                         |                                        |           |         |
|-------------------------|----------------------------------------|-----------|---------|
| tblAreaMitigation       | UseLowVOCPaintResidentialInteriorValue | 250       | 50      |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | DPF                                    | No Change | Level 2 |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 3.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 1.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 4.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated             | 0.00      | 2.00    |

|                         |                            |           |          |
|-------------------------|----------------------------|-----------|----------|
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00      | 10.00    |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00      | 1.00     |
| tblConstEquipMitigation | NumberOfEquipmentMitigated | 0.00      | 1.00     |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstEquipMitigation | Tier                       | No Change | Tier 2   |
| tblConstructionPhase    | NumDays                    | 370.00    | 520.00   |
| tblConstructionPhase    | NumDays                    | 35.00     | 78.00    |
| tblConstructionPhase    | NumDays                    | 20.00     | 65.00    |
| tblConstructionPhase    | NumDays                    | 10.00     | 11.00    |
| tblConstructionPhase    | PhaseEndDate               | 4/27/2018 | 4/1/2018 |
| tblConstructionPhase    | PhaseEndDate               | 3/30/2018 | 4/1/2018 |
| tblConstructionPhase    | PhaseEndDate               | 7/1/2016  | 4/1/2016 |
| tblConstructionPhase    | PhaseStartDate             | 4/2/2018  | 3/5/2018 |
| tblConstructionPhase    | PhaseStartDate             | 4/2/2016  | 1/2/2016 |
| tblFireplaces           | FireplaceWoodMass          | 3,078.40  | 0.00     |

|                           |                            |          |                         |
|---------------------------|----------------------------|----------|-------------------------|
| tblFireplaces             | NumberGas                  | 36.30    | 66.00                   |
| tblFireplaces             | NumberNoFireplace          | 6.60     | 0.00                    |
| tblFireplaces             | NumberWood                 | 23.10    | 0.00                    |
| tblOffRoadEquipment       | HorsePower                 | 400.00   | 122.00                  |
| tblOffRoadEquipment       | LoadFactor                 | 0.38     | 0.44                    |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0.00     | 1.00                    |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0.00     | 1.00                    |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0.00     | 1.00                    |
| tblOffRoadEquipment       | PhaseName                  |          | Backbone Infrastructure |
| tblOffRoadEquipment       | PhaseName                  |          | Backbone Infrastructure |
| tblOffRoadEquipment       | PhaseName                  |          | Backbone Infrastructure |
| tblProjectCharacteristics | OperationalYear            | 2014     | 2018                    |
| tblVehicleTrips           | ST_TR                      | 10.08    | 12.00                   |
| tblVehicleTrips           | SU_TR                      | 8.77     | 12.00                   |
| tblVehicleTrips           | WD_TR                      | 9.57     | 12.00                   |
| tblWoodstoves             | WoodstoveWoodMass          | 3,019.20 | 0.00                    |

## 2.0 Emissions Summary

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**2.1 Overall Construction (Maximum Daily Emission)****Unmitigated Construction**

|              | ROG            | NOx             | CO              | SO2           | Fugitive PM10  | Exhaust PM10   | PM10 Total     | Fugitive PM2.5 | Exhaust PM2.5  | PM2.5 Total    | Bio- CO2      | NBio- CO2          | Total CO2          | CH4           | N2O           | CO2e               |
|--------------|----------------|-----------------|-----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|--------------------|---------------|---------------|--------------------|
| Year         | lb/day         |                 |                 |               |                |                |                |                |                |                | lb/day        |                    |                    |               |               |                    |
| 2015         | 6.8566         | 79.1481         | 51.8047         | 0.0637        | 18.2141        | 3.8035         | 21.3036        | 9.9699         | 3.4992         | 12.8122        | 0.0000        | 6,655.2974         | 6,655.2974         | 1.9459        | 0.0000        | 6,696.1602         |
| 2016         | 6.5536         | 74.9058         | 50.0067         | 0.0637        | 8.8376         | 3.5855         | 12.4231        | 3.6401         | 3.2986         | 6.9387         | 0.0000        | 6,578.1150         | 6,578.1150         | 1.9437        | 0.0000        | 6,618.9325         |
| 2017         | 3.6341         | 28.9667         | 24.6715         | 0.0401        | 0.7723         | 1.8183         | 2.5905         | 0.2083         | 1.7070         | 1.9153         | 0.0000        | 3,817.3935         | 3,817.3935         | 0.6837        | 0.0000        | 3,831.7522         |
| 2018         | 40.6727        | 27.6391         | 26.0255         | 0.0445        | 0.8955         | 1.6803         | 2.5758         | 0.2410         | 1.5880         | 1.8290         | 0.0000        | 4,150.2772         | 4,150.2772         | 0.7030        | 0.0000        | 4,165.0395         |
| <b>Total</b> | <b>57.7170</b> | <b>210.6597</b> | <b>152.5083</b> | <b>0.2120</b> | <b>28.7195</b> | <b>10.8875</b> | <b>38.8930</b> | <b>14.0593</b> | <b>10.0929</b> | <b>23.4952</b> | <b>0.0000</b> | <b>21,201.0831</b> | <b>21,201.0831</b> | <b>5.2763</b> | <b>0.0000</b> | <b>21,311.8844</b> |

## 2.1 Overall Construction (Maximum Daily Emission)

### Mitigated Construction

|       | ROG     | NOx      | CO       | SO2    | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2   | Total CO2   | CH4    | N2O    | CO2e        |
|-------|---------|----------|----------|--------|---------------|--------------|------------|----------------|---------------|-------------|----------|-------------|-------------|--------|--------|-------------|
| Year  | lb/day  |          |          |        |               |              |            |                |               |             | lb/day   |             |             |        |        |             |
| 2015  | 1.9737  | 51.0479  | 38.9079  | 0.0637 | 8.2777        | 0.6904       | 8.7594     | 4.5080         | 0.6903        | 4.9896      | 0.0000   | 6,655.2974  | 6,655.2974  | 1.9459 | 0.0000 | 6,696.1602  |
| 2016  | 1.9663  | 51.0385  | 38.8125  | 0.0637 | 4.0673        | 0.6904       | 4.7577     | 1.6620         | 0.6903        | 2.3523      | 0.0000   | 6,578.1150  | 6,578.1150  | 1.9437 | 0.0000 | 6,618.9325  |
| 2017  | 1.6100  | 26.0226  | 24.3580  | 0.0401 | 0.7723        | 0.4878       | 1.2601     | 0.2083         | 0.4849        | 0.6932      | 0.0000   | 3,817.3935  | 3,817.3935  | 0.6837 | 0.0000 | 3,831.7522  |
| 2018  | 38.8974 | 28.1864  | 26.2866  | 0.0445 | 0.8955        | 0.5338       | 1.4293     | 0.2410         | 0.5310        | 0.7720      | 0.0000   | 4,150.2772  | 4,150.2772  | 0.7030 | 0.0000 | 4,165.0395  |
| Total | 44.4473 | 156.2954 | 128.3649 | 0.2120 | 14.0127       | 2.4024       | 16.2064    | 6.6193         | 2.3964        | 8.8070      | 0.0000   | 21,201.0831 | 21,201.0831 | 5.2763 | 0.0000 | 21,311.8844 |

|                   | 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 |
|-------------------|-------|-------|-------|------|---------------|--------------|------------|----------------|---------------|-------------|----------|----------|-----------|------|------|------|
| Percent Reduction | 22.99 | 25.81 | 15.83 | 0.00 | 51.21         | 77.93        | 58.33      | 52.92          | 76.26         | 62.52       | 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         | 6.3782        | 0.0638        | 5.5028         | 2.9000e-004   |               | 0.1185        | 0.1185        |                | 0.1176        | 0.1176        | 0.0000        | 1,407.477<br>3         | 1,407.477<br>3         | 0.0366        | 0.0256        | 1,416.188<br>7         |
| Energy       | 0.0539        | 0.4608        | 0.1961         | 2.9400e-003   |               | 0.0373        | 0.0373        |                | 0.0373        | 0.0373        |               | 588.2773               | 588.2773               | 0.0113        | 0.0108        | 591.8575               |
| Mobile       | 2.8041        | 6.2602        | 28.5916        | 0.0674        | 4.7849        | 0.0832        | 4.8681        | 1.2773         | 0.0767        | 1.3540        |               | 5,515.644<br>3         | 5,515.644<br>3         | 0.2240        |               | 5,520.348<br>6         |
| <b>Total</b> | <b>9.2362</b> | <b>6.7848</b> | <b>34.2904</b> | <b>0.0706</b> | <b>4.7849</b> | <b>0.2390</b> | <b>5.0239</b> | <b>1.2773</b>  | <b>0.2315</b> | <b>1.5088</b> | <b>0.0000</b> | <b>7,511.398<br/>9</b> | <b>7,511.398<br/>9</b> | <b>0.2719</b> | <b>0.0364</b> | <b>7,528.394<br/>7</b> |

### 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         | 5.5635        | 0.0638        | 5.5028         | 2.9000e-004   |               | 0.1185        | 0.1185        |                | 0.1176        | 0.1176        | 0.0000        | 1,407.477<br>3         | 1,407.477<br>3         | 0.0366        | 0.0256        | 1,416.188<br>7         |
| Energy       | 0.0433        | 0.3699        | 0.1574         | 2.3600e-003   |               | 0.0299        | 0.0299        |                | 0.0299        | 0.0299        |               | 472.1551               | 472.1551               | 9.0500e-003   | 8.6600e-003   | 475.0286               |
| Mobile       | 2.8041        | 6.2602        | 28.5916        | 0.0674        | 4.7849        | 0.0832        | 4.8681        | 1.2773         | 0.0767        | 1.3540        |               | 5,515.644<br>3         | 5,515.644<br>3         | 0.2240        |               | 5,520.348<br>6         |
| <b>Total</b> | <b>8.4109</b> | <b>6.6938</b> | <b>34.2517</b> | <b>0.0701</b> | <b>4.7849</b> | <b>0.2316</b> | <b>5.0165</b> | <b>1.2773</b>  | <b>0.2242</b> | <b>1.5015</b> | <b>0.0000</b> | <b>7,395.276<br/>7</b> | <b>7,395.276<br/>7</b> | <b>0.2696</b> | <b>0.0343</b> | <b>7,411.565<br/>9</b> |



|                   | 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 |
|-------------------|------|------|------|------|---------------|--------------|------------|----------------|---------------|-------------|----------|----------|-----------|------|------|------|
| Percent Reduction | 8.94 | 1.34 | 0.11 | 0.82 | 0.00          | 3.08         | 0.15       | 0.00           | 3.18          | 0.49        | 0.00     | 1.55     | 1.55      | 0.82 | 5.85 | 1.55 |

### 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      | 9/1/2015   | 9/15/2015 | 5             | 11       |                   |
| 2            | Grading                 | Grading               | 9/16/2015  | 1/1/2016  | 5             | 78       |                   |
| 3            | Backbone Infrastructure | Trenching             | 1/2/2016   | 4/1/2016  | 5             | 65       |                   |
| 4            | Paving                  | Paving                | 1/2/2016   | 4/1/2016  | 5             | 65       |                   |
| 5            | Building Construction   | Building Construction | 4/2/2016   | 4/1/2018  | 5             | 520      |                   |
| 6            | Architectural Coating   | Architectural Coating | 3/5/2018   | 4/1/2018  | 5             | 20       |                   |

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 195

Acres of Paving: 0

Residential Indoor: 240,570; Residential Outdoor: 80,190; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

#### OffRoad Equipment

| Phase Name              | Offroad Equipment Type    | Amount | Usage Hours | Horse Power | Load Factor |
|-------------------------|---------------------------|--------|-------------|-------------|-------------|
| Site Preparation        | Rubber Tired Dozers       | 3      | 8.00        | 255         | 0.40        |
| Site Preparation        | Tractors/Loaders/Backhoes | 4      | 8.00        | 97          | 0.37        |
| Grading                 | Excavators                | 2      | 8.00        | 162         | 0.38        |
| Grading                 | Graders                   | 1      | 8.00        | 174         | 0.41        |
| Grading                 | Rubber Tired Dozers       | 1      | 8.00        | 255         | 0.40        |
| Grading                 | Scrapers                  | 2      | 8.00        | 361         | 0.48        |
| Grading                 | Tractors/Loaders/Backhoes | 2      | 8.00        | 97          | 0.37        |
| Backbone Infrastructure | Off-Highway Trucks        | 1      | 8.00        | 122         | 0.44        |
| Backbone Infrastructure | Tractors/Loaders/Backhoes | 1      | 8.00        | 97          | 0.37        |
| Backbone Infrastructure | Trenchers                 | 1      | 8.00        | 80          | 0.50        |
| Paving                  | Pavers                    | 2      | 8.00        | 125         | 0.42        |
| Paving                  | Paving Equipment          | 2      | 8.00        | 130         | 0.36        |
| Paving                  | Rollers                   | 2      | 8.00        | 80          | 0.38        |
| Building Construction   | Cranes                    | 1      | 7.00        | 226         | 0.29        |
| Building Construction   | Forklifts                 | 3      | 8.00        | 89          | 0.20        |
| Building Construction   | Generator Sets            | 1      | 8.00        | 84          | 0.74        |
| Building Construction   | Tractors/Loaders/Backhoes | 3      | 7.00        | 97          | 0.37        |
| Building Construction   | Welders                   | 1      | 8.00        | 46          | 0.45        |
| Architectural Coating   | Air Compressors           | 1      | 6.00        | 78          | 0.48        |

**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        | 7                       | 18.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Grading                 | 8                       | 20.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Backbone Infrastructure | 3                       | 8.00               | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Paving                  | 6                       | 15.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Building Construction   | 9                       | 73.00              | 26.00              | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Architectural Coating   | 1                       | 15.00              | 0.00               | 0.00                | 10.80              | 7.30               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |

### 3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Clean Paved Roads

### 3.2 Site Preparation - 2015

#### Unmitigated Construction On-Site

|               | ROG           | NOx            | CO             | SO2           | Fugitive PM10  | Exhaust PM10  | PM10 Total     | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total    | Bio- CO2 | NBio- CO2              | Total CO2              | CH4           | N2O | CO2e                   |
|---------------|---------------|----------------|----------------|---------------|----------------|---------------|----------------|----------------|---------------|----------------|----------|------------------------|------------------------|---------------|-----|------------------------|
| Category      | lb/day        |                |                |               |                |               |                |                |               |                | lb/day   |                        |                        |               |     |                        |
| Fugitive Dust |               |                |                |               | 18.0663        | 0.0000        | 18.0663        | 9.9307         | 0.0000        | 9.9307         |          |                        | 0.0000                 |               |     | 0.0000                 |
| Off-Road      | 5.2609        | 56.8897        | 42.6318        | 0.0391        |                | 3.0883        | 3.0883         |                | 2.8412        | 2.8412         |          | 4,111.744<br>4         | 4,111.744<br>4         | 1.2275        |     | 4,137.522<br>5         |
| <b>Total</b>  | <b>5.2609</b> | <b>56.8897</b> | <b>42.6318</b> | <b>0.0391</b> | <b>18.0663</b> | <b>3.0883</b> | <b>21.1545</b> | <b>9.9307</b>  | <b>2.8412</b> | <b>12.7719</b> |          | <b>4,111.744<br/>4</b> | <b>4,111.744<br/>4</b> | <b>1.2275</b> |     | <b>4,137.522<br/>5</b> |

**3.2 Site Preparation - 2015****Unmitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0734        | 0.0913        | 0.8682        | 1.7600e-003        | 0.1479        | 1.1600e-003        | 0.1490        | 0.0392         | 1.0600e-003        | 0.0403        |          | 152.1487        | 152.1487        | 8.4900e-003        |     | 152.3270        |
| <b>Total</b> | <b>0.0734</b> | <b>0.0913</b> | <b>0.8682</b> | <b>1.7600e-003</b> | <b>0.1479</b> | <b>1.1600e-003</b> | <b>0.1490</b> | <b>0.0392</b>  | <b>1.0600e-003</b> | <b>0.0403</b> |          | <b>152.1487</b> | <b>152.1487</b> | <b>8.4900e-003</b> |     | <b>152.3270</b> |

**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 |               |                |                |               | 8.1298        | 0.0000        | 8.1298        | 4.4688         | 0.0000        | 4.4688        |               |                        | 0.0000                 |               |     | 0.0000                 |
| Off-Road      | 1.2300        | 34.4240        | 23.4003        | 0.0391        |               | 0.4805        | 0.4805        |                | 0.4805        | 0.4805        | 0.0000        | 4,111.744<br>4         | 4,111.744<br>4         | 1.2275        |     | 4,137.522<br>4         |
| <b>Total</b>  | <b>1.2300</b> | <b>34.4240</b> | <b>23.4003</b> | <b>0.0391</b> | <b>8.1298</b> | <b>0.4805</b> | <b>8.6104</b> | <b>4.4688</b>  | <b>0.4805</b> | <b>4.9493</b> | <b>0.0000</b> | <b>4,111.744<br/>4</b> | <b>4,111.744<br/>4</b> | <b>1.2275</b> |     | <b>4,137.522<br/>4</b> |

### 3.2 Site Preparation - 2015

#### Mitigated Construction Off-Site

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0734        | 0.0913        | 0.8682        | 1.7600e-003        | 0.1479        | 1.1600e-003        | 0.1490        | 0.0392         | 1.0600e-003        | 0.0403        |          | 152.1487        | 152.1487        | 8.4900e-003        |     | 152.3270        |
| <b>Total</b> | <b>0.0734</b> | <b>0.0913</b> | <b>0.8682</b> | <b>1.7600e-003</b> | <b>0.1479</b> | <b>1.1600e-003</b> | <b>0.1490</b> | <b>0.0392</b>  | <b>1.0600e-003</b> | <b>0.0403</b> |          | <b>152.1487</b> | <b>152.1487</b> | <b>8.4900e-003</b> |     | <b>152.3270</b> |

### 3.3 Grading - 2015

#### Unmitigated Construction On-Site

|               | ROG           | NOx            | CO             | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total     | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2 | NBio- CO2         | Total CO2         | CH4           | N2O | CO2e              |
|---------------|---------------|----------------|----------------|---------------|---------------|---------------|----------------|----------------|---------------|---------------|----------|-------------------|-------------------|---------------|-----|-------------------|
| Category      | lb/day        |                |                |               |               |               |                |                |               |               | lb/day   |                   |                   |               |     |                   |
| Fugitive Dust |               |                |                |               | 8.6733        | 0.0000        | 8.6733         | 3.5965         | 0.0000        | 3.5965        |          |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 6.7751        | 79.0467        | 50.8400        | 0.0618        |               | 3.8022        | 3.8022         |                | 3.4980        | 3.4980        |          | 6,486.2433        | 6,486.2433        | 1.9364        |     | 6,526.9080        |
| <b>Total</b>  | <b>6.7751</b> | <b>79.0467</b> | <b>50.8400</b> | <b>0.0618</b> | <b>8.6733</b> | <b>3.8022</b> | <b>12.4755</b> | <b>3.5965</b>  | <b>3.4980</b> | <b>7.0945</b> |          | <b>6,486.2433</b> | <b>6,486.2433</b> | <b>1.9364</b> |     | <b>6,526.9080</b> |

### 3.3 Grading - 2015

#### Unmitigated Construction Off-Site

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0815        | 0.1015        | 0.9647        | 1.9600e-003        | 0.1643        | 1.2900e-003        | 0.1656        | 0.0436         | 1.1800e-003        | 0.0448        |          | 169.0541        | 169.0541        | 9.4300e-003        |     | 169.2522        |
| <b>Total</b> | <b>0.0815</b> | <b>0.1015</b> | <b>0.9647</b> | <b>1.9600e-003</b> | <b>0.1643</b> | <b>1.2900e-003</b> | <b>0.1656</b> | <b>0.0436</b>  | <b>1.1800e-003</b> | <b>0.0448</b> |          | <b>169.0541</b> | <b>169.0541</b> | <b>9.4300e-003</b> |     | <b>169.2522</b> |

#### 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 |               |                |                |               | 3.9030        | 0.0000        | 3.9030        | 1.6184         | 0.0000        | 1.6184        |               |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 1.8922        | 50.9465        | 37.9432        | 0.0618        |               | 0.6891        | 0.6891        |                | 0.6891        | 0.6891        | 0.0000        | 6,486.2433        | 6,486.2433        | 1.9364        |     | 6,526.9080        |
| <b>Total</b>  | <b>1.8922</b> | <b>50.9465</b> | <b>37.9432</b> | <b>0.0618</b> | <b>3.9030</b> | <b>0.6891</b> | <b>4.5921</b> | <b>1.6184</b>  | <b>0.6891</b> | <b>2.3076</b> | <b>0.0000</b> | <b>6,486.2433</b> | <b>6,486.2433</b> | <b>1.9364</b> |     | <b>6,526.9080</b> |

**3.3 Grading - 2015****Mitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2 | NBio- CO2       | Total CO2       | CH4                | N2O | CO2e            |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|----------|-----------------|-----------------|--------------------|-----|-----------------|
| Category     | lb/day        |               |               |                    |               |                    |               |                |                    |               | lb/day   |                 |                 |                    |     |                 |
| Hauling      | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Vendor       | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000         | 0.0000             | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             |     | 0.0000          |
| Worker       | 0.0815        | 0.1015        | 0.9647        | 1.9600e-003        | 0.1643        | 1.2900e-003        | 0.1656        | 0.0436         | 1.1800e-003        | 0.0448        |          | 169.0541        | 169.0541        | 9.4300e-003        |     | 169.2522        |
| <b>Total</b> | <b>0.0815</b> | <b>0.1015</b> | <b>0.9647</b> | <b>1.9600e-003</b> | <b>0.1643</b> | <b>1.2900e-003</b> | <b>0.1656</b> | <b>0.0436</b>  | <b>1.1800e-003</b> | <b>0.0448</b> |          | <b>169.0541</b> | <b>169.0541</b> | <b>9.4300e-003</b> |     | <b>169.2522</b> |

**3.3 Grading - 2016****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 |               |                |                |               | 8.6733        | 0.0000        | 8.6733         | 3.5965         | 0.0000        | 3.5965        |          |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 6.4795        | 74.8137        | 49.1374        | 0.0617        |               | 3.5842        | 3.5842         |                | 3.2975        | 3.2975        |          | 6,414.9807        | 6,414.9807        | 1.9350        |     | 6,455.6154        |
| <b>Total</b>  | <b>6.4795</b> | <b>74.8137</b> | <b>49.1374</b> | <b>0.0617</b> | <b>8.6733</b> | <b>3.5842</b> | <b>12.2576</b> | <b>3.5965</b>  | <b>3.2975</b> | <b>6.8940</b> |          | <b>6,414.9807</b> | <b>6,414.9807</b> | <b>1.9350</b> |     | <b>6,455.6154</b> |

**3.3 Grading - 2016****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       | 0.0741        | 0.0921        | 0.8693        | 1.9500e-003        | 0.1643        | 1.2300e-003        | 0.1655        | 0.0436         | 1.1300e-003        | 0.0447        |          | 163.1343        | 163.1343        | 8.7000e-003        |     | 163.3171        |
| <b>Total</b> | <b>0.0741</b> | <b>0.0921</b> | <b>0.8693</b> | <b>1.9500e-003</b> | <b>0.1643</b> | <b>1.2300e-003</b> | <b>0.1655</b> | <b>0.0436</b>  | <b>1.1300e-003</b> | <b>0.0447</b> |          | <b>163.1343</b> | <b>163.1343</b> | <b>8.7000e-003</b> |     | <b>163.3171</b> |

**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 |               |                |                |               | 3.9030        | 0.0000        | 3.9030        | 1.6184         | 0.0000        | 1.6184        |               |                   | 0.0000            |               |     | 0.0000            |
| Off-Road      | 1.8922        | 50.9465        | 37.9432        | 0.0617        |               | 0.6891        | 0.6891        |                | 0.6891        | 0.6891        | 0.0000        | 6,414.9807        | 6,414.9807        | 1.9350        |     | 6,455.6154        |
| <b>Total</b>  | <b>1.8922</b> | <b>50.9465</b> | <b>37.9432</b> | <b>0.0617</b> | <b>3.9030</b> | <b>0.6891</b> | <b>4.5921</b> | <b>1.6184</b>  | <b>0.6891</b> | <b>2.3076</b> | <b>0.0000</b> | <b>6,414.9807</b> | <b>6,414.9807</b> | <b>1.9350</b> |     | <b>6,455.6154</b> |



### 3.3 Grading - 2016

#### 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       | 0.0741        | 0.0921        | 0.8693        | 1.9500e-003        | 0.1643        | 1.2300e-003        | 0.1655        | 0.0436         | 1.1300e-003        | 0.0447        |          | 163.1343        | 163.1343        | 8.7000e-003        |     | 163.3171        |
| <b>Total</b> | <b>0.0741</b> | <b>0.0921</b> | <b>0.8693</b> | <b>1.9500e-003</b> | <b>0.1643</b> | <b>1.2300e-003</b> | <b>0.1655</b> | <b>0.0436</b>  | <b>1.1300e-003</b> | <b>0.0447</b> |          | <b>163.1343</b> | <b>163.1343</b> | <b>8.7000e-003</b> |     | <b>163.3171</b> |

### 3.4 Backbone Infrastructure - 2016

#### 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     | 1.3442        | 12.5240        | 8.5009        | 0.0112        |               | 0.8765        | 0.8765        |                | 0.8064        | 0.8064        |          | 1,160.1420        | 1,160.1420        | 0.3499        |     | 1,167.4907        |
| <b>Total</b> | <b>1.3442</b> | <b>12.5240</b> | <b>8.5009</b> | <b>0.0112</b> |               | <b>0.8765</b> | <b>0.8765</b> |                | <b>0.8064</b> | <b>0.8064</b> |          | <b>1,160.1420</b> | <b>1,160.1420</b> | <b>0.3499</b> |     | <b>1,167.4907</b> |

**3.4 Backbone Infrastructure - 2016****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       | 0.0296        | 0.0368        | 0.3477        | 7.8000e-004        | 0.0657        | 4.9000e-004        | 0.0662        | 0.0174         | 4.5000e-004        | 0.0179        |          | 65.2537        | 65.2537        | 3.4800e-003        |     | 65.3268        |
| <b>Total</b> | <b>0.0296</b> | <b>0.0368</b> | <b>0.3477</b> | <b>7.8000e-004</b> | <b>0.0657</b> | <b>4.9000e-004</b> | <b>0.0662</b> | <b>0.0174</b>  | <b>4.5000e-004</b> | <b>0.0179</b> |          | <b>65.2537</b> | <b>65.2537</b> | <b>3.4800e-003</b> |     | <b>65.3268</b> |

**Mitigated Construction On-Site**

|              | ROG           | NOx            | CO            | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2         | Total CO2         | CH4           | N2O | CO2e              |
|--------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|-------------------|-------------------|---------------|-----|-------------------|
| Category     | lb/day        |                |               |               |               |               |               |                |               |               | lb/day        |                   |                   |               |     |                   |
| Off-Road     | 0.4877        | 10.3057        | 8.4553        | 0.0112        |               | 0.1891        | 0.1891        |                | 0.1891        | 0.1891        | 0.0000        | 1,160.1420        | 1,160.1420        | 0.3499        |     | 1,167.4907        |
| <b>Total</b> | <b>0.4877</b> | <b>10.3057</b> | <b>8.4553</b> | <b>0.0112</b> |               | <b>0.1891</b> | <b>0.1891</b> |                | <b>0.1891</b> | <b>0.1891</b> | <b>0.0000</b> | <b>1,160.1420</b> | <b>1,160.1420</b> | <b>0.3499</b> |     | <b>1,167.4907</b> |

### 3.4 Backbone Infrastructure - 2016

#### 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       | 0.0296        | 0.0368        | 0.3477        | 7.8000e-004        | 0.0657        | 4.9000e-004        | 0.0662        | 0.0174         | 4.5000e-004        | 0.0179        |          | 65.2537        | 65.2537        | 3.4800e-003        |     | 65.3268        |
| <b>Total</b> | <b>0.0296</b> | <b>0.0368</b> | <b>0.3477</b> | <b>7.8000e-004</b> | <b>0.0657</b> | <b>4.9000e-004</b> | <b>0.0662</b> | <b>0.0174</b>  | <b>4.5000e-004</b> | <b>0.0179</b> |          | <b>65.2537</b> | <b>65.2537</b> | <b>3.4800e-003</b> |     | <b>65.3268</b> |

### 3.5 Paving - 2016

#### 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     | 2.0898        | 22.3859        | 14.8176        | 0.0223        |               | 1.2610        | 1.2610        |                | 1.1601        | 1.1601        |          | 2,316.3767        | 2,316.3767        | 0.6987        |     | 2,331.0495        |
| Paving       | 0.1088        |                |                |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          |                   | 0.0000            |               |     | 0.0000            |
| <b>Total</b> | <b>2.1986</b> | <b>22.3859</b> | <b>14.8176</b> | <b>0.0223</b> |               | <b>1.2610</b> | <b>1.2610</b> |                | <b>1.1601</b> | <b>1.1601</b> |          | <b>2,316.3767</b> | <b>2,316.3767</b> | <b>0.6987</b> |     | <b>2,331.0495</b> |

**3.5 Paving - 2016****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       | 0.0556        | 0.0690        | 0.6519        | 1.4700e-003        | 0.1232        | 9.2000e-004        | 0.1242        | 0.0327         | 8.5000e-004        | 0.0335        |          | 122.3507        | 122.3507        | 6.5300e-003        |     | 122.4878        |
| <b>Total</b> | <b>0.0556</b> | <b>0.0690</b> | <b>0.6519</b> | <b>1.4700e-003</b> | <b>0.1232</b> | <b>9.2000e-004</b> | <b>0.1242</b> | <b>0.0327</b>  | <b>8.5000e-004</b> | <b>0.0335</b> |          | <b>122.3507</b> | <b>122.3507</b> | <b>6.5300e-003</b> |     | <b>122.4878</b> |

**Mitigated Construction On-Site**

|              | ROG           | NOx            | CO             | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2         | Total CO2         | CH4           | N2O | CO2e              |
|--------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|-------------------|-------------------|---------------|-----|-------------------|
| Category     | lb/day        |                |                |               |               |               |               |                |               |               | lb/day        |                   |                   |               |     |                   |
| Off-Road     | 0.9122        | 19.6998        | 16.9276        | 0.0223        |               | 0.3271        | 0.3271        |                | 0.3271        | 0.3271        | 0.0000        | 2,316.3767        | 2,316.3767        | 0.6987        |     | 2,331.0495        |
| Paving       | 0.1088        |                |                |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                   | 0.0000            |               |     | 0.0000            |
| <b>Total</b> | <b>1.0210</b> | <b>19.6998</b> | <b>16.9276</b> | <b>0.0223</b> |               | <b>0.3271</b> | <b>0.3271</b> |                | <b>0.3271</b> | <b>0.3271</b> | <b>0.0000</b> | <b>2,316.3767</b> | <b>2,316.3767</b> | <b>0.6987</b> |     | <b>2,331.0495</b> |

**3.5 Paving - 2016****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       | 0.0556        | 0.0690        | 0.6519        | 1.4700e-003        | 0.1232        | 9.2000e-004        | 0.1242        | 0.0327         | 8.5000e-004        | 0.0335        |          | 122.3507        | 122.3507        | 6.5300e-003        |     | 122.4878        |
| <b>Total</b> | <b>0.0556</b> | <b>0.0690</b> | <b>0.6519</b> | <b>1.4700e-003</b> | <b>0.1232</b> | <b>9.2000e-004</b> | <b>0.1242</b> | <b>0.0327</b>  | <b>8.5000e-004</b> | <b>0.0335</b> |          | <b>122.3507</b> | <b>122.3507</b> | <b>6.5300e-003</b> |     | <b>122.4878</b> |

**3.6 Building Construction - 2016****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     | 3.4062        | 28.5063        | 18.5066        | 0.0268        |               | 1.9674        | 1.9674        |                | 1.8485        | 1.8485        |          | 2,669.2864        | 2,669.2864        | 0.6620        |     | 2,683.1890        |
| <b>Total</b> | <b>3.4062</b> | <b>28.5063</b> | <b>18.5066</b> | <b>0.0268</b> |               | <b>1.9674</b> | <b>1.9674</b> |                | <b>1.8485</b> | <b>1.8485</b> |          | <b>2,669.2864</b> | <b>2,669.2864</b> | <b>0.6620</b> |     | <b>2,683.1890</b> |

**3.6 Building Construction - 2016****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       | 0.3138        | 2.5238        | 3.8925        | 6.1600e-003   | 0.1726        | 0.0377        | 0.2102        | 0.0492         | 0.0346        | 0.0839        |          | 615.5740          | 615.5740          | 4.9100e-003   |     | 615.6772          |
| Worker       | 0.2705        | 0.3360        | 3.1728        | 7.1300e-003   | 0.5997        | 4.5000e-003   | 0.6042        | 0.1591         | 4.1400e-003   | 0.1632        |          | 595.4401          | 595.4401          | 0.0318        |     | 596.1072          |
| <b>Total</b> | <b>0.5843</b> | <b>2.8598</b> | <b>7.0653</b> | <b>0.0133</b> | <b>0.7723</b> | <b>0.0422</b> | <b>0.8144</b> | <b>0.2083</b>  | <b>0.0388</b> | <b>0.2471</b> |          | <b>1,211.0141</b> | <b>1,211.0141</b> | <b>0.0367</b> |     | <b>1,211.7844</b> |

**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     | 1.0782        | 23.4615        | 17.8156        | 0.0268        |               | 0.4508        | 0.4508        |                | 0.4508        | 0.4508        | 0.0000        | 2,669.2864        | 2,669.2864        | 0.6620        |     | 2,683.1890        |
| <b>Total</b> | <b>1.0782</b> | <b>23.4615</b> | <b>17.8156</b> | <b>0.0268</b> |               | <b>0.4508</b> | <b>0.4508</b> |                | <b>0.4508</b> | <b>0.4508</b> | <b>0.0000</b> | <b>2,669.2864</b> | <b>2,669.2864</b> | <b>0.6620</b> |     | <b>2,683.1890</b> |

**3.6 Building Construction - 2016****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       | 0.3138        | 2.5238        | 3.8925        | 6.1600e-003   | 0.1726        | 0.0377        | 0.2102        | 0.0492         | 0.0346        | 0.0839        |          | 615.5740          | 615.5740          | 4.9100e-003   |     | 615.6772          |
| Worker       | 0.2705        | 0.3360        | 3.1728        | 7.1300e-003   | 0.5997        | 4.5000e-003   | 0.6042        | 0.1591         | 4.1400e-003   | 0.1632        |          | 595.4401          | 595.4401          | 0.0318        |     | 596.1072          |
| <b>Total</b> | <b>0.5843</b> | <b>2.8598</b> | <b>7.0653</b> | <b>0.0133</b> | <b>0.7723</b> | <b>0.0422</b> | <b>0.8144</b> | <b>0.2083</b>  | <b>0.0388</b> | <b>0.2471</b> |          | <b>1,211.0141</b> | <b>1,211.0141</b> | <b>0.0367</b> |     | <b>1,211.7844</b> |

**3.6 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     | 3.1024        | 26.4057        | 18.1291        | 0.0268        |               | 1.7812        | 1.7812        |                | 1.6730        | 1.6730        |          | 2,639.8053        | 2,639.8053        | 0.6497        |     | 2,653.4490        |
| <b>Total</b> | <b>3.1024</b> | <b>26.4057</b> | <b>18.1291</b> | <b>0.0268</b> |               | <b>1.7812</b> | <b>1.7812</b> |                | <b>1.6730</b> | <b>1.6730</b> |          | <b>2,639.8053</b> | <b>2,639.8053</b> | <b>0.6497</b> |     | <b>2,653.4490</b> |

**3.6 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       | 0.2867        | 2.2557        | 3.6868        | 6.1400e-003   | 0.1726        | 0.0327        | 0.2053        | 0.0492         | 0.0301        | 0.0793        |          | 605.1601          | 605.1601          | 4.6500e-003   |     | 605.2578          |
| Worker       | 0.2451        | 0.3054        | 2.8555        | 7.1300e-003   | 0.5997        | 4.3600e-003   | 0.6040        | 0.1591         | 4.0200e-003   | 0.1631        |          | 572.4282          | 572.4282          | 0.0294        |     | 573.0454          |
| <b>Total</b> | <b>0.5318</b> | <b>2.5611</b> | <b>6.5424</b> | <b>0.0133</b> | <b>0.7723</b> | <b>0.0370</b> | <b>0.8093</b> | <b>0.2083</b>  | <b>0.0341</b> | <b>0.2424</b> |          | <b>1,177.5882</b> | <b>1,177.5882</b> | <b>0.0340</b> |     | <b>1,178.3031</b> |

**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     | 1.0782        | 23.4615        | 17.8156        | 0.0268        |               | 0.4508        | 0.4508        |                | 0.4508        | 0.4508        | 0.0000        | 2,639.8053        | 2,639.8053        | 0.6497        |     | 2,653.4490        |
| <b>Total</b> | <b>1.0782</b> | <b>23.4615</b> | <b>17.8156</b> | <b>0.0268</b> |               | <b>0.4508</b> | <b>0.4508</b> |                | <b>0.4508</b> | <b>0.4508</b> | <b>0.0000</b> | <b>2,639.8053</b> | <b>2,639.8053</b> | <b>0.6497</b> |     | <b>2,653.4490</b> |



### 3.6 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       | 0.2867        | 2.2557        | 3.6868        | 6.1400e-003   | 0.1726        | 0.0327        | 0.2053        | 0.0492         | 0.0301        | 0.0793        |          | 605.1601          | 605.1601          | 4.6500e-003   |     | 605.2578          |
| Worker       | 0.2451        | 0.3054        | 2.8555        | 7.1300e-003   | 0.5997        | 4.3600e-003   | 0.6040        | 0.1591         | 4.0200e-003   | 0.1631        |          | 572.4282          | 572.4282          | 0.0294        |     | 573.0454          |
| <b>Total</b> | <b>0.5318</b> | <b>2.5611</b> | <b>6.5424</b> | <b>0.0133</b> | <b>0.7723</b> | <b>0.0370</b> | <b>0.8093</b> | <b>0.2083</b>  | <b>0.0341</b> | <b>0.2424</b> |          | <b>1,177.5882</b> | <b>1,177.5882</b> | <b>0.0340</b> |     | <b>1,178.3031</b> |

### 3.6 Building Construction - 2018

#### 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     | 2.6687        | 23.2608        | 17.5327        | 0.0268        |               | 1.4943        | 1.4943        |                | 1.4048        | 1.4048        |          | 2,609.9390        | 2,609.9390        | 0.6387        |     | 2,623.3517        |
| <b>Total</b> | <b>2.6687</b> | <b>23.2608</b> | <b>17.5327</b> | <b>0.0268</b> |               | <b>1.4943</b> | <b>1.4943</b> |                | <b>1.4048</b> | <b>1.4048</b> |          | <b>2,609.9390</b> | <b>2,609.9390</b> | <b>0.6387</b> |     | <b>2,623.3517</b> |

**3.6 Building Construction - 2018****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       | 0.2688        | 2.0365        | 3.5298        | 6.1300e-003   | 0.1726        | 0.0303        | 0.2029        | 0.0492         | 0.0279        | 0.0771        |          | 594.7573          | 594.7573          | 4.5700e-003   |     | 594.8532          |
| Worker       | 0.2227        | 0.2787        | 2.5789        | 7.1300e-003   | 0.5997        | 4.2800e-003   | 0.6040        | 0.1591         | 3.9600e-003   | 0.1630        |          | 550.9280          | 550.9280          | 0.0273        |     | 551.5021          |
| <b>Total</b> | <b>0.4915</b> | <b>2.3152</b> | <b>6.1087</b> | <b>0.0133</b> | <b>0.7722</b> | <b>0.0346</b> | <b>0.8069</b> | <b>0.2083</b>  | <b>0.0319</b> | <b>0.2402</b> |          | <b>1,145.6853</b> | <b>1,145.6853</b> | <b>0.0319</b> |     | <b>1,146.3553</b> |

**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     | 1.0782        | 23.4615        | 17.8156        | 0.0268        |               | 0.4508        | 0.4508        |                | 0.4508        | 0.4508        | 0.0000        | 2,609.9389        | 2,609.9389        | 0.6387        |     | 2,623.3517        |
| <b>Total</b> | <b>1.0782</b> | <b>23.4615</b> | <b>17.8156</b> | <b>0.0268</b> |               | <b>0.4508</b> | <b>0.4508</b> |                | <b>0.4508</b> | <b>0.4508</b> | <b>0.0000</b> | <b>2,609.9389</b> | <b>2,609.9389</b> | <b>0.6387</b> |     | <b>2,623.3517</b> |

### 3.6 Building Construction - 2018

#### 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       | 0.2688        | 2.0365        | 3.5298        | 6.1300e-003   | 0.1726        | 0.0303        | 0.2029        | 0.0492         | 0.0279        | 0.0771        |          | 594.7573          | 594.7573          | 4.5700e-003   |     | 594.8532          |
| Worker       | 0.2227        | 0.2787        | 2.5789        | 7.1300e-003   | 0.5997        | 4.2800e-003   | 0.6040        | 0.1591         | 3.9600e-003   | 0.1630        |          | 550.9280          | 550.9280          | 0.0273        |     | 551.5021          |
| <b>Total</b> | <b>0.4915</b> | <b>2.3152</b> | <b>6.1087</b> | <b>0.0133</b> | <b>0.7722</b> | <b>0.0346</b> | <b>0.8069</b> | <b>0.2083</b>  | <b>0.0319</b> | <b>0.2402</b> |          | <b>1,145.6853</b> | <b>1,145.6853</b> | <b>0.0319</b> |     | <b>1,146.3553</b> |

### 3.7 Architectural Coating - 2018

#### 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 | 37.1681        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          |                 | 0.0000          |               |     | 0.0000          |
| Off-Road        | 0.2986         | 2.0058        | 1.8542        | 2.9700e-003        |               | 0.1506        | 0.1506        |                | 0.1506        | 0.1506        |          | 281.4485        | 281.4485        | 0.0267        |     | 282.0102        |
| <b>Total</b>    | <b>37.4667</b> | <b>2.0058</b> | <b>1.8542</b> | <b>2.9700e-003</b> |               | <b>0.1506</b> | <b>0.1506</b> |                | <b>0.1506</b> | <b>0.1506</b> |          | <b>281.4485</b> | <b>281.4485</b> | <b>0.0267</b> |     | <b>282.0102</b> |

### 3.7 Architectural Coating - 2018

#### 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       | 0.0458        | 0.0573        | 0.5299        | 1.4600e-003        | 0.1232        | 8.8000e-004        | 0.1241        | 0.0327         | 8.1000e-004        | 0.0335        |          | 113.2044        | 113.2044        | 5.6200e-003        |     | 113.3224        |
| <b>Total</b> | <b>0.0458</b> | <b>0.0573</b> | <b>0.5299</b> | <b>1.4600e-003</b> | <b>0.1232</b> | <b>8.8000e-004</b> | <b>0.1241</b> | <b>0.0327</b>  | <b>8.1000e-004</b> | <b>0.0335</b> |          | <b>113.2044</b> | <b>113.2044</b> | <b>5.6200e-003</b> |     | <b>113.3224</b> |

#### 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 | 37.1681        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                 | 0.0000          |               |     | 0.0000          |
| Off-Road        | 0.1139         | 2.3524        | 1.8324        | 2.9700e-003        |               | 0.0475        | 0.0475        |                | 0.0475        | 0.0475        | 0.0000        | 281.4485        | 281.4485        | 0.0267        |     | 282.0102        |
| <b>Total</b>    | <b>37.2820</b> | <b>2.3524</b> | <b>1.8324</b> | <b>2.9700e-003</b> |               | <b>0.0475</b> | <b>0.0475</b> |                | <b>0.0475</b> | <b>0.0475</b> | <b>0.0000</b> | <b>281.4485</b> | <b>281.4485</b> | <b>0.0267</b> |     | <b>282.0102</b> |

### 3.7 Architectural Coating - 2018

#### 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       | 0.0458        | 0.0573        | 0.5299        | 1.4600e-003        | 0.1232        | 8.8000e-004        | 0.1241        | 0.0327         | 8.1000e-004        | 0.0335        |          | 113.2044        | 113.2044        | 5.6200e-003        |     | 113.3224        |
| <b>Total</b> | <b>0.0458</b> | <b>0.0573</b> | <b>0.5299</b> | <b>1.4600e-003</b> | <b>0.1232</b> | <b>8.8000e-004</b> | <b>0.1241</b> | <b>0.0327</b>  | <b>8.1000e-004</b> | <b>0.0335</b> |          | <b>113.2044</b> | <b>113.2044</b> | <b>5.6200e-003</b> |     | <b>113.3224</b> |

### 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   | 2.8041 | 6.2602 | 28.5916 | 0.0674 | 4.7849        | 0.0832       | 4.8681     | 1.2773         | 0.0767        | 1.3540      |          | 5,515.644<br>3 | 5,515.644<br>3 | 0.2240 |     | 5,520.348<br>6 |
| Unmitigated | 2.8041 | 6.2602 | 28.5916 | 0.0674 | 4.7849        | 0.0832       | 4.8681     | 1.2773         | 0.0767        | 1.3540      |          | 5,515.644<br>3 | 5,515.644<br>3 | 0.2240 |     | 5,520.348<br>6 |

## 4.2 Trip Summary Information

| Land Use               | Average Daily Trip Rate |          |        | Unmitigated | Mitigated  |
|------------------------|-------------------------|----------|--------|-------------|------------|
|                        | Weekday                 | Saturday | Sunday | Annual VMT  | Annual VMT |
| Other Asphalt Surfaces | 0.00                    | 0.00     | 0.00   |             |            |
| Single Family Housing  | 792.00                  | 792.00   | 792.00 | 2,261,400   | 2,261,400  |
| Total                  | 792.00                  | 792.00   | 792.00 | 2,261,400   | 2,261,400  |

## 4.3 Trip Type Information

| Land Use               | Miles      |            |             | Trip %     |            |             | Trip Purpose % |          |         |
|------------------------|------------|------------|-------------|------------|------------|-------------|----------------|----------|---------|
|                        | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary        | Diverted | Pass-by |
| Other Asphalt Surfaces | 9.50       | 7.30       | 7.30        | 0.00       | 0.00       | 0.00        | 0              | 0        | 0       |
| Single Family Housing  | 10.80      | 7.30       | 7.50        | 41.60      | 18.80      | 39.60       | 86             | 11       | 3       |

| LDA      | LDT1     | LDT2     | MDV      | LHD1     | LHD2     | MHD      | HHD      | OBUS     | UBUS     | MCY      | SBUS     | MH       |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 0.511818 | 0.073499 | 0.191840 | 0.131575 | 0.036332 | 0.005186 | 0.012677 | 0.022513 | 0.001864 | 0.002072 | 0.006564 | 0.000601 | 0.003458 |

## 5.0 Energy Detail

### 4.4 Fleet Mix

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

Exceed Title 24

|                        | 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   | 0.0433 | 0.3699 | 0.1574 | 2.3600e-003 |               | 0.0299       | 0.0299     |                | 0.0299        | 0.0299      |          | 472.1551  | 472.1551  | 9.0500e-003 | 8.6600e-003 | 475.0286 |
| NaturalGas Unmitigated | 0.0539 | 0.4608 | 0.1961 | 2.9400e-003 |               | 0.0373       | 0.0373     |                | 0.0373        | 0.0373      |          | 588.2773  | 588.2773  | 0.0113      | 0.0108      | 591.8575 |

## 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   |                 |                 |               |               |                 |
| Single Family Housing  | 5000.36        | 0.0539        | 0.4608        | 0.1961        | 2.9400e-003        |               | 0.0373        | 0.0373        |                | 0.0373        | 0.0373        |          | 588.2773        | 588.2773        | 0.0113        | 0.0108        | 591.8575        |
| Other Asphalt Surfaces | 0              | 0.0000        | 0.0000        | 0.0000        | 0.0000             |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          | 0.0000          | 0.0000          | 0.0000        | 0.0000        | 0.0000          |
| <b>Total</b>           |                | <b>0.0539</b> | <b>0.4608</b> | <b>0.1961</b> | <b>2.9400e-003</b> |               | <b>0.0373</b> | <b>0.0373</b> |                | <b>0.0373</b> | <b>0.0373</b> |          | <b>588.2773</b> | <b>588.2773</b> | <b>0.0113</b> | <b>0.0108</b> | <b>591.8575</b> |

## 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        | lb/day        |               |               |                    |               |               |               |                |               |               | lb/day   |                 |                 |                    |                    |                 |
| Single Family Housing  | 4.01332        | 0.0433        | 0.3699        | 0.1574        | 2.3600e-003        |               | 0.0299        | 0.0299        |                | 0.0299        | 0.0299        |          | 472.1551        | 472.1551        | 9.0500e-003        | 8.6600e-003        | 475.0286        |
| Other Asphalt Surfaces | 0              | 0.0000        | 0.0000        | 0.0000        | 0.0000             |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |          | 0.0000          | 0.0000          | 0.0000             | 0.0000             | 0.0000          |
| <b>Total</b>           |                | <b>0.0433</b> | <b>0.3699</b> | <b>0.1574</b> | <b>2.3600e-003</b> |               | <b>0.0299</b> | <b>0.0299</b> |                | <b>0.0299</b> | <b>0.0299</b> |          | <b>472.1551</b> | <b>472.1551</b> | <b>9.0500e-003</b> | <b>8.6600e-003</b> | <b>475.0286</b> |

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - 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   | 5.5635 | 0.0638 | 5.5028 | 2.9000e-004 |               | 0.1185       | 0.1185     |                | 0.1176        | 0.1176      | 0.0000   | 1,407.4773 | 1,407.4773 | 0.0366 | 0.0256 | 1,416.1887 |
| Unmitigated | 6.3782 | 0.0638 | 5.5028 | 2.9000e-004 |               | 0.1185       | 0.1185     |                | 0.1176        | 0.1176      | 0.0000   | 1,407.4773 | 1,407.4773 | 0.0366 | 0.0256 | 1,416.1887 |



**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 | 1.0183        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Consumer Products     | 5.0615        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Hearth                | 0.1281        | 1.0000e-005   | 6.9900e-003   | 0.0000             |               | 0.0885        | 0.0885        |                | 0.0876        | 0.0876        | 0.0000        | 1,397.647<br>1         | 1,397.647<br>1         | 0.0268        | 0.0256        | 1,406.152<br>9         |
| Landscaping           | 0.1702        | 0.0638        | 5.4958        | 2.9000e-004        |               | 0.0300        | 0.0300        |                | 0.0300        | 0.0300        |               | 9.8302                 | 9.8302                 | 9.7900e-003   |               | 10.0358                |
| <b>Total</b>          | <b>6.3782</b> | <b>0.0638</b> | <b>5.5028</b> | <b>2.9000e-004</b> |               | <b>0.1185</b> | <b>0.1185</b> |                | <b>0.1176</b> | <b>0.1176</b> | <b>0.0000</b> | <b>1,407.477<br/>3</b> | <b>1,407.477<br/>3</b> | <b>0.0366</b> | <b>0.0256</b> | <b>1,416.188<br/>7</b> |

## 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 | 0.2037        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Consumer Products     | 5.0615        |               |               |                    |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        |               |                        | 0.0000                 |               |               | 0.0000                 |
| Hearth                | 0.1281        | 1.0000e-005   | 6.9900e-003   | 0.0000             |               | 0.0885        | 0.0885        |                | 0.0876        | 0.0876        | 0.0000        | 1,397.647<br>1         | 1,397.647<br>1         | 0.0268        | 0.0256        | 1,406.152<br>9         |
| Landscaping           | 0.1702        | 0.0638        | 5.4958        | 2.9000e-004        |               | 0.0300        | 0.0300        |                | 0.0300        | 0.0300        |               | 9.8302                 | 9.8302                 | 9.7900e-003   |               | 10.0358                |
| <b>Total</b>          | <b>5.5635</b> | <b>0.0638</b> | <b>5.5028</b> | <b>2.9000e-004</b> |               | <b>0.1185</b> | <b>0.1185</b> |                | <b>0.1176</b> | <b>0.1176</b> | <b>0.0000</b> | <b>1,407.477<br/>3</b> | <b>1,407.477<br/>3</b> | <b>0.0366</b> | <b>0.0256</b> | <b>1,416.188<br/>7</b> |

## 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

**Brightwater Ranch**  
**San Diego County, Annual**

## 1.0 Project Characteristics

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### 1.1 Land Usage

| Land Uses              | Size   | Metric        | Lot Acreage | Floor Surface Area | Population |
|------------------------|--------|---------------|-------------|--------------------|------------|
| Other Asphalt Surfaces | 117.72 | 1000sqft      | 2.7         | 117,720.00         | 0          |
| Single Family Housing  | 66     | Dwelling Unit | 21.43       | 118,800.00         | 189        |

### 1.2 Other Project Characteristics

|                                     |                          |                                     |       |                                     |       |
|-------------------------------------|--------------------------|-------------------------------------|-------|-------------------------------------|-------|
| <b>Urbanization</b>                 | Urban                    | <b>Wind Speed (m/s)</b>             | 2.6   | <b>Precipitation Freq (Days)</b>    | 40    |
| <b>Climate Zone</b>                 | 13                       |                                     |       | <b>Operational Year</b>             | 2018  |
| <b>Utility Company</b>              | San Diego Gas & Electric |                                     |       |                                     |       |
| <b>CO2 Intensity<br/>(lb/MW hr)</b> | 720.49                   | <b>CH4 Intensity<br/>(lb/MW hr)</b> | 0.029 | <b>N2O Intensity<br/>(lb/MW hr)</b> | 0.006 |

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

[illegible]

[illegible]

|                           |                            |           |                         |
|---------------------------|----------------------------|-----------|-------------------------|
| tblConstEquipMitigation   | Tier                       | No Change | Tier 2                  |
| tblConstEquipMitigation   | Tier                       | No Change | Tier 2                  |
| tblConstEquipMitigation   | Tier                       | No Change | Tier 2                  |
| tblConstEquipMitigation   | Tier                       | No Change | Tier 2                  |
| tblConstEquipMitigation   | Tier                       | No Change | Tier 2                  |
| tblConstEquipMitigation   | Tier                       | No Change | Tier 2                  |
| tblConstEquipMitigation   | Tier                       | No Change | Tier 2                  |
| tblConstructionPhase      | NumDays                    | 370       | 520                     |
| tblConstructionPhase      | NumDays                    | 35        | 78                      |
| tblConstructionPhase      | NumDays                    | 20        | 65                      |
| tblConstructionPhase      | NumDays                    | 10        | 11                      |
| tblConstructionPhase      | PhaseEndDate               | 4/27/2018 | 3/30/2018               |
| tblConstructionPhase      | PhaseEndDate               | 7/1/2016  | 4/1/2016                |
| tblConstructionPhase      | PhaseStartDate             | 3/31/2018 | 3/5/2018                |
| tblConstructionPhase      | PhaseStartDate             | 4/2/2016  | 1/2/2016                |
| tblOffRoadEquipment       | HorsePower                 | 400       | 122                     |
| tblOffRoadEquipment       | LoadFactor                 | 0.38      | 0.44                    |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0         | 1                       |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0         | 1                       |
| tblOffRoadEquipment       | OffRoadEquipmentUnitAmount | 0         | 1                       |
| tblOffRoadEquipment       | PhaseName                  |           | Backbone Infrastructure |
| tblOffRoadEquipment       | PhaseName                  |           | Backbone Infrastructure |
| tblOffRoadEquipment       | PhaseName                  |           | Backbone Infrastructure |
| tblProjectCharacteristics | OperationalYear            | 2014      | 2018                    |
| tblVehicleTrips           | ST_TR                      | 10.08     | 12                      |
| tblVehicleTrips           | SU_TR                      | 8.77      | 12                      |
| tblVehicleTrips           | WD_TR                      | 9.57      | 12                      |

## 2.0 Emissions Summary

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### 2.1 Overall Construction

#### Unmitigated Construction

|       | ROG     | NOx     | CO     | SO2      | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4    | N2O | CO2e     |
|-------|---------|---------|--------|----------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|--------|-----|----------|
| Year  | tons/yr |         |        |          |               |              |            |                |               |             | MT/yr    |           |           |        |     |          |
| 2015  | 0.2931  | 3.3605  | 2.2334 | 2.68E-03 | 0.4446        | 0.1634       | 0.608      | 0.1967         | 0.1504        | 0.3471      | 0        | 253.7879  | 253.7879  | 0.0741 | 0   | 255.3446 |
| 2016  | 0.5063  | 4.2347  | 3.2739 | 5.11E-03 | 0.4179        | 0.2672       | 0.6851     | 0.1618         | 0.2496        | 0.4114      | 0        | 455.052   | 455.052   | 0.0939 | 0   | 457.0237 |
| 2017  | 0.468   | 3.767   | 3.1634 | 5.22E-03 | 0.0981        | 0.2364       | 0.3344     | 0.0265         | 0.2219        | 0.2484      | 0        | 451.1922  | 451.1922  | 0.0806 | 0   | 452.8854 |
| 2018  | 0.4768  | 0.8522  | 0.7817 | 1.35E-03 | 0.0257        | 0.0512       | 0.0769     | 6.95E-03       | 0.0482        | 0.0552      | 0        | 114.56    | 114.56    | 0.0201 | 0   | 114.9813 |
| Total | 1.7442  | 12.2144 | 9.4523 | 0.0144   | 0.9863        | 0.7182       | 1.7045     | 0.392          | 0.67          | 1.062       | 0        | 1,274.59  | 1,274.59  | 0.2687 | 0   | 1,280.24 |

Mitigated Construction

|       | ROG     | NOx    | CO     | SO2      | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4    | N2O | CO2e     |
|-------|---------|--------|--------|----------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|--------|-----|----------|
| Year  | tons/yr |        |        |          |               |              |            |                |               |             | MT/yr    |           |           |        |     |          |
| 2015  | 0.0829  | 2.1551 | 1.6311 | 2.68E-03 | 0.2039        | 0.0292       | 0.2331     | 0.0896         | 0.0292        | 0.1188      | 0        | 253.7876  | 253.7876  | 0.0741 | 0   | 255.3443 |
| 2016  | 0.211   | 3.5715 | 3.268  | 5.11E-03 | 0.2319        | 0.0652       | 0.2971     | 0.0846         | 0.0649        | 0.1495      | 0        | 455.0516  | 455.0516  | 0.0939 | 0   | 457.0233 |
| 2017  | 0.2049  | 3.3843 | 3.1226 | 5.22E-03 | 0.0981        | 0.0634       | 0.1615     | 0.0265         | 0.063         | 0.0895      | 0        | 451.1919  | 451.1919  | 0.0806 | 0   | 452.8851 |
| 2018  | 0.4233  | 0.8621 | 0.7906 | 1.35E-03 | 0.0257        | 0.0163       | 0.042      | 6.95E-03       | 0.0162        | 0.0231      | 0        | 114.5599  | 114.5599  | 0.0201 | 0   | 114.9812 |
| Total | 0.922   | 9.973  | 8.8124 | 0.0144   | 0.5596        | 0.1741       | 0.7337     | 0.2076         | 0.1733        | 0.3809      | 0        | 1,274.59  | 1,274.59  | 0.2687 | 0   | 1,280.23 |

|                   | 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 |
|-------------------|-------|-------|------|-----|---------------|--------------|------------|----------------|---------------|-------------|----------|----------|-----------|-----|-----|------|
| Percent Reduction | 47.14 | 18.35 | 6.77 | 0   | 43.27         | 75.76        | 56.96      | 47.03          | 74.14         | 64.13       | 0        | 0        | 0         | 0   | 0   | 0    |



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     | 5.2661   | 0.0619 | 5.5962  | 2.02E-03 |               | 0.7194       | 0.7194     |                | 0.7194        | 0.7194      | 68.1752  | 29.3943   | 97.5695   | 0.0637   | 5.36E-03 | 100.5699 |
| Energy   | 9.84E-03 | 0.0841 | 0.0358  | 5.40E-04 |               | 6.80E-03     | 6.80E-03   |                | 6.80E-03      | 6.80E-03    | 0        | 251.062   | 251.062   | 8.05E-03 | 3.07E-03 | 252.1813 |
| Mobile   | 0.4796   | 1.1346 | 5.0663  | 0.0124   | 0.8504        | 0.0151       | 0.8655     | 0.2274         | 0.0139        | 0.2414      | 0        | 916.9952  | 916.9952  | 0.0369   | 0        | 917.7707 |
| Waste    |          |        |         |          |               | 0            | 0          |                | 0             | 0           | 15.7298  | 0         | 15.7298   | 0.9296   | 0        | 35.2514  |
| Water    |          |        |         |          |               | 0            | 0          |                | 0             | 0           | 1.3642   | 28.142    | 29.5062   | 0.1413   | 3.54E-03 | 33.5708  |
| Total    | 5.7556   | 1.2806 | 10.6983 | 0.0149   | 0.8504        | 0.7413       | 1.5917     | 0.2274         | 0.7401        | 0.9676      | 85.2692  | 1,225.59  | 1,310.86  | 1.1795   | 0.012    | 1,339.34 |

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     | 0.9809   | 5.74E-03 | 0.4949 | 3.00E-05 |               | 5.96E-03     | 5.96E-03   |                | 5.93E-03      | 5.93E-03    | 0        | 47.589    | 47.589    | 1.70E-03 | 8.60E-04 | 47.8905  |
| Energy   | 7.90E-03 | 0.0675   | 0.0287 | 4.30E-04 |               | 5.46E-03     | 5.46E-03   |                | 5.46E-03      | 5.46E-03    | 0        | 229.5416  | 229.5416  | 7.59E-03 | 2.69E-03 | 230.536  |
| Mobile   | 0.4796   | 1.1346   | 5.0663 | 0.0124   | 0.8504        | 0.0151       | 0.8655     | 0.2274         | 0.0139        | 0.2414      | 0        | 916.9952  | 916.9952  | 0.0369   | 0        | 917.7707 |
| Waste    |          |          |        |          |               | 0            | 0          |                | 0             | 0           | 15.7298  | 0         | 15.7298   | 0.9296   | 0        | 35.2514  |
| Water    |          |          |        |          |               | 0            | 0          |                | 0             | 0           | 1.3642   | 28.142    | 29.5062   | 0.1412   | 3.54E-03 | 33.5687  |
| Total    | 1.4684   | 1.2078   | 5.5899 | 0.0128   | 0.8504        | 0.0265       | 0.8769     | 0.2274         | 0.0253        | 0.2528      | 17.094   | 1,222.27  | 1,239.36  | 1.1171   | 7.09E-03 | 1,265.02 |

|                   | 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 |
|-------------------|-------|------|-------|-------|---------------|--------------|------------|----------------|---------------|-------------|----------|----------|-----------|-----|-------|------|
| Percent Reduction | 74.49 | 5.68 | 47.75 | 14.08 | 0             | 96.42        | 44.91      | 0              | 96.58         | 73.88       | 79.95    | 0.27     | 5.45      | 5.3 | 40.77 | 5.55 |

### 3.0 Construction Detail

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#### Construction Phase

| Phase Number | Phase Name              | Phase Type            | Start Date | End Date  | Num Days Week | Num Days | Phase Description |
|--------------|-------------------------|-----------------------|------------|-----------|---------------|----------|-------------------|
| 1            | Site Preparation        | Site Preparation      | 9/1/2015   | 9/15/2015 | 5             | 11       |                   |
| 2            | Grading                 | Grading               | 9/16/2015  | 1/1/2016  | 5             | 78       |                   |
| 3            | Backbone Infrastructure | Trenching             | 1/2/2016   | 4/1/2016  | 5             | 65       |                   |
| 4            | Paving                  | Paving                | 1/2/2016   | 4/1/2016  | 5             | 65       |                   |
| 5            | Building Construction   | Building Construction | 4/2/2016   | 3/30/2018 | 5             | 520      |                   |
| 6            | Architectural Coating   | Architectural Coating | 3/5/2018   | 3/30/2018 | 5             | 20       |                   |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 195**

**Acres of Paving: 0**

**Residential Indoor: 240,570; Residential Outdoor: 80,190; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –**

OffRoad Equipment

| Phase Name              | Offroad Equipment Type    | Amount | Usage Hours | Horse Power | Load Factor |
|-------------------------|---------------------------|--------|-------------|-------------|-------------|
| Site Preparation        | Rubber Tired Dozers       | 3      | 8           | 255         | 0.4         |
| Site Preparation        | Tractors/Loaders/Backhoes | 4      | 8           | 97          | 0.37        |
| Grading                 | Excavators                | 2      | 8           | 162         | 0.38        |
| Grading                 | Graders                   | 1      | 8           | 174         | 0.41        |
| Grading                 | Rubber Tired Dozers       | 1      | 8           | 255         | 0.4         |
| Grading                 | Scrapers                  | 2      | 8           | 361         | 0.48        |
| Grading                 | Tractors/Loaders/Backhoes | 2      | 8           | 97          | 0.37        |
| Backbone Infrastructure | Off-Highway Trucks        | 1      | 8           | 122         | 0.44        |
| Backbone Infrastructure | Tractors/Loaders/Backhoes | 1      | 8           | 97          | 0.37        |
| Backbone Infrastructure | Trenchers                 | 1      | 8           | 80          | 0.5         |
| Paving                  | Pavers                    | 2      | 8           | 125         | 0.42        |
| Paving                  | Paving Equipment          | 2      | 8           | 130         | 0.36        |
| Paving                  | Rollers                   | 2      | 8           | 80          | 0.38        |
| Building Construction   | Cranes                    | 1      | 7           | 226         | 0.29        |
| Building Construction   | Forklifts                 | 3      | 8           | 89          | 0.2         |
| Building Construction   | Generator Sets            | 1      | 8           | 84          | 0.74        |
| Building Construction   | Tractors/Loaders/Backhoes | 3      | 7           | 97          | 0.37        |
| Building Construction   | Welders                   | 1      | 8           | 46          | 0.45        |
| Architectural Coating   | Air Compressors           | 1      | 6           | 78          | 0.48        |

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        | 7                       | 18                 | 0                  | 0                   | 10.8               | 7.3                | 20                  | LD_Mix               | HDT_Mix              | HHDT                  |
| Grading                 | 8                       | 20                 | 0                  | 0                   | 10.8               | 7.3                | 20                  | LD_Mix               | HDT_Mix              | HHDT                  |
| Backbone Infrastructure | 3                       | 8                  | 0                  | 0                   | 10.8               | 7.3                | 20                  | LD_Mix               | HDT_Mix              | HHDT                  |
| Paving                  | 6                       | 15                 | 0                  | 0                   | 10.8               | 7.3                | 20                  | LD_Mix               | HDT_Mix              | HHDT                  |
| Building Construction   | 9                       | 73                 | 26                 | 0                   | 10.8               | 7.3                | 20                  | LD_Mix               | HDT_Mix              | HHDT                  |
| Architectural Coating   | 1                       | 15                 | 0                  | 0                   | 10.8               | 7.3                | 20                  | LD_Mix               | HDT_Mix              | HHDT                  |

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2015

Unmitigated Construction On-Site

|               | ROG     | NOx    | CO     | SO2      | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4      | N2O | CO2e    |
|---------------|---------|--------|--------|----------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|----------|-----|---------|
| Category      | tons/yr |        |        |          |               |              |            |                |               |             | MT/yr    |           |           |          |     |         |
| Fugitive Dust |         |        |        |          | 0.0994        | 0            | 0.0994     | 0.0546         | 0             | 0.0546      | 0        | 0         | 0         | 0        | 0   | 0       |
| Off-Road      | 0.0289  | 0.3129 | 0.2345 | 2.20E-04 |               | 0.017        | 0.017      |                | 0.0156        | 0.0156      | 0        | 20.5156   | 20.5156   | 6.12E-03 | 0   | 20.6442 |
| Total         | 0.0289  | 0.3129 | 0.2345 | 2.20E-04 | 0.0994        | 0.017        | 0.1164     | 0.0546         | 0.0156        | 0.0703      | 0        | 20.5156   | 20.5156   | 6.12E-03 | 0   | 20.6442 |

### 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        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 3.70E-04 | 4.90E-04 | 4.74E-03 | 1.00E-05 | 7.90E-04      | 1.00E-05     | 8.00E-04   | 2.10E-04       | 1.00E-05      | 2.20E-04    | 0        | 0.7667    | 0.7667    | 4.00E-05 | 0   | 0.7676 |
| Total    | 3.70E-04 | 4.90E-04 | 4.74E-03 | 1.00E-05 | 7.90E-04      | 1.00E-05     | 8.00E-04   | 2.10E-04       | 1.00E-05      | 2.20E-04    | 0        | 0.7667    | 0.7667    | 4.00E-05 | 0   | 0.7676 |

### 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 |          |        |        |          | 0.0447        | 0            | 0.0447     | 0.0246         | 0             | 0.0246      | 0        | 0         | 0         | 0        | 0   | 0       |
| Off-Road      | 6.76E-03 | 0.1893 | 0.1287 | 2.20E-04 |               | 2.64E-03     | 2.64E-03   |                | 2.64E-03      | 2.64E-03    | 0        | 20.5156   | 20.5156   | 6.12E-03 | 0   | 20.6442 |
| Total         | 6.76E-03 | 0.1893 | 0.1287 | 2.20E-04 | 0.0447        | 2.64E-03     | 0.0474     | 0.0246         | 2.64E-03      | 0.0272      | 0        | 20.5156   | 20.5156   | 6.12E-03 | 0   | 20.6442 |

### 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        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 3.70E-04 | 4.90E-04 | 4.74E-03 | 1.00E-05 | 7.90E-04      | 1.00E-05     | 8.00E-04   | 2.10E-04       | 1.00E-05      | 2.20E-04    | 0        | 0.7667    | 0.7667    | 4.00E-05 | 0   | 0.7676 |
| Total    | 3.70E-04 | 4.90E-04 | 4.74E-03 | 1.00E-05 | 7.90E-04      | 1.00E-05     | 8.00E-04   | 2.10E-04       | 1.00E-05      | 2.20E-04    | 0        | 0.7667    | 0.7667    | 4.00E-05 | 0   | 0.7676 |

### 3.3 Grading - 2015

#### Unmitigated Construction On-Site

|               | ROG     | NOx    | CO     | SO2      | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4    | N2O | CO2e     |
|---------------|---------|--------|--------|----------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|--------|-----|----------|
| Category      | tons/yr |        |        |          |               |              |            |                |               |             | MT/yr    |           |           |        |     |          |
| Fugitive Dust |         |        |        |          | 0.3383        | 0            | 0.3383     | 0.1403         | 0             | 0.1403      | 0        | 0         | 0         | 0      | 0   | 0        |
| Off-Road      | 0.2608  | 3.0433 | 1.9573 | 2.38E-03 |               | 0.1464       | 0.1464     |                | 0.1347        | 0.1347      | 0        | 226.5425  | 226.5425  | 0.0676 | 0   | 227.9628 |
| Total         | 0.2608  | 3.0433 | 1.9573 | 2.38E-03 | 0.3383        | 0.1464       | 0.4846     | 0.1403         | 0.1347        | 0.2749      | 0        | 226.5425  | 226.5425  | 0.0676 | 0   | 227.9628 |

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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0    |
| Vendor   | 0        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0    |
| Worker   | 2.90E-03 | 3.85E-03 | 0.0369 | 8.00E-05 | 6.17E-03      | 5.00E-05     | 6.22E-03   | 1.64E-03       | 5.00E-05      | 1.69E-03    | 0        | 5.9631    | 5.9631    | 3.30E-04 | 0   | 5.97 |
| Total    | 2.90E-03 | 3.85E-03 | 0.0369 | 8.00E-05 | 6.17E-03      | 5.00E-05     | 6.22E-03   | 1.64E-03       | 5.00E-05      | 1.69E-03    | 0        | 5.9631    | 5.9631    | 3.30E-04 | 0   | 5.97 |

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 |         |        |        |          | 0.1522        | 0            | 0.1522     | 0.0631         | 0             | 0.0631      | 0        | 0         | 0         | 0      | 0   | 0        |
| Off-Road      | 0.0729  | 1.9614 | 1.4608 | 2.38E-03 |               | 0.0265       | 0.0265     |                | 0.0265        | 0.0265      | 0        | 226.5422  | 226.5422  | 0.0676 | 0   | 227.9625 |
| Total         | 0.0729  | 1.9614 | 1.4608 | 2.38E-03 | 0.1522        | 0.0265       | 0.1788     | 0.0631         | 0.0265        | 0.0897      | 0        | 226.5422  | 226.5422  | 0.0676 | 0   | 227.9625 |



### 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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0    |
| Vendor   | 0        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0    |
| Worker   | 2.90E-03 | 3.85E-03 | 0.0369 | 8.00E-05 | 6.17E-03      | 5.00E-05     | 6.22E-03   | 1.64E-03       | 5.00E-05      | 1.69E-03    | 0        | 5.9631    | 5.9631    | 3.30E-04 | 0   | 5.97 |
| Total    | 2.90E-03 | 3.85E-03 | 0.0369 | 8.00E-05 | 6.17E-03      | 5.00E-05     | 6.22E-03   | 1.64E-03       | 5.00E-05      | 1.69E-03    | 0        | 5.9631    | 5.9631    | 3.30E-04 | 0   | 5.97 |

### 3.3 Grading - 2016

#### 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 |          |        |        |          | 0.3383        | 0            | 0.3383     | 0.1403         | 0             | 0.1403      | 0        | 0         | 0         | 0        | 0   | 0      |
| Off-Road      | 3.24E-03 | 0.0374 | 0.0246 | 3.00E-05 |               | 1.79E-03     | 1.79E-03   |                | 1.65E-03      | 1.65E-03    | 0        | 2.9098    | 2.9098    | 8.80E-04 | 0   | 2.9282 |
| Total         | 3.24E-03 | 0.0374 | 0.0246 | 3.00E-05 | 0.3383        | 1.79E-03     | 0.3401     | 0.1403         | 1.65E-03      | 0.1419      | 0        | 2.9098    | 2.9098    | 8.80E-04 | 0   | 2.9282 |

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        | 0        | 0        | 0   | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0   | 0   | 0      |
| Vendor   | 0        | 0        | 0        | 0   | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0   | 0   | 0      |
| Worker   | 3.00E-05 | 5.00E-05 | 4.30E-04 | 0   | 8.00E-05      | 0            | 8.00E-05   | 2.00E-05       | 0             | 2.00E-05    | 0        | 0.0747    | 0.0747    | 0   | 0   | 0.0748 |
| Total    | 3.00E-05 | 5.00E-05 | 4.30E-04 | 0   | 8.00E-05      | 0            | 8.00E-05   | 2.00E-05       | 0             | 2.00E-05    | 0        | 0.0747    | 0.0747    | 0   | 0   | 0.0748 |

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 |          |        |       |          | 0.1522        | 0            | 0.1522     | 0.0631         | 0             | 0.0631      | 0        | 0         | 0         | 0        | 0   | 0      |
| Off-Road      | 9.50E-04 | 0.0255 | 0.019 | 3.00E-05 |               | 3.40E-04     | 3.40E-04   |                | 3.40E-04      | 3.40E-04    | 0        | 2.9098    | 2.9098    | 8.80E-04 | 0   | 2.9282 |
| Total         | 9.50E-04 | 0.0255 | 0.019 | 3.00E-05 | 0.1522        | 3.40E-04     | 0.1526     | 0.0631         | 3.40E-04      | 0.0635      | 0        | 2.9098    | 2.9098    | 8.80E-04 | 0   | 2.9282 |

### 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        | 0        | 0        | 0   | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0   | 0   | 0      |
| Vendor   | 0        | 0        | 0        | 0   | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0   | 0   | 0      |
| Worker   | 3.00E-05 | 5.00E-05 | 4.30E-04 | 0   | 8.00E-05      | 0            | 8.00E-05   | 2.00E-05       | 0             | 2.00E-05    | 0        | 0.0747    | 0.0747    | 0   | 0   | 0.0748 |
| Total    | 3.00E-05 | 5.00E-05 | 4.30E-04 | 0   | 8.00E-05      | 0            | 8.00E-05   | 2.00E-05       | 0             | 2.00E-05    | 0        | 0.0747    | 0.0747    | 0   | 0   | 0.0748 |

### 3.4 Backbone Infrastructure - 2016

#### 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 | 0.0437  | 0.407 | 0.2763 | 3.60E-04 |               | 0.0285       | 0.0285     |                | 0.0262        | 0.0262      | 0        | 34.2051   | 34.2051   | 0.0103 | 0   | 34.4217 |
| Total    | 0.0437  | 0.407 | 0.2763 | 3.60E-04 |               | 0.0285       | 0.0285     |                | 0.0262        | 0.0262      | 0        | 34.2051   | 34.2051   | 0.0103 | 0   | 34.4217 |

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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 8.90E-04 | 1.18E-03 | 0.0112 | 3.00E-05 | 2.08E-03      | 2.00E-05     | 2.10E-03   | 5.50E-04       | 1.00E-05      | 5.70E-04    | 0        | 1.943     | 1.943     | 1.00E-04 | 0   | 1.9452 |
| Total    | 8.90E-04 | 1.18E-03 | 0.0112 | 3.00E-05 | 2.08E-03      | 2.00E-05     | 2.10E-03   | 5.50E-04       | 1.00E-05      | 5.70E-04    | 0        | 1.943     | 1.943     | 1.00E-04 | 0   | 1.9452 |

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 | 0.0159  | 0.3349 | 0.2748 | 3.60E-04 |               | 6.15E-03     | 6.15E-03   |                | 6.15E-03      | 6.15E-03    | 0        | 34.205    | 34.205    | 0.0103 | 0   | 34.4217 |
| Total    | 0.0159  | 0.3349 | 0.2748 | 3.60E-04 |               | 6.15E-03     | 6.15E-03   |                | 6.15E-03      | 6.15E-03    | 0        | 34.205    | 34.205    | 0.0103 | 0   | 34.4217 |

### 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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 8.90E-04 | 1.18E-03 | 0.0112 | 3.00E-05 | 2.08E-03      | 2.00E-05     | 2.10E-03   | 5.50E-04       | 1.00E-05      | 5.70E-04    | 0        | 1.943     | 1.943     | 1.00E-04 | 0   | 1.9452 |
| Total    | 8.90E-04 | 1.18E-03 | 0.0112 | 3.00E-05 | 2.08E-03      | 2.00E-05     | 2.10E-03   | 5.50E-04       | 1.00E-05      | 5.70E-04    | 0        | 1.943     | 1.943     | 1.00E-04 | 0   | 1.9452 |

### 3.5 Paving - 2016

#### 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 | 0.0679   | 0.7275 | 0.4816 | 7.20E-04 |               | 0.041        | 0.041      |                | 0.0377        | 0.0377      | 0        | 68.2949   | 68.2949   | 0.0206 | 0   | 68.7275 |
| Paving   | 3.54E-03 |        |        |          |               | 0            | 0          |                | 0             | 0           | 0        | 0         | 0         | 0      | 0   | 0       |
| Total    | 0.0715   | 0.7275 | 0.4816 | 7.20E-04 |               | 0.041        | 0.041      |                | 0.0377        | 0.0377      | 0        | 68.2949   | 68.2949   | 0.0206 | 0   | 68.7275 |

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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 1.67E-03 | 2.21E-03 | 0.0211 | 5.00E-05 | 3.91E-03      | 3.00E-05     | 3.94E-03   | 1.04E-03       | 3.00E-05      | 1.07E-03    | 0        | 3.6431    | 3.6431    | 1.90E-04 | 0   | 3.6472 |
| Total    | 1.67E-03 | 2.21E-03 | 0.0211 | 5.00E-05 | 3.91E-03      | 3.00E-05     | 3.94E-03   | 1.04E-03       | 3.00E-05      | 1.07E-03    | 0        | 3.6431    | 3.6431    | 1.90E-04 | 0   | 3.6472 |

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 | 0.0296   | 0.6402 | 0.5502 | 7.20E-04 |               | 0.0106       | 0.0106     |                | 0.0106        | 0.0106      | 0        | 68.2948   | 68.2948   | 0.0206 | 0   | 68.7274 |
| Paving   | 3.54E-03 |        |        |          |               | 0            | 0          |                | 0             | 0           | 0        | 0         | 0         | 0      | 0   | 0       |
| Total    | 0.0332   | 0.6402 | 0.5502 | 7.20E-04 |               | 0.0106       | 0.0106     |                | 0.0106        | 0.0106      | 0        | 68.2948   | 68.2948   | 0.0206 | 0   | 68.7274 |

### 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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 1.67E-03 | 2.21E-03 | 0.0211 | 5.00E-05 | 3.91E-03      | 3.00E-05     | 3.94E-03   | 1.04E-03       | 3.00E-05      | 1.07E-03    | 0        | 3.6431    | 3.6431    | 1.90E-04 | 0   | 3.6472 |
| Total    | 1.67E-03 | 2.21E-03 | 0.0211 | 5.00E-05 | 3.91E-03      | 3.00E-05     | 3.94E-03   | 1.04E-03       | 3.00E-05      | 1.07E-03    | 0        | 3.6431    | 3.6431    | 1.90E-04 | 0   | 3.6472 |

### 3.6 Building Construction - 2016

#### 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 | 0.3321  | 2.7794 | 1.8044 | 2.61E-03 |               | 0.1918       | 0.1918     |                | 0.1802        | 0.1802      | 0        | 236.0998  | 236.0998  | 0.0586 | 0   | 237.3294 |
| Total    | 0.3321  | 2.7794 | 1.8044 | 2.61E-03 |               | 0.1918       | 0.1918     |                | 0.1802        | 0.1802      | 0        | 236.0998  | 236.0998  | 0.0586 | 0   | 237.3294 |

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       | 0      | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0        |
| Vendor   | 0.0288  | 0.2477 | 0.347  | 6.00E-04 | 0.0165        | 3.65E-03     | 0.0201     | 4.72E-03       | 3.36E-03      | 8.07E-03    | 0        | 54.6918   | 54.6918   | 4.30E-04 | 0   | 54.7008  |
| Worker   | 0.0244  | 0.0323 | 0.3074 | 7.00E-04 | 0.0571        | 4.40E-04     | 0.0575     | 0.0152         | 4.00E-04      | 0.0156      | 0        | 53.1898   | 53.1898   | 2.81E-03 | 0   | 53.2488  |
| Total    | 0.0533  | 0.2799 | 0.6544 | 1.30E-03 | 0.0736        | 4.09E-03     | 0.0777     | 0.0199         | 3.76E-03      | 0.0236      | 0        | 107.8816  | 107.8816  | 3.24E-03 | 0   | 107.9497 |

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 | 0.1051  | 2.2875 | 1.737 | 2.61E-03 |               | 0.044        | 0.044      |                | 0.044         | 0.044       | 0        | 236.0995  | 236.0995  | 0.0586 | 0   | 237.3292 |
| Total    | 0.1051  | 2.2875 | 1.737 | 2.61E-03 |               | 0.044        | 0.044      |                | 0.044         | 0.044       | 0        | 236.0995  | 236.0995  | 0.0586 | 0   | 237.3292 |



### 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       | 0      | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0        |
| Vendor   | 0.0288  | 0.2477 | 0.347  | 6.00E-04 | 0.0165        | 3.65E-03     | 0.0201     | 4.72E-03       | 3.36E-03      | 8.07E-03    | 0        | 54.6918   | 54.6918   | 4.30E-04 | 0   | 54.7008  |
| Worker   | 0.0244  | 0.0323 | 0.3074 | 7.00E-04 | 0.0571        | 4.40E-04     | 0.0575     | 0.0152         | 4.00E-04      | 0.0156      | 0        | 53.1898   | 53.1898   | 2.81E-03 | 0   | 53.2488  |
| Total    | 0.0533  | 0.2799 | 0.6544 | 1.30E-03 | 0.0736        | 4.09E-03     | 0.0777     | 0.0199         | 3.76E-03      | 0.0236      | 0        | 107.8816  | 107.8816  | 3.24E-03 | 0   | 107.9497 |

### 3.6 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 | 0.4033  | 3.4327 | 2.3568 | 3.49E-03 |               | 0.2316       | 0.2316     |                | 0.2175        | 0.2175      | 0        | 311.3228  | 311.3228  | 0.0766 | 0   | 312.9319 |
| Total    | 0.4033  | 3.4327 | 2.3568 | 3.49E-03 |               | 0.2316       | 0.2316     |                | 0.2175        | 0.2175      | 0        | 311.3228  | 311.3228  | 0.0766 | 0   | 312.9319 |

### 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       | 0      | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0        |
| Vendor   | 0.0352  | 0.2952 | 0.4371 | 8.00E-04 | 0.022         | 4.22E-03     | 0.0262     | 6.29E-03       | 3.88E-03      | 0.0102      | 0        | 71.6898   | 71.6898   | 5.40E-04 | 0   | 71.7011  |
| Worker   | 0.0295  | 0.0391 | 0.3695 | 9.40E-04 | 0.0761        | 5.70E-04     | 0.0767     | 0.0202         | 5.20E-04      | 0.0208      | 0        | 68.1796   | 68.1796   | 3.47E-03 | 0   | 68.2524  |
| Total    | 0.0647  | 0.3343 | 0.8066 | 1.74E-03 | 0.0981        | 4.79E-03     | 0.1029     | 0.0265         | 4.40E-03      | 0.0309      | 0        | 139.8694  | 139.8694  | 4.01E-03 | 0   | 139.9535 |

### 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 | 0.1402  | 3.05 | 2.316 | 3.49E-03 |               | 0.0586       | 0.0586     |                | 0.0586        | 0.0586      | 0        | 311.3225  | 311.3225  | 0.0766 | 0   | 312.9315 |
| Total    | 0.1402  | 3.05 | 2.316 | 3.49E-03 |               | 0.0586       | 0.0586     |                | 0.0586        | 0.0586      | 0        | 311.3225  | 311.3225  | 0.0766 | 0   | 312.9315 |

### 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       | 0      | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0        |
| Vendor   | 0.0352  | 0.2952 | 0.4371 | 8.00E-04 | 0.022         | 4.22E-03     | 0.0262     | 6.29E-03       | 3.88E-03      | 0.0102      | 0        | 71.6898   | 71.6898   | 5.40E-04 | 0   | 71.7011  |
| Worker   | 0.0295  | 0.0391 | 0.3695 | 9.40E-04 | 0.0761        | 5.70E-04     | 0.0767     | 0.0202         | 5.20E-04      | 0.0208      | 0        | 68.1796   | 68.1796   | 3.47E-03 | 0   | 68.2524  |
| Total    | 0.0647  | 0.3343 | 0.8066 | 1.74E-03 | 0.0981        | 4.79E-03     | 0.1029     | 0.0265         | 4.40E-03      | 0.0309      | 0        | 139.8694  | 139.8694  | 4.01E-03 | 0   | 139.9535 |

### 3.6 Building Construction - 2018

#### 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 | 0.0867  | 0.756 | 0.5698 | 8.70E-04 |               | 0.0486       | 0.0486     |                | 0.0457        | 0.0457      | 0        | 76.9502   | 76.9502   | 0.0188 | 0   | 77.3456 |
| Total    | 0.0867  | 0.756 | 0.5698 | 8.70E-04 |               | 0.0486       | 0.0486     |                | 0.0457        | 0.0457      | 0        | 76.9502   | 76.9502   | 0.0188 | 0   | 77.3456 |

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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0       |
| Vendor   | 8.26E-03 | 0.0666   | 0.1045 | 2.00E-04 | 5.50E-03      | 9.80E-04     | 6.48E-03   | 1.57E-03       | 9.00E-04      | 2.47E-03    | 0        | 17.6146   | 17.6146   | 1.30E-04 | 0   | 17.6173 |
| Worker   | 6.70E-03 | 8.91E-03 | 0.0836 | 2.30E-04 | 0.019         | 1.40E-04     | 0.0192     | 5.06E-03       | 1.30E-04      | 5.18E-03    | 0        | 16.4048   | 16.4048   | 8.10E-04 | 0   | 16.4218 |
| Total    | 0.015    | 0.0755   | 0.188  | 4.30E-04 | 0.0245        | 1.12E-03     | 0.0256     | 6.63E-03       | 1.03E-03      | 7.65E-03    | 0        | 34.0194   | 34.0194   | 9.40E-04 | 0   | 34.0391 |

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 | 0.035   | 0.7625 | 0.579 | 8.70E-04 |               | 0.0147       | 0.0147     |                | 0.0147        | 0.0147      | 0        | 76.9501   | 76.9501   | 0.0188 | 0   | 77.3455 |
| Total    | 0.035   | 0.7625 | 0.579 | 8.70E-04 |               | 0.0147       | 0.0147     |                | 0.0147        | 0.0147      | 0        | 76.9501   | 76.9501   | 0.0188 | 0   | 77.3455 |

### 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        | 0        | 0      | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0       |
| Vendor   | 8.26E-03 | 0.0666   | 0.1045 | 2.00E-04 | 5.50E-03      | 9.80E-04     | 6.48E-03   | 1.57E-03       | 9.00E-04      | 2.47E-03    | 0        | 17.6146   | 17.6146   | 1.30E-04 | 0   | 17.6173 |
| Worker   | 6.70E-03 | 8.91E-03 | 0.0836 | 2.30E-04 | 0.019         | 1.40E-04     | 0.0192     | 5.06E-03       | 1.30E-04      | 5.18E-03    | 0        | 16.4048   | 16.4048   | 8.10E-04 | 0   | 16.4218 |
| Total    | 0.015    | 0.0755   | 0.188  | 4.30E-04 | 0.0245        | 1.12E-03     | 0.0256     | 6.63E-03       | 1.03E-03      | 7.65E-03    | 0        | 34.0194   | 34.0194   | 9.40E-04 | 0   | 34.0391 |

### 3.7 Architectural Coating - 2018

#### 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 | 0.3717   |        |        |          |               | 0            | 0          |                | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Off-Road        | 2.99E-03 | 0.0201 | 0.0185 | 3.00E-05 |               | 1.51E-03     | 1.51E-03   |                | 1.51E-03      | 1.51E-03    | 0        | 2.5533    | 2.5533    | 2.40E-04 | 0   | 2.5584 |
| Total           | 0.3747   | 0.0201 | 0.0185 | 3.00E-05 |               | 1.51E-03     | 1.51E-03   |                | 1.51E-03      | 1.51E-03    | 0        | 2.5533    | 2.5533    | 2.40E-04 | 0   | 2.5584 |

### 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        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 4.20E-04 | 5.60E-04 | 5.28E-03 | 1.00E-05 | 1.20E-03      | 1.00E-05     | 1.21E-03   | 3.20E-04       | 1.00E-05      | 3.30E-04    | 0        | 1.0372    | 1.0372    | 5.00E-05 | 0   | 1.0383 |
| Total    | 4.20E-04 | 5.60E-04 | 5.28E-03 | 1.00E-05 | 1.20E-03      | 1.00E-05     | 1.21E-03   | 3.20E-04       | 1.00E-05      | 3.30E-04    | 0        | 1.0372    | 1.0372    | 5.00E-05 | 0   | 1.0383 |

### 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 | 0.3717   |        |        |          |               | 0            | 0          |                | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Off-Road        | 1.14E-03 | 0.0235 | 0.0183 | 3.00E-05 |               | 4.80E-04     | 4.80E-04   |                | 4.80E-04      | 4.80E-04    | 0        | 2.5533    | 2.5533    | 2.40E-04 | 0   | 2.5584 |
| Total           | 0.3728   | 0.0235 | 0.0183 | 3.00E-05 |               | 4.80E-04     | 4.80E-04   |                | 4.80E-04      | 4.80E-04    | 0        | 2.5533    | 2.5533    | 2.40E-04 | 0   | 2.5584 |

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        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Vendor   | 0        | 0        | 0        | 0        | 0             | 0            | 0          | 0              | 0             | 0           | 0        | 0         | 0         | 0        | 0   | 0      |
| Worker   | 4.20E-04 | 5.60E-04 | 5.28E-03 | 1.00E-05 | 1.20E-03      | 1.00E-05     | 1.21E-03   | 3.20E-04       | 1.00E-05      | 3.30E-04    | 0        | 1.0372    | 1.0372    | 5.00E-05 | 0   | 1.0383 |
| Total    | 4.20E-04 | 5.60E-04 | 5.28E-03 | 1.00E-05 | 1.20E-03      | 1.00E-05     | 1.21E-03   | 3.20E-04       | 1.00E-05      | 3.30E-04    | 0        | 1.0372    | 1.0372    | 5.00E-05 | 0   | 1.0383 |

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

|             | ROG     | NOx    | CO     | SO2    | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4    | N2O | CO2e     |
|-------------|---------|--------|--------|--------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|--------|-----|----------|
| Category    | tons/yr |        |        |        |               |              |            |                |               |             | MT/yr    |           |           |        |     |          |
| Mitigated   | 0.4796  | 1.1346 | 5.0663 | 0.0124 | 0.8504        | 0.0151       | 0.8655     | 0.2274         | 0.0139        | 0.2414      | 0        | 916.9952  | 916.9952  | 0.0369 | 0   | 917.7707 |
| Unmitigated | 0.4796  | 1.1346 | 5.0663 | 0.0124 | 0.8504        | 0.0151       | 0.8655     | 0.2274         | 0.0139        | 0.2414      | 0        | 916.9952  | 916.9952  | 0.0369 | 0   | 917.7707 |

4.2 Trip Summary Information

|                        | Average Daily Trip Rate |          |        | Unmitigated | Mitigated  |
|------------------------|-------------------------|----------|--------|-------------|------------|
| Land Use               | Weekday                 | Saturday | Sunday | Annual VMT  | Annual VMT |
| Other Asphalt Surfaces | 0.00                    | 0.00     | 0.00   |             |            |
| Single Family Housing  | 792.00                  | 792.00   | 792.00 | 2,261,400   | 2,261,400  |
| Total                  | 792.00                  | 792.00   | 792.00 | 2,261,400   | 2,261,400  |

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- | H-S or C-C | H-O or C-NW | Primary        | Diverted | Pass-by |
| Other Asphalt Surfaces | 9.50       | 7.30       | 7.30        | 0.00      | 0.00       | 0.00        | 0              | 0        | 0       |
| Single Family Housing  | 10.80      | 7.30       | 7.50        | 41.60     | 18.80      | 39.60       | 86             | 11       | 3       |

| LDA      | LDT1     | LDT2    | MDV      | LHD1     | LHD2     | MHD      | HHD      | OBUS     | UBUS     | MCY      | SBUS     | MH       |
|----------|----------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 0.511818 | 0.073499 | 0.19184 | 0.131575 | 0.036332 | 0.005186 | 0.012677 | 0.022513 | 0.001864 | 0.002072 | 0.006564 | 0.000601 | 0.003458 |

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24



|                         | 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            | 0          |                | 0             | 0           | 0        | 151.371   | 151.371   | 6.09E-03 | 1.26E-03 | 151.8897 |
| Electricity Unmitigated |          |        |        |          |               | 0            | 0          |                | 0             | 0           | 0        | 153.6661  | 153.6661  | 6.19E-03 | 1.28E-03 | 154.1927 |
| NaturalGas Mitigated    | 7.90E-03 | 0.0675 | 0.0287 | 4.30E-04 |               | 5.46E-03     | 5.46E-03   |                | 5.46E-03      | 5.46E-03    | 0        | 78.1706   | 78.1706   | 1.50E-03 | 1.43E-03 | 78.6463  |
| NaturalGas Unmitigated  | 9.84E-03 | 0.0841 | 0.0358 | 5.40E-04 |               | 6.80E-03     | 6.80E-03   |                | 6.80E-03      | 6.80E-03    | 0        | 97.3959   | 97.3959   | 1.87E-03 | 1.79E-03 | 97.9886  |

5.2 Energy by Land Use - NaturalGas

Unmitigated

|                        | NaturalGas Use | ROG      | NOx    | CO     | SO2      | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4      | N2O      | CO2e    |
|------------------------|----------------|----------|--------|--------|----------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|----------|----------|---------|
| Land Use               | kBTU/yr        | tons/yr  |        |        |          |               |              |            |                |               |             | MT/yr    |           |           |          |          |         |
| Other Asphalt Surfaces | 0              | 0        | 0      | 0      | 0        |               | 0            | 0          |                | 0             | 0           | 0        | 0         | 0         | 0        | 0        | 0       |
| Single Family Housing  | 1.83E+06       | 9.84E-03 | 0.0841 | 0.0358 | 5.40E-04 |               | 6.80E-03     | 6.80E-03   |                | 6.80E-03      | 6.80E-03    | 0        | 97.3959   | 97.3959   | 1.87E-03 | 1.79E-03 | 97.9886 |
| Total                  |                | 9.84E-03 | 0.0841 | 0.0358 | 5.40E-04 |               | 6.80E-03     | 6.80E-03   |                | 6.80E-03      | 6.80E-03    | 0        | 97.3959   | 97.3959   | 1.87E-03 | 1.79E-03 | 97.9886 |

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    |           |           |          |          |         |
| Single Family Housing  | 1.46E+06       | 7.90E-03 | 0.0675 | 0.0287 | 4.30E-04 |               | 5.46E-03     | 5.46E-03   |                | 5.46E-03      | 5.46E-03    | 0        | 78.1706   | 78.1706   | 1.50E-03 | 1.43E-03 | 78.6463 |
| Other Asphalt Surfaces | 0              | 0        | 0      | 0      | 0        |               | 0            | 0          |                | 0             | 0           | 0        | 0         | 0         | 0        | 0        | 0       |
| Total                  |                | 7.90E-03 | 0.0675 | 0.0287 | 4.30E-04 |               | 5.46E-03     | 5.46E-03   |                | 5.46E-03      | 5.46E-03    | 0        | 78.1706   | 78.1706   | 1.50E-03 | 1.43E-03 | 78.6463 |

5.3 Energy by Land Use - Electricity

Unmitigated

|                        | Electricity Use | Total CO2 | CH4      | N2O      | CO2e     |
|------------------------|-----------------|-----------|----------|----------|----------|
| Land Use               | kWh/yr          | MT/yr     |          |          |          |
| Other Asphalt Surfaces | 0               | 0         | 0        | 0        | 0        |
| Single Family Housing  | 470202          | 153.6661  | 6.19E-03 | 1.28E-03 | 154.1927 |
| Total                  |                 | 153.6661  | 6.19E-03 | 1.28E-03 | 154.1927 |

Mitigated

|                        |                 |           |          |          |          |
|------------------------|-----------------|-----------|----------|----------|----------|
|                        | Electricity Use | Total CO2 | CH4      | N2O      | CO2e     |
| Land Use               | kWh/yr          | MT/yr     |          |          |          |
| Other Asphalt Surfaces | 0               | 0         | 0        | 0        | 0        |
| Single Family Housing  | 463179          | 151.371   | 6.09E-03 | 1.26E-03 | 151.8897 |
| Total                  |                 | 151.371   | 6.09E-03 | 1.26E-03 | 151.8897 |

6.0 Area Detail

6.1 Mitigation Measures Area

- Use Low VOC Paint - Residential Interior
- Use Low VOC Paint - Residential Exterior
- Use only Natural Gas Hearths

|             |         |          |        |          |               |              |            |                |               |             |          |           |           |          |          |          |
|-------------|---------|----------|--------|----------|---------------|--------------|------------|----------------|---------------|-------------|----------|-----------|-----------|----------|----------|----------|
|             | 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   | 0.9809  | 5.74E-03 | 0.4949 | 3.00E-05 |               | 5.96E-03     | 5.96E-03   |                | 5.93E-03      | 5.93E-03    | 0        | 47.589    | 47.589    | 1.70E-03 | 8.60E-04 | 47.8905  |
| Unmitigated | 5.2661  | 0.0619   | 5.5962 | 2.02E-03 |               | 0.7194       | 0.7194     |                | 0.7194        | 0.7194      | 68.1752  | 29.3943   | 97.5695   | 0.0637   | 5.36E-03 | 100.5699 |

## 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 | 0.1858        |               |               |                 |               | 0             | 0             |                | 0             | 0             | 0              | 0              | 0              | 0             | 0               | 0               |
| Consumer Products     | 0.9237        |               |               |                 |               | 0             | 0             |                | 0             | 0             | 0              | 0              | 0              | 0             | 0               | 0               |
| Hearth                | 4.1413        | 0.0562        | 5.1016        | 1.99E-03        |               | 0.7167        | 0.7167        |                | 0.7167        | 0.7167        | 68.1752        | 28.5917        | 96.7669        | 0.0629        | 5.36E-03        | 99.7505         |
| Landscaping           | 0.0153        | 5.74E-03      | 0.4946        | 3.00E-05        |               | 2.70E-03      | 2.70E-03      |                | 2.70E-03      | 2.70E-03      | 0              | 0.8026         | 0.8026         | 8.00E-04      | 0               | 0.8194          |
| <b>Total</b>          | <b>5.2661</b> | <b>0.0619</b> | <b>5.5962</b> | <b>2.02E-03</b> |               | <b>0.7194</b> | <b>0.7194</b> |                | <b>0.7194</b> | <b>0.7194</b> | <b>68.1752</b> | <b>29.3943</b> | <b>97.5695</b> | <b>0.0637</b> | <b>5.36E-03</b> | <b>100.5699</b> |

### 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 | 0.0372       |                 |               |                 |               | 0               | 0               |                | 0               | 0               | 0        | 0             | 0             | 0               | 0               | 0              |
| Consumer Products     | 0.9237       |                 |               |                 |               | 0               | 0               |                | 0               | 0               | 0        | 0             | 0             | 0               | 0               | 0              |
| Hearth                | 4.73E-03     | 0               | 2.60E-04      | 0               |               | 3.27E-03        | 3.27E-03        |                | 3.23E-03        | 3.23E-03        | 0        | 46.7864       | 46.7864       | 9.00E-04        | 8.60E-04        | 47.0711        |
| Landscaping           | 0.0153       | 5.74E-03        | 0.4946        | 3.00E-05        |               | 2.70E-03        | 2.70E-03        |                | 2.70E-03        | 2.70E-03        | 0        | 0.8026        | 0.8026        | 8.00E-04        | 0               | 0.8194         |
| <b>Total</b>          | <b>0.981</b> | <b>5.74E-03</b> | <b>0.4949</b> | <b>3.00E-05</b> |               | <b>5.97E-03</b> | <b>5.97E-03</b> |                | <b>5.93E-03</b> | <b>5.93E-03</b> | <b>0</b> | <b>47.589</b> | <b>47.589</b> | <b>1.70E-03</b> | <b>8.60E-04</b> | <b>47.8905</b> |

7.0 Water Detail

7.1 Mitigation Measures Water

|             | Total CO2 | CH4    | N2O      | CO2e    |
|-------------|-----------|--------|----------|---------|
| Category    | MT/yr     |        |          |         |
| Mitigated   | 29.5062   | 0.1412 | 3.54E-03 | 33.5687 |
| Unmitigated | 29.5062   | 0.1413 | 3.54E-03 | 33.5708 |

7.2 Water by Land Use

Unmitigated

|                        | Indoor/Outdoor Use | Total CO2 | CH4    | N2O      | CO2e    |
|------------------------|--------------------|-----------|--------|----------|---------|
| Land Use               | Mgal               | MT/yr     |        |          |         |
| Other Asphalt Surfaces | 0 / 0              | 0         | 0      | 0        | 0       |
| Single Family Housing  | 4.30017 / 2.71097  | 29.5062   | 0.1413 | 3.54E-03 | 33.5708 |
| Total                  |                    | 29.5062   | 0.1413 | 3.54E-03 | 33.5708 |

Mitigated

|                        |                    |           |        |          |         |
|------------------------|--------------------|-----------|--------|----------|---------|
|                        | Indoor/Outdoor Use | Total CO2 | CH4    | N2O      | CO2e    |
| Land Use               | Mgal               | MT/yr     |        |          |         |
| Other Asphalt Surfaces | 0 / 0              | 0         | 0      | 0        | 0       |
| Single Family Housing  | 4.30017 / 2.71097  | 29.5062   | 0.1412 | 3.54E-03 | 33.5687 |
| Total                  |                    | 29.5062   | 0.1412 | 3.54E-03 | 33.5687 |

8.0 Waste Detail

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8.1 Mitigation Measures Waste

Category/Year

|             |           |        |     |         |
|-------------|-----------|--------|-----|---------|
|             | Total CO2 | CH4    | N2O | CO2e    |
|             | MT/yr     |        |     |         |
| Mitigated   | 15.7298   | 0.9296 | 0   | 35.2514 |
| Unmitigated | 15.7298   | 0.9296 | 0   | 35.2514 |

8.2 Waste by Land Use

Unmitigated

|                           | Waste<br>Disposed | Total CO2 | CH4    | N2O | CO2e    |
|---------------------------|-------------------|-----------|--------|-----|---------|
| Land Use                  | tons              | MT/yr     |        |     |         |
| Other Asphalt<br>Surfaces | 0                 | 0         | 0      | 0   | 0       |
| Single Family<br>Housing  | 77.49             | 15.7298   | 0.9296 | 0   | 35.2514 |
| Total                     |                   | 15.7298   | 0.9296 | 0   | 35.2514 |

Mitigated

|                           | Waste<br>Disposed | Total CO2 | CH4    | N2O | CO2e    |
|---------------------------|-------------------|-----------|--------|-----|---------|
| Land Use                  | tons              | MT/yr     |        |     |         |
| Other Asphalt<br>Surfaces | 0                 | 0         | 0      | 0   | 0       |
| Single Family<br>Housing  | 77.49             | 15.7298   | 0.9296 | 0   | 35.2514 |
| Total                     |                   | 15.7298   | 0.9296 | 0   | 35.2514 |

9.0 Operational Offroad

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

10.0 Vegetation

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## Appendix B

# GHG EMISSION REDUCTION ADJUSTMENTS





## Appendix B

### EMISSION REDUCTION ADJUSTMENTS FOR BRIGHTWATER RANCH PROJECT

#### Methodology for Calculating Reduction Credits for the Project with Design Features

Transportation-related emissions reductions would be achieved through mandatory regulations applicable to all vehicle emissions within the state and are not attributable to specific GHG reduction features of the Project. Energy- and solid waste-related emissions reductions would be achieved partly through state regulations, goals, and policies. Per the County's Guidelines, it is acceptable to apply the reductions from these measures to the 16 percent reduction requirement.

As summarized in Table B-1, reduction credits are based on the CARB Scoping Plan reductions for sector-specific activity. For example, Pavley II reductions counted towards the 2020 target is 3.1 MMTCO<sub>2</sub>e and projected 2020 BAU transportation-related emissions is 168.7 MMTCO<sub>2</sub>e, therefore the reduction is 1.8 percent (3.1 MMTCO<sub>2</sub>e/168.7 MMTCO<sub>2</sub>e). This percentage reduction can be applied to the Project's transportation emissions.

| <b>Table B-1</b><br><b>SCOPING PLAN GHG EMISSION REDUCTIONS</b><br><b>(ANNUAL MMTCO<sub>2</sub>e)</b> |           |                                                            |                        |                      |
|-------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------|------------------------|----------------------|
| Statewide Land Use-Adjusted<br>2020 GHG Emissions Inventory <sup>1</sup>                              |           | AB 32 Scoping Plan<br>GHG Emission Reductions <sup>2</sup> |                        | Percent<br>Reduction |
| Sector                                                                                                | Emissions | Measure                                                    | Emissions<br>Reduction |                      |
| Electricity                                                                                           | 103.8     | Renewable Electricity<br>Standard                          | 11.5                   | 11.1%                |
|                                                                                                       |           | Energy Efficiency and<br>Conservation                      | 12.2                   | 11.8%                |
| Transportation                                                                                        | 168.7     | Low Carbon Fuel Standard                                   | 15.2                   | 9.0%                 |
|                                                                                                       |           | Pavley II                                                  | 3.1                    | 1.8%                 |
|                                                                                                       |           | SB 375                                                     | 3.0                    | 1.8%                 |
| Recycling and Waste                                                                                   | 9.1       | Landfill Methane Control<br>Measure                        | 1.8                    | 19.8%                |

Source: CARB 2014

<sup>1</sup> From CARB's 2020 BAU Forecast, available:

[http://www.arb.ca.gov/cc/inventory/data/tables/2020\\_bau\\_forecast\\_by\\_scoping\\_category\\_2014-05-22.pdf](http://www.arb.ca.gov/cc/inventory/data/tables/2020_bau_forecast_by_scoping_category_2014-05-22.pdf)

<sup>2</sup> From CARB's Greenhouse Gas Reductions from Ongoing, Adopted and Foreseeable Scoping Plan Measures: available [http://www.arb.ca.gov/cc/inventory/data/tables/ar4\\_first\\_update\\_to\\_scoping\\_plan\\_2014-05-22.pdf](http://www.arb.ca.gov/cc/inventory/data/tables/ar4_first_update_to_scoping_plan_2014-05-22.pdf)

## Methodology for Calculating Mobile Emissions for the Unmitigated (BAU) Project and the Project with Design Features

The vehicle emission factors in CalEEMod already account for Pavley I and Low Carbon Fuel Standard (LCFS) regulations. The reductions associated with Pavley I, however, are not allowable reduction credits for the Project, consistent with the revised CARB projection that determined the 16 percent reduction goal. As a result, neither the unmitigated (BAU) nor Project with design features model scenarios were adjusted with respect to Pavley I. Because LCFS is an allowable reduction, the Unmitigated (BAU) Project emissions were corrected to reverse the associated reduction in mobile emissions.

Project emissions were corrected to account for mobile emission reductions associated with Pavley II (1.8 percent) and SB375 (1.8 percent). The combined transportation measures would result in a 3.6 percent reduction in vehicular emissions. Table B-2 summarizes the above corrections to both the unmitigated (BAU) emissions and the Project emissions.

| <b>Table B-2<br/>UNCORRECTED AND CORRECTED CALEEMOD OUTPUTS<br/>FOR UNMITIGATED (BAU) AND PROJECT WITH<br/>DESIGN FEATURES EMISSIONS – MOBILE<br/>(ANNUAL MT CO<sub>2</sub>e)</b> |                                          |                                                    |                                              |                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------|----------------------------------------------|--------------------------------------------|
| <b>Source</b>                                                                                                                                                                     | <b>Unmitigated/BAU<br/>(uncorrected)</b> | <b>Unmitigated/BAU<br/>(corrected)<sup>1</sup></b> | <b>Project<br/>(uncorrected)<sup>2</sup></b> | <b>Project<br/>(corrected)<sup>3</sup></b> |
| Mobile Emissions                                                                                                                                                                  | 917.77                                   | 1,008.65                                           | 917.77                                       | 881.30                                     |

**Notes:**

All model results include built in emission reductions for Pavley I regulations (model default).

<sup>1</sup> Reverses the 9.0 percent mobile emission reduction to adjust model default to allow reduction credit for LCFS in mitigated scenario.

<sup>2</sup> Includes LCFS reduction (model default)

<sup>3</sup> Includes reduction of 4.1 percent for Pavely II and SB375

## Methodology for Calculating Energy-related Emissions for the Unmitigated (BAU) Project and the Project with Design Features

As shown in Table B-1, the Renewable Electricity Standard (RES) would reduce electricity-related emissions by 11.1 percent and the Energy Efficiency and Conservation (EEC) measures would reduce energy-related emissions by 11.8 percent. CalEEMod defaults do not include reductions from the RES or EEC; therefore, the unmitigated (BAU) scenario did not require a correction. Emissions for the Project with design features were corrected to include the reduction from these measures.

Energy sources in CalEEMod include both electricity and natural gas. In order to appropriately allocate electricity emission reductions relative to the RES, these sources were broken out using the detailed breakdown in Appendix A and the RES reduction was only applied to electricity

sources while the EEC reduction was applied to all energy sources. Table B-3 summarizes adjustments due to the above correction and project design features.

| <b>Table B-3</b><br><b>UNCORRECTED AND CORRECTED CALEEMOD OUTPUTS</b><br><b>FOR UNMITIGATED (BAU) AND PROJECT WITH</b><br><b>DESIGN FEATURES EMISSIONS – ENERGY</b><br><b>(ANNUAL MTCO<sub>2</sub>e)</b> |                        |                                              |                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------|--------------------------------------------|
| <b>Energy Sources</b>                                                                                                                                                                                    | <b>Unmitigated/BAU</b> | <b>Project<br/>(uncorrected)<sup>1</sup></b> | <b>Project<br/>(corrected)<sup>2</sup></b> |
| Electricity                                                                                                                                                                                              | 154.19                 | 151.89                                       | 116.68                                     |
| Natural Gas                                                                                                                                                                                              | 97.99                  | 78.65                                        | 67.13                                      |
| Total Energy Sources                                                                                                                                                                                     | 252.18                 | 230.54                                       | 183.81                                     |

Notes:

<sup>1</sup> Includes project design features discussed in Section 1.3.

<sup>2</sup> Includes reductions of 11.1 percent for RES and 11.8 percent for Energy Efficiency and Conservation.

#### **Methodology for Calculating Solid Waste-related Emissions for the Unmitigated (BAU) Project and the Project with Design Features**

As shown in Table B-1, the Landfill Methane Control Measure would reduce solid waste-related emissions by 19.8 percent. CalEEMod defaults do not include this reduction; therefore, the unmitigated (BAU) scenario did not require a correction. Emissions for the Project with design features were corrected to include the reduction from this measure. Table B-4 summarizes adjustments due to the above correction and project design features.

| <b>Table B-4</b><br><b>UNCORRECTED AND CORRECTED CALEEMOD OUTPUTS</b><br><b>FOR UNMITIGATED (BAU) AND PROJECT WITH</b><br><b>DESIGN FEATURES EMISSIONS – SOLID WASTE</b><br><b>(ANNUAL MTCO<sub>2</sub>e)</b> |                        |                                  |                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------|--------------------------------------------|
| <b>Source</b>                                                                                                                                                                                                 | <b>Unmitigated/BAU</b> | <b>Project<br/>(uncorrected)</b> | <b>Project<br/>(corrected)<sup>1</sup></b> |
| Solid Waste                                                                                                                                                                                                   | 35.25                  | 35.25                            | 29.85                                      |

Notes:

<sup>1</sup> Includes reduction of 19.8 percent for the Landfill Methane Control Measure.

## Methodology for Calculating Water-related Emissions for the Unmitigated (BAU) Project and the Project with Design Features

As shown in Table B-1, the RES would reduce electricity-related emissions by 11.1 percent. Water-related emissions are due to the electricity used to convey and treat water; therefore, the RES reduction can also be applied to water-related emissions. As stated above, CalEEMod defaults do not include reductions from the RES; therefore, the unmitigated (BAU) scenario did not require a correction. Emissions for the Project with design features were corrected to include the reduction from this measure. Table B-5 summarizes adjustments due to the above correction and project design features.

| <b>Table B-5</b><br><b>UNCORRECTED AND CORRECTED CALEEMOD OUTPUTS</b><br><b>FOR UNMITIGATED (BAU) AND PROJECT WITH</b><br><b>DESIGN FEATURES EMISSIONS – WATER</b><br><b>(ANNUAL MTCO<sub>2</sub>e)</b> |                        |                                              |                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------|--------------------------------------------|
| <b>Source</b>                                                                                                                                                                                           | <b>Unmitigated/BAU</b> | <b>Project<br/>(uncorrected)<sup>1</sup></b> | <b>Project<br/>(corrected)<sup>2</sup></b> |
| Water                                                                                                                                                                                                   | 33.57                  | 33.57                                        | 29.85                                      |

Notes:

<sup>1</sup> Includes project design features discussed in Section 1.3.

<sup>2</sup> Includes electricity reduction of 11.1 percent for RES.