

# **GREENHOUSE GAS TECHNICAL MEMORANDUM**

## **13TH STREET BRIDGE PROJECT**

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October 2020

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## 1.0 INTRODUCTION

This greenhouse gas (GHG) technical memorandum was prepared to address GHG impacts associated with the 13th Street Bridge Project (proposed project) consistent with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) review. The proposed project will be funded through the Federal Highway Administration.

## 2.0 PROJECT DESCRIPTION

The proposed 13th Street Bridge Project is located on 13th Street and Maple Street between Main Street (SR 67) and Walnut Street in the unincorporated community of Ramona. The project segment of 13th Street/Maple Street is a dirt roadway, with gravel at the Santa Maria Creek culvert crossing. The existing, undersized corrugated steel culvert does not have sufficient capacity to convey the creek water during storm events; flooding at this crossing makes the roadway impassable for motor vehicles and pedestrians during portions of the rainy season.

The objective of the project is to provide an adequate and safe crossing that allows for the conveyance of water from a 100-year storm event. The project would include replacement of the existing culvert crossing with a bridge designed to meet current federal standards, with roadway improvements along 13th Street/Maple Street and Walnut Street, and the addition of stormwater conveyance and treatment features that would ultimately discharge into Santa Maria Creek.

The proposed bridge would be a 4-span cast-in-place pre-stressed, post-tensioned concrete box girder structure, approximately 480-feet long and approximately 42-feet wide with three singular-column bents and two abutments. The bridge and approaches would include two 12-foot travel lanes, 3-foot shoulders on each side, and an approximately 8-foot wide multi-use pathway to accommodate pedestrians, bicyclists, and equestrians. In addition, three bridge barriers with a total width of approximately 4-feet, consisting of two edge deck rails and one pedestrian barrier would be installed to separate pathway users from the travel lane and creek. The pathway across the bridge would connect to the existing southern segment near the Ramona County Library and transition users across the bridge to existing and planned facilities north of the bridge. The grade of 13th Street/Maple Street would be raised approximately 10-feet at the Santa Maria Creek crossing to comply with current Federal Highway Administration (FHWA) requirements.

Storm drain systems are proposed directly to the north and south of the bridge to capture runoff and direct it towards the existing creek. Permeable pavement areas would be incorporated into the project as Green Street features to facilitate meeting water quality requirements and for storm-water management. An existing bio-retention basin located south of the bridge that currently treats stormwater from the library and associated parking lot would be redesigned to continue treating those existing areas in addition to the proposed paved roads south of Santa Maria Creek.

The total quantity of cut for the project is approximately 6,200 cubic yards (cy), the total quantity of fill is approximately 8,442 cy, and the total quantity of import is approximately 13,000 cy. Construction is

anticipated to last approximately 12 months. During the bridge foundation construction, dewatering may be required for the project.

### **3.0 GREENHOUSE GAS AND CLIMATE CHANGE BACKGROUND**

Certain gases in Earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters earth's atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back towards space. Infrared radiation is absorbed by GHGs; as a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth.

GHGs are present in the atmosphere naturally, are released by natural sources and anthropogenic sources, and are formed from secondary reactions taking place in the atmosphere. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change that are relevant to the proposed project:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)

Anthropogenic emissions of CO<sub>2</sub> are byproducts of fossil fuel combustion. CH<sub>4</sub> is the main component of natural gas and is associated with agricultural practices and landfills. N<sub>2</sub>O is a colorless GHG that results from industrial processes, vehicle emissions, and agricultural practices.

Global warming potential (GWP) is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to CO<sub>2</sub>. The GWP of a GHG is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time (i.e., lifetime) that the gas remains in the atmosphere ("atmospheric lifetime"). The reference gas for GWP is CO<sub>2</sub>; therefore, CO<sub>2</sub> has a GWP of 1. The other main GHGs that have been attributed to human activity include CH<sub>4</sub>, which has a GWP of 28, and N<sub>2</sub>O, which has a GWP of 265 (IPCC 2013). For example, 1 ton of CH<sub>4</sub> has the same contribution to the greenhouse effect as approximately 28 tons of CO<sub>2</sub>. GHGs with lower emissions rates than CO<sub>2</sub> may still contribute to climate change, because they are more effective at absorbing outgoing infrared radiation than CO<sub>2</sub> (i.e., high GWP). The concept of CO<sub>2</sub>-equivalents (CO<sub>2</sub>e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation.

## 4.0 REGULATORY BACKGROUND

### 4.1 Federal

The U.S. Environmental Protection Agency (USEPA) is the federal agency responsible for implementing the federal Clean Air Act (CAA). The Supreme Court of the United States ruled on April 2, 2007, that CO<sub>2</sub> is an air pollutant as defined under the CAA, and that USEPA has the authority to regulate emissions of GHGs.

#### **Greenhouse Gas Findings under the Federal Clean Air Act**

On December 7, 2009, USEPA signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>)—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution which threatens public health and welfare.

Although these findings did not themselves impose any requirements on industries or other entities, this action was a prerequisite to finalizing USEPA's Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles. On May 7, 2010, the final Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards were published in the Federal Register. The emissions standards require model year 2016 vehicles to meet an estimated combined average emissions level of 250 grams of CO<sub>2</sub> per mile, which is equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO<sub>2</sub> level solely through fuel economy improvements.

On August 28, 2012, the U.S. Department of Transportation (USDOT) and USEPA issued a joint Final Rulemaking requiring additional federal GHG and fuel economy standards for model years 2017 through 2025 passenger cars and light-duty trucks. The standards would require these vehicles to meet an estimated combined average emissions level of 163 grams of CO<sub>2</sub> per mile in model year 2025, which is equivalent to 54.5 miles per gallon if the improvements were made solely through fuel efficiency. However, on April 2, 2018, USEPA issued a Mid-term Evaluation Final Determination, which finds that the model years 2022 through 2025 emissions standards are not appropriate and should be revised. This Mid-term Evaluation was not a final agency action; rather, this determination led to the rule making of the Safer Affordable Fuel Efficient Vehicle Rule (USEPA 2018).

In addition to the standards for light-duty vehicles, USDOT and USEPA adopted complementary standards to reduce GHG emissions and improve the fuel efficiency of heavy-duty trucks and buses on September 15, 2011. These standards together form a comprehensive heavy-duty national program for all on-road vehicles rated at a gross vehicle weight at or above 8,500 pounds for model years 2014 through 2018. The standards will phase in with increasing stringency in each model year from 2014 through 2018. The USEPA standards adopted for 2018 will represent an average per-vehicle reduction in GHG emissions of 17% for diesel vehicles and 12% for gasoline vehicles (USEPA 2011). Building on the success of the Phase 1 standards, USEPA and the National Highway Traffic Safety Administration finalized Phase 2 standards for medium- and heavy-duty vehicles through model year 2027. The Phase 2 standards are expected to lower CO<sub>2</sub> emissions by approximately 1.1 billion metric tons (MT). On November 16, 2017, USEPA released a proposed rule to repeal the emission standards for heavy-duty glider vehicles, glider engines, and glider kits (USEPA 2017).

### **Safer Affordable Fuel-Efficient Vehicle Rule**

In September 2019, the USEPA and the National Highway Traffic Safety Agency (NHTSA) issued the Safer Affordable Fuel Efficient (SAFE) Vehicle Rule Part One: One National Program that revoked California's authority and vehicle waiver to set its own emissions standards and set zero emission vehicle mandates in California for passenger cars and light trucks. On March 31, 2020, the NHTSA and the EPA finalized the Safer Affordable Fuel Efficient (SAFE) Vehicle Rule for Model Years 2021-2026 that relaxed federal GHG emissions and fuel economy standards. The final rule will increase stringency of CO<sub>2</sub> emissions standards by 1.5 percent each year through model year 2026, as compared with the CO<sub>2</sub> standards issued in 2012, which would have required increases of about 4 percent per year.

### **Mandatory Greenhouse Gas Reporting Rule**

On September 22, 2009, USEPA published the Final Mandatory Greenhouse Gas Reporting Rule (Reporting Rule) in the Federal Register. The Reporting Rule requires reporting of GHG data and other relevant information from fossil fuel and industrial GHG suppliers, vehicle and engine manufacturers, and all facilities that would emit 25,000 MT CO<sub>2</sub>e or more per year. Facility owners are required to submit an annual report with detailed calculations of facility GHG emissions on March 31 for emissions from the previous calendar year. The Reporting Rule also mandates recordkeeping and administrative requirements to enable USEPA to verify the annual GHG emissions reports.

## **4.2 State**

California Air Resources Board (ARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act.

## **Assembly Bill 1493**

Assembly Bill (AB) 1493 requires ARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with model year 2009. In June 2009, the USEPA Administrator granted a CAA waiver of preemption to California. This waiver allowed California to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. California agencies worked with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017 through 2025.

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

Executive Order (EO) S-3-05, signed in June 2005, proclaimed that California is vulnerable to the impacts of climate change. EO S-3-05 declared that increased temperatures could reduce the Sierra Nevada's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emissions targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80% below the 1990 level by 2050. The statewide GHG emissions in 2000 were approximately 466 million metric tons (MMT) CO<sub>2</sub>e (ARB 2012). In 2010, overall statewide GHG emissions were approximately 453 MMT CO<sub>2</sub>e, exceeding the 2010 goal established by EO S-3-05 (ARB 2012). California is currently on track to exceed its 2020 climate target (ARB 2017).

## **Assembly Bill 32**

In 2006, California passed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.). AB 32 further details and puts into law the mid-term GHG reduction target established in EO S-3-05, which is to reduce statewide GHG emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050. AB 32 also identifies ARB as the state agency responsible for the design and implementation of emissions limits, regulations, and other measures to meet the target. AB 32 also established several programs to achieve GHG emission reductions, including the Cap-and-Trade program.

In December 2008, ARB adopted its Climate Change Scoping Plan (Scoping Plan), which contains the main strategies California will implement to achieve the required GHG reductions required by AB 32 (ARB 2008). The Scoping Plan also includes ARB-recommended GHG reductions for each emissions sector of California's GHG inventory. ARB further acknowledges that decisions about how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors.

ARB is required to update the Scoping Plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process. ARB approved the first update to the Climate Change Scoping Plan: Building on the Framework in June 2014 (ARB 2014). The Scoping Plan update includes a



status of the 2008 Scoping Plan measures and other federal, state, and local efforts to reduce GHG emissions in California, and potential actions to further reduce GHG emissions by 2020.

In November 2017, ARB released the 2017 Climate Change Scoping Plan, which establishes a framework of action for California to reduce statewide emissions by 40% by 2030, compared to 1990 levels, per Senate Bill (SB) 32 explained in more detail below (ARB 2017). The 2017 Scoping Plan builds upon the framework established by the 2008 Scoping Plan and the 2014 Scoping Plan Update, while also identifying new, technologically feasible and cost-effective strategies to ensure that California meets its GHG reduction targets.

### **Executive Order S-1-07**

EO S-1-07, which was signed by then California Governor Arnold Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at more than 40% of statewide emissions. EO S-1-07 establishes a goal that the carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10% by 2020. ARB adopted the low carbon fuel standard on April 23, 2009. In November 2015, the Office of Administrative Law approved re-adoption of the low carbon fuel standard.

### **Senate Bill 375**

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or an Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted regional GHG targets for passenger vehicles and light trucks for 2020 and 2035 for the 18 MPOs in California. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

SB 375 also extends the minimum time period for the Regional Housing Needs Allocation cycle from 5 years to 8 years for local governments located within an MPO that meet certain requirements. City or county land use policies (including general plans) are not required to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would incentivize qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

The San Diego Association of Governments' (SANDAG) current GHG targets are per capita GHG emission reductions from passenger vehicles of 7% by 2020 and 13% by 2035 relative to 2005 levels. SANDAG adopted San Diego Forward: The Regional Plan (2015 RTP/SCS), which is the current version of the RTP/SCS, in October 2015. SANDAG's estimate of GHG emissions reductions from the 2015 RTP/SCS indicates that the plan would result in per capita emissions reductions of 15% by 2020 and 21% by 2035

from a base year of 2005. ARB reviewed the adopted RTP/SCS and determined that, if implemented, it would achieve the reduction targets for the San Diego region in compliance with SB 375.

ARB is required to update the regional GHG targets at least every 8 years and may revise them every 4 years. In March 2018, ARB approved the final staff report for the proposed update to the SB 375 GHG targets. The staff report describes ARB's role to establish targets; reviews the current SB 375 targets and existing SCSs prepared to date; presents the reduction targets; and reflects on several state, regional, and local land use and transportation planning issues that affect SB 375 implementation. The SB 375 GHG targets for the SANDAG region are emission reductions from passenger vehicles of 7% by 2020 and 13% by 2035 relative to 2005 levels for targets through September 30, 2018. For targets beginning October 1, 2018, the GHG targets for the SANDAG region are emission reductions from passenger vehicles of 15% by 2020 and 19% by 2035 relative to 2005 levels (ARB 2018).

### **Senate Bill 97**

SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

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

In April 2015, Governor Edmund Brown issued an EO establishing a statewide GHG reduction goal of 40% below 1990 levels by 2030. The emission reduction target acts as an interim goal between the AB 32 goal (i.e., achieve 1990 emission levels by 2020) and Governor Brown's EO S-03-05 goal of reducing statewide emissions 80% below 1990 levels by 2050. In addition, the EO aligns California's 2030 GHG reduction goal with the European Union's reduction target (i.e., 40% below 1990 levels by 2030) that was adopted in October 2014.

### **Senate Bill 32 and Assembly Bill 197**

In September 2016, Governor Brown signed SB 32 (Chapter 249, Statutes of 2016) and AB 197 (Chapter 250, Statutes of 2016), which require the State to reduce GHG emissions to at least 40% below 1990 levels by 2030 and invest in the communities most affected by climate change. SB 32 codifies the 2030 GHG emissions reduction goal established by EO B-30-15, issued by Governor Brown in 2015. AB 197 establishes a legislative committee on climate change policies to help continue the State's activities to reduce GHG emissions.

## **4.3 Regional and Local**

ARB also acknowledges that local governments have broad influence and, in some cases, exclusive jurisdiction over activities that contribute to significant direct and indirect GHG emissions through

their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations.

### **San Diego Air Pollution Control District**

In the County of San Diego, the San Diego Air Pollution Control District (SDAPCD) is the agency responsible for protecting public health and welfare through the administration of federal and state air quality laws and policies.

County of San Diego

The County of San Diego General Plan: A Plan for Growth, Conservation, and Sustainability includes a Conservation and Open Space Element with a purpose of reducing emissions of GHGs while promoting conservation and other methods of efficiency (County of San Diego 2011).

**Goal COS-14:** Sustainable Land Development. Land use development techniques and patterns that reduce emissions of criteria pollutants and GHGs through minimized transportation and energy demands, while protecting public health and contributing to a more sustainable environment.

Policy COS-14.10: Low-Emission Construction Vehicles and Equipment. Require County contractors and encourage other developers to use low-emission construction vehicles and equipment to improve air quality and reduce GHG emissions. **Goal COS-17:** Sustainable Solid Waste Management. Perform solid waste management in a manner that protects natural resources from pollutants while providing sufficient, long term capacity through vigorous reduction, reuse, recycling, and composting programs.

Policy COS-17.2: Construction and Demolition Waste. Require recycling, reduction and reuse of construction and demolition debris.

In addition, on April 1, 2020, the County of San Diego enacted changes to its Construction and Demolition (C&D) Ordinance to reach its waste diversion goals. The update is intended to increase C&D diversion from landfills, conserve landfill capacity and comply with waste diversion requirements of the State's CalGreen Building Standards Code. The key changes to the C&D Ordinance include:

- The square footage for covered C&D projects was lowered from 40,000 square feet to those greater than 5,000 square feet and now includes grading and land clearing projects.
- All applicable C&D projects are required to reach a 65% overall recycling rate, including 90% diversion of inert materials (concrete, asphalt, dirt, etc.).
- Major grading projects must recycle or reuse 100% of excavated soils, trees, stumps, rocks and vegetation.

- A fully refundable performance guarantee of \$0.40 per square foot is required for applicable C&D projects. Grading projects are not required to place a deposit.
- All projects covered by the C&D Ordinance are required to submit a Debris Management Plan, maintain a Daily Log on-site and submit a Debris Management Report within 180 days of project completion that details levels of recycling diversion obtained.
- A phased approach in lowering the threshold for applicable projects was built into the implementation of the ordinance. Additional changes will take effect on January 1, 2021.

## 5.0 THRESHOLDS OF SIGNIFICANCE

The geographic scope of consideration for GHG emissions is on a global scale as such emissions contribute, on a cumulative basis, to global climate change. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies evaluate the cumulative impacts of GHGs, even relatively small additions, on a global basis. By their nature, GHG evaluations under CEQA are a cumulative study. (See *Center for Biological Diversity v. California Department of Fish and Wildlife* [2015] 62 Cal.4<sup>th</sup> 204.)

### California Environmental Quality Act Analysis

The County of San Diego and SDAPCD have not adopted thresholds for evaluating GHG emissions from construction activities. Consistent with the County's requirements on climate change analyses, GHG emissions associated with implementation of the proposed project were estimated.

To establish context in which to consider the proposed project's construction-related GHG emissions, this analysis reviewed guidelines used by other experts and public agencies. The most conservative threshold was included in the California Air Pollution Control Officers Association (CAPCOA) report, CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to CEQA, which recommends a threshold of 900 MT CO<sub>2</sub>e per year for any residential, commercial, or industrial project (CAPCOA 2008). The 900 MT CO<sub>2</sub>e threshold was developed based on residential and commercial project applications and was intended to ensure that approximately 90 percent of new GHG emissions would be reviewed and assessed for mitigation, thereby contributing to GHG emissions reduction goals of AB 32. However, the proposed project is anticipated to begin construction in 2023; thus, construction-related GHG emissions should also be analyzed in the SB 32 statewide framework (which established a 2030 GHG emissions reduction target of 40 percent below 1990 levels). CAPCOA has not recommended a threshold of significance consistent with SB 32 goals. To provide this additional information to put the project-generated GHG emissions in the appropriate statewide context, this analysis presumes that a 40 percent reduction in the CAPCOA's existing threshold (resulting in 540 MT CO<sub>2</sub>e) is necessary to achieve the State's 2030 GHG reduction goal (which is a 40 percent reduction below 1990 GHG emissions levels).

This analysis also reviewed guidelines used by other public agencies. For example, the Sacramento Metropolitan Air Quality Management District (SMAQMD) has identified an annual threshold of 1,100 MT CO<sub>2e</sub> for the construction phase of all project types. Although the SMAQMD recognizes that, although there is no known level of emissions that determines if a single project will substantially impact overall GHG emission levels in the atmosphere, a threshold must be set to trigger a review and assessment of the need to mitigate project GHG emissions. The threshold set by the SMAQMD was developed considering the AB 32 and SB 32 reduction goals.

Direct comparison of construction GHG emissions with long-term thresholds would not be appropriate because these emissions cease upon completion of construction. Other districts (e.g., SMAQMD 2020; South Coast Air Quality Management District 2008) recommend that GHG emissions from construction activities be amortized over a project's operational lifetime (typically assumed to be 20 to 30 years depending on the project type) for comparison with long-term GHG emissions significance thresholds. In California, many bridges in service today were designed for a 50-year lifespan and preventive maintenance can extend the lifespan of a bridge (ASCE 2018). As such, construction emissions were amortized over 50 years, for comparison to the thresholds. However, innovations in bridge design and materials have the potential to increase the durability of a bridge or prolong its lifespan. Advances in material have made concrete stronger or more durable to withstand weather conditions. Generally, bridges today are designed to a 75-year lifespan under the American Association of State Highway and Transportation Officials and California Department of Transportation design manuals; therefore, this amortization approach is conservative.

Using this approach, if the proposed project does not exceed the adjusted SB 32 threshold of 540 MT CO<sub>2e</sub> per year or the SMAQMD threshold of 1,100 MT CO<sub>2e</sub> per year, then the climate change impacts would be less than cumulatively considerable. It is not the intent of the County of San Diego to adopt these thresholds as mass emissions limits for this or other projects, but rather to provide this additional information to put the proposed project generated GHG emissions in the appropriate statewide context and consider the proposed project's impacts pursuant to CEQA.

### National Environmental Protection Act Analysis

Caltrans has not developed a quantitative threshold for determining whether a project's GHG emissions will have a significant effect on the environment. Therefore, the determination of whether the level of GHG emissions associated with the proposed project would have a significant effect on the environment involved consideration of the following factors: the extent to which the proposed project would increase or decrease GHG emissions; and whether the proposed project complies with applicable regulations, plans, or policies for reducing GHG emissions.

On December 18, 2014, the Council on Environmental Quality (CEQ) released revised draft guidance that explains that agencies should consider both the potential effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental effects of a proposed action. CEQ has withdrawn its final guidance for federal agencies on how to consider

GHG emissions and the effects of climate change in NEPA reviews (CEQ 2016). Pursuant to EO 13783, “Promoting Energy Independence and Economic Growth,” of March 28, 2017, the guidance has been withdrawn for further consideration (CEQ 2018). As noted in the Federal Register notice, the withdrawn guidance was not a regulation and does not change any law, regulation, or other legally binding requirement. On June 26, 2019, CEQ released Draft NEPA Guidance on the Consideration of GHG Emissions. This Draft Guidance, if finalized, would replace the August 2016 CEQ guidance. However, the Draft Guidance has not been adopted at the time of this analysis. Therefore, to evaluate the proposed project’s effects on climate change as indicated by the estimated GHG emissions, the NEPA analysis is based on the emissions reporting limit of 25,000 MT CO<sub>2</sub>e per year as required by the Mandatory Greenhouse Gas Reporting Rule.

## 6.0 GREENHOUSE GAS IMPACTS

Would the proposed project:

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

The impacts associated with GHG emissions generated by the proposed project are related to emissions from construction. Off-road equipment, materials transport, and worker commutes during construction of the proposed project would generate GHG emissions.

Project construction is anticipated to begin in 2023 and last approximately 12 months. The total quantity of cut for the project is approximately 6,200 cubic yards (cy), the total quantity of fill is approximately 8,442 cy, and the total quantity of import is approximately 13,000 cy. The analysis assumed approximately 3,455 haul truck trips would be needed for the import and export of materials during project construction. The maximum number of workers during the peak construction period is anticipated to be approximately 30 workers per day.

Construction-related emissions associated with typical construction activities were modeled using the California Emissions Estimator Model (CalEEMod), Version 2016.3.2. CalEEMod allows the user to enter project-specific construction information, such as duration and types of construction phases, and types, number, and horsepower of construction equipment. The total estimated construction-related GHG emissions are presented in Table 1. As shown in Table 1, the total GHG emissions would be approximately 744 MT CO<sub>2</sub>e. Additional modeling assumptions and details are provided in Attachment A.

**Table 1. GHG Construction-Related Emissions**

| Description                        | MT CO <sub>2</sub> e/year |
|------------------------------------|---------------------------|
| Total Construction Emissions       | 744                       |
| Amortized Emissions <sup>(a)</sup> | 15                        |

Notes:

(a) Total project construction emissions divided over the project lifetime (conservatively assumed to be 50 years).  
MT = metric tons, CO<sub>2</sub>e = carbon dioxide equivalents  
Detailed modeling outputs provided in Attachment A.

The total GHG emissions resulting from construction of the proposed project would be 744 MT CO<sub>2</sub>e. As such, the amortized construction-related GHG emissions would be approximately 15 MT CO<sub>2</sub>e per year.

As explained in more detail in the Traffic Impact Analysis prepared in October 2013 (LLG 2013) and the Data Validation Memorandum prepared in February 2019 (Chen Ryan 2019), the proposed project would not generate any new traffic and would only redistribute background traffic within the study area, which would result in a slight reduction in vehicle miles travelled as well as vehicle hours of travel. The proposed project would provide transportation infrastructure improvements without changing the traffic carrying capacity of the study area. Thus, the proposed project is not anticipated to generate new vehicle trips and therefore would not substantially increase operational emissions relative to existing conditions. Therefore, the project-related GHG emissions would not exceed the adjusted SB 32 threshold of 540 MT CO<sub>2</sub>e per year, or the SMAQMD threshold of 1,100 MT CO<sub>2</sub>e for the construction phase of projects. The project-related GHG emissions would also not exceed the NEPA thresholds of significance. In addition, the construction-related emissions would not occur on an annual basis and instead would enable the efficient and safe use of the 13th Street and Maple Street crossing in the long-term. Thus, the proposed project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The impact would be less than significant.

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

As discussed in Section 4.2, AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. The Scoping Plans contain the main strategies California will implement to achieve the required GHG reductions required by AB 32 (ARB 2014). The latest Scoping Plan, California’s 2017 Climate Change Scoping Plan, draws from the previous plans to present strategies to reaching California’s 2030 GHG reduction target.

While the Scoping Plan updates do include measures that would indirectly address GHG emissions associated with construction activities, including the phasing in of cleaner technology for diesel engine fleets (including construction equipment) and low-carbon fuel standard, successful implementation of these measures predominantly depends on the development of laws and policies at the state level. As such, none of these statewide plans or policies constitute a regulation to adopt or implement a regional or local plan

for reduction or mitigation of GHG emissions. In addition, it is assumed that any requirements formulated under the mandate of AB 32 and SB 32 would be implemented consistent with statewide policies and laws.

Further, consistent with Scoping Plan strategies for increasing waste diversion from landfills as well as the County of San Diego General Plan Policy COS-17, which requires recycling, reduction, and reuse of construction and demolition debris, the proposed project would comply with the County C&D Ordinance and thus, would not conflict with the Scoping Plan strategies or the County of San Diego General Plan. The County contractors would also be encouraged to use low-emission construction vehicles, consistent with Scoping Plan goals and County of San Diego policies.

As mentioned above, the proposed project would provide transportation infrastructure improvements which would enable the safe and efficient use of the 13th Street and Maple Street crossing in the long-term without changing the traffic carrying capacity of the study area. Thus, the proposed project would not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. Therefore, this impact would be less than significant.



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## 7.0 REFERENCES

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## **ATTACHMENT A**

### **CALEEMOD OUTPUT – CONSTRUCTION EMISSIONS**

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**13th Street Bridge**  
**San Diego County, Annual**

**1.0 Project Characteristics**

---

**1.1 Land Usage**

| Land Uses              | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|------------------------|------|--------|-------------|--------------------|------------|
| Other Asphalt Surfaces | 1.48 | Acre   | 1.48        | 64,564.98          | 0          |

**1.2 Other Project Characteristics**

|                                 |                          |                                 |       |                                  |       |
|---------------------------------|--------------------------|---------------------------------|-------|----------------------------------|-------|
| <b>Urbanization</b>             | Rural                    | <b>Wind Speed (m/s)</b>         | 2.6   | <b>Precipitation Freq (Days)</b> | 40    |
| <b>Climate Zone</b>             | 13                       |                                 |       | <b>Operational Year</b>          | 2024  |
| <b>Utility Company</b>          | San Diego Gas & Electric |                                 |       |                                  |       |
| <b>CO2 Intensity (lb/MW hr)</b> | 720.49                   | <b>CH4 Intensity (lb/MW hr)</b> | 0.029 | <b>N2O Intensity (lb/MW hr)</b>  | 0.006 |

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

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## Project Characteristics -

Land Use - Based on 70% design permanent impacts of 64,565 square feet.

Construction Phase - Project specific data provided by County of SD - Based on a 12 month construction schedule.

Off-road Equipment - Project specific equipment provided by County of SD. Concrete boom pump modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD. Concrete boom pump modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD.

Off-road Equipment - Project specific equipment provided by County of SD.

Off-road Equipment - Project specific equipment provided by County of SD.

Off-road Equipment - Project specific equipment provided by County of SD. Water truck modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD. Water truck modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD. Water truck modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD. Water truck modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD.

Off-road Equipment - No off-road equipment.

Off-road Equipment - Project specific equipment provided by County of SD. Water truck modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD. Water truck modeled as off-highway truck.

Off-road Equipment - Project specific equipment provided by County of SD. 18-wheeler modeled as off-highway truck.

Off-road Equipment - No off-road equipment.

Off-road Equipment - Project specific equipment provided by County of SD.

Off-road Equipment - Project specific equipment provided by County of SD. 18-wheeler truck modeled as off-highway truck.

Off-road Equipment - No off-road equipment.

Off-road Equipment - Project specific equipment provided by County of SD.

Grading - Assumes approximately 13,000 CY of import and 6,200 CY of export. Additional 8,442 CY associated with AC, CL-2 Base, CTPB, Rock, Bio Soil, CIDH Pile included in haul trucks in Trips and VMT screen/

Trips and VMT - Assumes 5 workers at start/end of construction, 30 workers at peak construction. Pickup trucks modeled as vendor trips. Additional vendor trips added to account for general site up-keep.

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| Table Name           | Column Name  | Default Value | New Value |
|----------------------|--------------|---------------|-----------|
| tblConstructionPhase | NumDays      | 200.00        | 67.00     |
| tblConstructionPhase | NumDays      | 200.00        | 107.00    |
| tblConstructionPhase | NumDays      | 4.00          | 45.00     |
| tblConstructionPhase | NumDays      | 4.00          | 42.00     |
| tblConstructionPhase | NumDays      | 4.00          | 42.00     |
| tblConstructionPhase | NumDays      | 4.00          | 23.00     |
| tblConstructionPhase | NumDays      | 10.00         | 23.00     |
| tblConstructionPhase | NumDays      | 10.00         | 23.00     |
| tblConstructionPhase | NumDays      | 10.00         | 44.00     |
| tblConstructionPhase | NumDays      | 2.00          | 24.00     |
| tblConstructionPhase | NumDays      | 2.00          | 44.00     |
| tblConstructionPhase | NumDays      | 2.00          | 1.00      |
| tblConstructionPhase | NumDays      | 2.00          | 5.00      |
| tblConstructionPhase | NumDays      | 2.00          | 11.00     |
| tblConstructionPhase | NumDays      | 2.00          | 1.00      |
| tblConstructionPhase | NumDays      | 2.00          | 6.00      |
| tblConstructionPhase | NumDays      | 2.00          | 23.00     |
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| tblConstructionPhase | PhaseEndDate | 11/27/2023    | 7/3/2023  |
| tblConstructionPhase | PhaseEndDate | 2/20/2023     | 9/5/2023  |
| tblConstructionPhase | PhaseEndDate | 2/2/2023      | 4/3/2023  |
| tblConstructionPhase | PhaseEndDate | 2/8/2023      | 4/3/2023  |
| tblConstructionPhase | PhaseEndDate | 2/14/2023     | 5/4/2023  |
| tblConstructionPhase | PhaseEndDate | 9/16/2024     | 5/4/2023  |
| tblConstructionPhase | PhaseEndDate | 9/30/2024     | 10/6/2023 |
| tblConstructionPhase | PhaseEndDate | 10/14/2024    | 12/7/2023 |

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|                      |                |            |            |
|----------------------|----------------|------------|------------|
| tblConstructionPhase | PhaseEndDate   | 1/3/2023   | 2/2/2023   |
| tblConstructionPhase | PhaseEndDate   | 1/17/2023  | 12/6/2023  |
| tblConstructionPhase | PhaseEndDate   | 1/19/2023  | 12/8/2023  |
| tblConstructionPhase | PhaseEndDate   | 1/23/2023  | 12/15/2023 |
| tblConstructionPhase | PhaseEndDate   | 1/25/2023  | 12/11/2023 |
| tblConstructionPhase | PhaseEndDate   | 1/27/2023  | 12/29/2023 |
| tblConstructionPhase | PhaseEndDate   | 1/5/2023   | 1/16/2023  |
| tblConstructionPhase | PhaseEndDate   | 1/9/2023   | 1/23/2023  |
| tblConstructionPhase | PhaseEndDate   | 1/11/2023  | 1/17/2023  |
| tblConstructionPhase | PhaseEndDate   | 1/13/2023  | 5/3/2023   |
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| tblConstructionPhase | PhaseStartDate | 2/15/2023  | 7/5/2023   |
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| tblConstructionPhase | PhaseStartDate | 2/9/2023   | 4/4/2023   |
| tblConstructionPhase | PhaseStartDate | 9/3/2024   | 4/4/2023   |
| tblConstructionPhase | PhaseStartDate | 9/17/2024  | 9/6/2023   |
| tblConstructionPhase | PhaseStartDate | 10/1/2024  | 10/7/2023  |
| tblConstructionPhase | PhaseStartDate | 1/14/2023  | 10/6/2023  |
| tblConstructionPhase | PhaseStartDate | 1/18/2023  | 12/8/2023  |
| tblConstructionPhase | PhaseStartDate | 1/20/2023  | 12/9/2023  |
| tblConstructionPhase | PhaseStartDate | 1/24/2023  | 12/8/2023  |
| tblConstructionPhase | PhaseStartDate | 1/26/2023  | 12/15/2023 |
| tblConstructionPhase | PhaseStartDate | 1/4/2023   | 1/16/2023  |
| tblConstructionPhase | PhaseStartDate | 1/6/2023   | 1/16/2023  |
| tblConstructionPhase | PhaseStartDate | 1/10/2023  | 1/16/2023  |
| tblConstructionPhase | PhaseStartDate | 1/12/2023  | 4/3/2023   |



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|                     |                            |           |           |
|---------------------|----------------------------|-----------|-----------|
| tblGrading          | MaterialExported           | 0.00      | 6,200.00  |
| tblGrading          | MaterialImported           | 0.00      | 13,000.00 |
| tblLandUse          | LandUseSquareFeet          | 64,468.80 | 64,564.98 |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
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| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
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| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 2.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 2.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 1.00      | 0.00      |





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|                     |                            |      |                                   |
|---------------------|----------------------------|------|-----------------------------------|
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 2.00                              |
| tblOffRoadEquipment | OffRoadEquipmentUnitAmount | 0.00 | 2.00                              |
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| tblOffRoadEquipment | PhaseName                  |      | Bridge Construction B             |
| tblOffRoadEquipment | PhaseName                  |      | Bridge Construction A             |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 1C         |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 2C         |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 1B         |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 1C         |
| tblOffRoadEquipment | PhaseName                  |      | Roadway Excavation                |
| tblOffRoadEquipment | PhaseName                  |      | Channel Grading                   |
| tblOffRoadEquipment | PhaseName                  |      | Bridge Construction B             |
| tblOffRoadEquipment | PhaseName                  |      | Green Street B                    |
| tblOffRoadEquipment | PhaseName                  |      | Bridge Interior/Exterior Sidewalk |
| tblOffRoadEquipment | PhaseName                  |      | Bridge Construction A             |
| tblOffRoadEquipment | PhaseName                  |      | Green Street A                    |
| tblOffRoadEquipment | PhaseName                  |      | Channel Grading                   |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 1B         |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 1B         |
| tblOffRoadEquipment | PhaseName                  |      | Roadway Paving A                  |
| tblOffRoadEquipment | PhaseName                  |      | Roadway Construction B            |
| tblOffRoadEquipment | PhaseName                  |      | Bridge Construction B             |
| tblOffRoadEquipment | PhaseName                  |      | Roadway Paving B                  |
| tblOffRoadEquipment | PhaseName                  |      | Green Street B                    |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 2A         |
| tblOffRoadEquipment | PhaseName                  |      | Traffic Control Set Up 1A         |
| tblOffRoadEquipment | PhaseName                  |      | Roadway Construction A            |

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|                     |            |      |                           |
|---------------------|------------|------|---------------------------|
| tblOffRoadEquipment | PhaseName  |      | Bridge Construction A     |
| tblOffRoadEquipment | PhaseName  |      | Green Street A            |
| tblOffRoadEquipment | PhaseName  |      | Traffic Control Set Up 1C |
| tblOffRoadEquipment | PhaseName  |      | Traffic Control Set Up 1C |
| tblOffRoadEquipment | PhaseName  |      | Roadway Construction B    |
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| tblOffRoadEquipment | PhaseName  |      | Traffic Control Set Up 1C |
| tblOffRoadEquipment | PhaseName  |      | Roadway Construction A    |
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| tblOffRoadEquipment | PhaseName  |      | Roadway Paving A          |
| tblOffRoadEquipment | PhaseName  |      | Roadway Paving B          |
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| tblOffRoadEquipment | UsageHours | 6.00 | 8.00                      |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00                      |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00                      |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00                      |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00                      |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00                      |
| tblOffRoadEquipment | UsageHours | 6.00 | 8.00                      |
| tblOffRoadEquipment | UsageHours | 6.00 | 0.00                      |
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| tblOffRoadEquipment | UsageHours | 6.00 | 0.00                      |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00                      |
| tblOffRoadEquipment | UsageHours | 8.00 | 0.00                      |



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|                           |                   |       |          |
|---------------------------|-------------------|-------|----------|
| tblOffRoadEquipment       | UsageHours        | 7.00  | 0.00     |
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| tblOffRoadEquipment       | UsageHours        | 8.00  | 0.00     |
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| tblOffRoadEquipment       | UsageHours        | 8.00  | 0.00     |
| tblOffRoadEquipment       | UsageHours        | 8.00  | 0.00     |
| tblOffRoadEquipment       | UsageHours        | 8.00  | 0.00     |
| tblOffRoadEquipment       | UsageHours        | 8.00  | 4.00     |
| tblOffRoadEquipment       | UsageHours        | 8.00  | 0.00     |
| tblOffRoadEquipment       | UsageHours        | 8.00  | 0.00     |
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| tblTripsAndVMT            | HaulingTripNumber | 0.00  | 1,055.00 |
| tblTripsAndVMT            | HaulingTripNumber | 38.00 | 0.00     |
| tblTripsAndVMT            | VendorTripNumber  | 0.00  | 2.00     |
| tblTripsAndVMT            | VendorTripNumber  | 11.00 | 12.00    |

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|                |                  |       |       |
|----------------|------------------|-------|-------|
| tblTripsAndVMT | VendorTripNumber | 0.00  | 8.00  |
| tblTripsAndVMT | VendorTripNumber | 0.00  | 2.00  |
| tblTripsAndVMT | VendorTripNumber | 0.00  | 4.00  |
| tblTripsAndVMT | VendorTripNumber | 0.00  | 2.00  |
| tblTripsAndVMT | VendorTripNumber | 11.00 | 12.00 |
| tblTripsAndVMT | WorkerTripNumber | 8.00  | 10.00 |
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| tblTripsAndVMT | WorkerTripNumber | 15.00 | 0.00  |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 0.00  |
| tblTripsAndVMT | WorkerTripNumber | 5.00  | 60.00 |
| tblTripsAndVMT | WorkerTripNumber | 5.00  | 0.00  |
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| tblTripsAndVMT | WorkerTripNumber | 3.00  | 0.00  |
| tblTripsAndVMT | WorkerTripNumber | 18.00 | 0.00  |
| tblTripsAndVMT | WorkerTripNumber | 8.00  | 0.00  |
| tblTripsAndVMT | WorkerTripNumber | 27.00 | 60.00 |
| tblTripsAndVMT | WorkerTripNumber | 13.00 | 0.00  |
| tblTripsAndVMT | WorkerTripNumber | 15.00 | 0.00  |

**2.0 Emissions Summary**

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| Quarter | Start Date | End Date  | Maximum Unmitigated ROG + NOX (tons/quarter) | Maximum Mitigated ROG + NOX (tons/quarter) |
|---------|------------|-----------|--|--|
| 1       | 1-2-2023   | 4-1-2023  | 1.1683                                       | 1.1683                                     |
| 2       | 4-2-2023   | 7-1-2023  | 0.8673                                       | 0.8673                                     |
| 3       | 7-2-2023   | 9-30-2023 | 0.7287                                       | 0.7287                                     |
|         |            | Highest   | 1.1683                                       | 1.1683                                     |

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         | 6.4200e-003        | 0.0000        | 1.0000e-005        | 0.0000        |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 3.0000e-005        | 3.0000e-005        | 0.0000        | 0.0000        | 3.0000e-005        |
| Energy       | 0.0000             | 0.0000        | 0.0000             | 0.0000        |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Mobile       | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Waste        |                    |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Water        |                    |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| <b>Total</b> | <b>6.4200e-003</b> | <b>0.0000</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</b> | <b>3.0000e-005</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</b> |

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**2.2 Overall Operational**

**Mitigated Operational**

|              | ROG                | NOx           | CO                 | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2          | Total CO2          | CH4           | N2O           | CO2e               |
|--------------|--------------------|---------------|--------------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|--------------------|--------------------|---------------|---------------|--------------------|
| Category     | tons/yr            |               |                    |               |               |               |               |                |               |               | MT/yr         |                    |                    |               |               |                    |
| Area         | 6.4200e-003        | 0.0000        | 1.0000e-005        | 0.0000        |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 3.0000e-005        | 3.0000e-005        | 0.0000        | 0.0000        | 3.0000e-005        |
| Energy       | 0.0000             | 0.0000        | 0.0000             | 0.0000        |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Mobile       | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Waste        |                    |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Water        |                    |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| <b>Total</b> | <b>6.4200e-003</b> | <b>0.0000</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</b> | <b>3.0000e-005</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</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 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00          | 0.00         | 0.00       | 0.00           | 0.00          | 0.00        | 0.00     | 0.00      | 0.00      | 0.00 | 0.00 | 0.00 |

**3.0 Construction Detail**

**Construction Phase**

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| Phase Number | Phase Name                        | Phase Type            | Start Date | End Date   | Num Days Week | Num Days | Phase Description |
|--------------|-----------------------------------|-----------------------|------------|------------|---------------|----------|-------------------|
| 1            | Clearing Grubbing WP Measures     | Site Preparation      | 1/2/2023   | 2/2/2023   | 5             | 24       |                   |
| 2            | Traffic Control Set Up 1A         | Site Preparation      | 1/16/2023  | 1/16/2023  | 5             | 1        |                   |
| 3            | Traffic Control Set Up 1B         | Site Preparation      | 1/16/2023  | 1/23/2023  | 5             | 6        |                   |
| 4            | Traffic Control Set Up 1C         | Site Preparation      | 1/16/2023  | 1/17/2023  | 5             | 2        |                   |
| 5            | Green Street A                    | Site Preparation      | 4/3/2023   | 5/3/2023   | 5             | 23       |                   |
| 6            | Green Street B                    | Site Preparation      | 10/6/2023  | 12/6/2023  | 5             | 44       |                   |
| 7            | Traffic Control Set Up 2A         | Site Preparation      | 12/8/2023  | 12/8/2023  | 5             | 1        |                   |
| 8            | Traffic Control Set Up 2B         | Site Preparation      | 12/9/2023  | 12/15/2023 | 5             | 5        |                   |
| 9            | Traffic Control Set Up 2C         | Site Preparation      | 12/8/2023  | 12/11/2023 | 5             | 2        |                   |
| 10           | Roadway Opening                   | Site Preparation      | 12/15/2023 | 12/29/2023 | 5             | 11       |                   |
| 11           | Roadway Excavation                | Grading               | 2/3/2023   | 4/3/2023   | 5             | 42       |                   |
| 12           | Roadway Construction A            | Grading               | 2/3/2023   | 4/3/2023   | 5             | 42       |                   |
| 13           | Channel Grading                   | Grading               | 4/4/2023   | 5/4/2023   | 5             | 23       |                   |
| 14           | Roadway Construction B            | Grading               | 7/5/2023   | 9/5/2023   | 5             | 45       |                   |
| 15           | Bridge Construction A             | Building Construction | 2/3/2023   | 7/3/2023   | 5             | 107      |                   |
| 16           | Bridge Construction B             | Building Construction | 7/5/2023   | 10/5/2023  | 5             | 67       |                   |
| 17           | Roadway Paving A                  | Paving                | 4/4/2023   | 5/4/2023   | 5             | 23       |                   |
| 18           | Roadway Paving B                  | Paving                | 9/6/2023   | 10/6/2023  | 5             | 23       |                   |
| 19           | Bridge Interior/Exterior Sidewalk | Paving                | 10/7/2023  | 12/7/2023  | 5             | 44       |                   |

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

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

**Acres of Paving: 1.48**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)**

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**OffRoad Equipment**

| Phase Name                    | Offroad Equipment Type    | Amount | Usage Hours | Horse Power | Load Factor |
|-------------------------------|---------------------------|--------|-------------|-------------|-------------|
| Clearing Grubbing WP Measures | Graders                   | 1      | 8.00        | 187         | 0.41        |
| Clearing Grubbing WP Measures | Rubber Tired Dozers       | 0      | 0.00        | 247         | 0.40        |
| Clearing Grubbing WP Measures | Skid Steer Loaders        | 2      | 8.00        | 65          | 0.37        |
| Clearing Grubbing WP Measures | Tractors/Loaders/Backhoes | 0      | 0.00        | 97          | 0.37        |
| Traffic Control Set Up 1A     | Graders                   | 0      | 0.00        | 187         | 0.41        |
| Traffic Control Set Up 1A     | Off-Highway Trucks        | 2      | 8.00        | 402         | 0.38        |
| Traffic Control Set Up 1A     | Rubber Tired Dozers       | 0      | 0.00        | 247         | 0.40        |
| Traffic Control Set Up 1A     | Tractors/Loaders/Backhoes | 0      | 0.00        | 97          | 0.37        |
| Traffic Control Set Up 1B     | Cranes                    | 0      | 0.00        | 231         | 0.29        |
| Traffic Control Set Up 1B     | Forklifts                 | 0      | 0.00        | 89          | 0.20        |
| Traffic Control Set Up 1B     | Generator Sets            | 0      | 0.00        | 84          | 0.74        |
| Traffic Control Set Up 1B     | Graders                   | 0      | 0.00        | 187         | 0.41        |
| Traffic Control Set Up 1B     | Rubber Tired Dozers       | 0      | 0.00        | 247         | 0.40        |
| Traffic Control Set Up 1B     | Tractors/Loaders/Backhoes | 0      | 0.00        | 97          | 0.37        |
| Traffic Control Set Up 1B     | Welders                   | 0      | 0.00        | 46          | 0.45        |
| Traffic Control Set Up 1C     | Cement and Mortar Mixers  | 0      | 0.00        | 9           | 0.56        |
| Traffic Control Set Up 1C     | Cranes                    | 1      | 4.00        | 231         | 0.29        |
| Traffic Control Set Up 1C     | Graders                   | 0      | 0.00        | 187         | 0.41        |
| Traffic Control Set Up 1C     | Pavers                    | 0      | 0.00        | 130         | 0.42        |
| Traffic Control Set Up 1C     | Paving Equipment          | 0      | 0.00        | 132         | 0.36        |
| Traffic Control Set Up 1C     | Rollers                   | 0      | 0.00        | 80          | 0.38        |
| Traffic Control Set Up 1C     | Rubber Tired Dozers       | 0      | 0.00        | 247         | 0.40        |
| Traffic Control Set Up 1C     | Tractors/Loaders/Backhoes | 0      | 0.00        | 97          | 0.37        |
| Roadway Excavation            | Air Compressors           | 0      | 0.00        | 78          | 0.48        |
| Roadway Excavation            | Dumpers/Tenders           | 4      | 8.00        | 16          | 0.38        |

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|                        |                           |   |      |     |      |
|------------------------|---------------------------|---|------|-----|------|
| Roadway Excavation     | Graders                   | 0 | 0.00 | 187 | 0.41 |
| Roadway Excavation     | Rubber Tired Dozers       | 2 | 8.00 | 247 | 0.40 |
| Roadway Excavation     | Tractors/Loaders/Backhoes | 1 | 4.00 | 97  | 0.37 |
| Roadway Construction A | Graders                   | 1 | 8.00 | 187 | 0.41 |
| Roadway Construction A | Off-Highway Trucks        | 1 | 4.00 | 402 | 0.38 |
| Roadway Construction A | Rollers                   | 1 | 4.00 | 80  | 0.38 |
| Roadway Construction A | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Roadway Construction A | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |
| Bridge Construction A  | Bore/Drill Rigs           | 1 | 8.00 | 221 | 0.50 |
| Bridge Construction A  | Cranes                    | 1 | 8.00 | 231 | 0.29 |
| Bridge Construction A  | Excavators                | 1 | 4.00 | 158 | 0.38 |
| Bridge Construction A  | Forklifts                 | 0 | 0.00 | 89  | 0.20 |
| Bridge Construction A  | Generator Sets            | 0 | 0.00 | 84  | 0.74 |
| Bridge Construction A  | Off-Highway Trucks        | 1 | 8.00 | 402 | 0.38 |
| Bridge Construction A  | Tractors/Loaders/Backhoes | 1 | 8.00 | 97  | 0.37 |
| Bridge Construction A  | Welders                   | 0 | 0.00 | 46  | 0.45 |
| Green Street A         | Excavators                | 1 | 8.00 | 158 | 0.38 |
| Green Street A         | Graders                   | 1 | 8.00 | 187 | 0.41 |
| Green Street A         | Off-Highway Trucks        | 1 | 8.00 | 402 | 0.38 |
| Green Street A         | Rollers                   | 1 | 8.00 | 80  | 0.38 |
| Green Street A         | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Green Street A         | Tractors/Loaders/Backhoes | 1 | 4.00 | 97  | 0.37 |
| Channel Grading        | Dumpers/Tenders           | 4 | 4.00 | 16  | 0.38 |
| Channel Grading        | Excavators                | 1 | 4.00 | 158 | 0.38 |
| Channel Grading        | Graders                   | 0 | 0.00 | 187 | 0.41 |
| Channel Grading        | Rubber Tired Dozers       | 1 | 4.00 | 247 | 0.40 |
| Channel Grading        | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |

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|                        |                           |   |      |     |      |
|------------------------|---------------------------|---|------|-----|------|
| Roadway Paving A       | Cement and Mortar Mixers  | 0 | 0.00 | 9   | 0.56 |
| Roadway Paving A       | Off-Highway Trucks        | 1 | 4.00 | 402 | 0.38 |
| Roadway Paving A       | Pavers                    | 1 | 8.00 | 130 | 0.42 |
| Roadway Paving A       | Paving Equipment          | 0 | 0.00 | 132 | 0.36 |
| Roadway Paving A       | Rollers                   | 2 | 8.00 | 80  | 0.38 |
| Roadway Paving A       | Skid Steer Loaders        | 2 | 8.00 | 65  | 0.37 |
| Roadway Paving A       | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |
| Roadway Construction B | Graders                   | 1 | 8.00 | 187 | 0.41 |
| Roadway Construction B | Off-Highway Trucks        | 1 | 4.00 | 402 | 0.38 |
| Roadway Construction B | Rollers                   | 1 | 4.00 | 80  | 0.38 |
| Roadway Construction B | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Roadway Construction B | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |
| Bridge Construction B  | Bore/Drill Rigs           | 1 | 8.00 | 221 | 0.50 |
| Bridge Construction B  | Cranes                    | 1 | 8.00 | 231 | 0.29 |
| Bridge Construction B  | Excavators                | 1 | 4.00 | 158 | 0.38 |
| Bridge Construction B  | Forklifts                 | 0 | 0.00 | 89  | 0.20 |
| Bridge Construction B  | Generator Sets            | 0 | 0.00 | 84  | 0.74 |
| Bridge Construction B  | Off-Highway Trucks        | 1 | 8.00 | 402 | 0.38 |
| Bridge Construction B  | Tractors/Loaders/Backhoes | 1 | 8.00 | 97  | 0.37 |
| Bridge Construction B  | Welders                   | 0 | 0.00 | 46  | 0.45 |
| Roadway Paving B       | Cement and Mortar Mixers  | 0 | 0.00 | 9   | 0.56 |
| Roadway Paving B       | Off-Highway Trucks        | 1 | 4.00 | 402 | 0.38 |
| Roadway Paving B       | Pavers                    | 1 | 8.00 | 130 | 0.42 |
| Roadway Paving B       | Paving Equipment          | 0 | 0.00 | 132 | 0.36 |
| Roadway Paving B       | Rollers                   | 2 | 8.00 | 80  | 0.38 |
| Roadway Paving B       | Skid Steer Loaders        | 2 | 8.00 | 65  | 0.37 |
| Roadway Paving B       | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |

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|                                   |                           |   |      |     |      |
|-----------------------------------|---------------------------|---|------|-----|------|
| Green Street B                    | Excavators                | 1 | 8.00 | 158 | 0.38 |
| Green Street B                    | Graders                   | 1 | 8.00 | 187 | 0.41 |
| Green Street B                    | Off-Highway Trucks        | 1 | 8.00 | 402 | 0.38 |
| Green Street B                    | Rollers                   | 1 | 8.00 | 80  | 0.38 |
| Green Street B                    | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Green Street B                    | Tractors/Loaders/Backhoes | 2 | 4.00 | 97  | 0.37 |
| Bridge Interior/Exterior Sidewalk | Cement and Mortar Mixers  | 0 | 0.00 | 9   | 0.56 |
| Bridge Interior/Exterior Sidewalk | Excavators                | 1 | 4.00 | 158 | 0.38 |
| Bridge Interior/Exterior Sidewalk | Pavers                    | 0 | 0.00 | 130 | 0.42 |
| Bridge Interior/Exterior Sidewalk | Paving Equipment          | 0 | 0.00 | 132 | 0.36 |
| Bridge Interior/Exterior Sidewalk | Rollers                   | 0 | 0.00 | 80  | 0.38 |
| Bridge Interior/Exterior Sidewalk | Tractors/Loaders/Backhoes | 1 | 4.00 | 97  | 0.37 |
| Traffic Control Set Up 2A         | Graders                   | 0 | 0.00 | 187 | 0.41 |
| Traffic Control Set Up 2A         | Off-Highway Trucks        | 2 | 8.00 | 402 | 0.38 |
| Traffic Control Set Up 2A         | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Traffic Control Set Up 2A         | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |
| Traffic Control Set Up 2B         | Graders                   | 0 | 0.00 | 187 | 0.41 |
| Traffic Control Set Up 2B         | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Traffic Control Set Up 2B         | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |
| Traffic Control Set Up 2C         | Cranes                    | 1 | 4.00 | 231 | 0.29 |
| Traffic Control Set Up 2C         | Graders                   | 0 | 0.00 | 187 | 0.41 |
| Traffic Control Set Up 2C         | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Traffic Control Set Up 2C         | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |
| Roadway Opening                   | Graders                   | 0 | 0.00 | 187 | 0.41 |
| Roadway Opening                   | Rubber Tired Dozers       | 0 | 0.00 | 247 | 0.40 |
| Roadway Opening                   | Tractors/Loaders/Backhoes | 0 | 0.00 | 97  | 0.37 |



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**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 |
|-----------------------------------|-------------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|----------------------|----------------------|-----------------------|
| Clearing Grubbing WP Measures     | 3                       | 10.00              | 2.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Traffic Control Set Up 1A         | 2                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Traffic Control Set Up 1B         | 0                       | 0.00               | 2.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Traffic Control Set Up 1C         | 1                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Roadway Excavation                | 7                       | 0.00               | 0.00               | 2,400.00            | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Roadway Construction A            | 3                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Bridge Construction A             | 5                       | 60.00              | 12.00              | 1,055.00            | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Green Street A                    | 5                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Channel Grading                   | 6                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Roadway Paving A                  | 6                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Roadway Construction B            | 3                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Bridge Construction B             | 5                       | 60.00              | 12.00              | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Roadway Paving B                  | 6                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Green Street B                    | 5                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Bridge Interior/Exterior Sidewalk | 2                       | 60.00              | 8.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Traffic Control Set Up 2A         | 2                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Traffic Control Set Up 2B         | 0                       | 10.00              | 2.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Traffic Control Set Up 2C         | 1                       | 0.00               | 0.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |
| Roadway Opening                   | 0                       | 10.00              | 4.00               | 0.00                | 16.80              | 6.60               | 20.00               | LD_Mix               | HDT_Mix              | HHDT                  |

**3.1 Mitigation Measures Construction**

Water Exposed Area

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**3.2 Clearing Grubbing WP Measures - 2023**

**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 |                    |               |               |                    | 6.3600e-003        | 0.0000             | 6.3600e-003        | 6.9000e-004        | 0.0000             | 6.9000e-004        | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Off-Road      | 6.1600e-003        | 0.0766        | 0.0536        | 1.3000e-004        |                    | 2.5100e-003        | 2.5100e-003        |                    | 2.3100e-003        | 2.3100e-003        | 0.0000        | 11.3416        | 11.3416        | 3.6700e-003        | 0.0000        | 11.4333        |
| <b>Total</b>  | <b>6.1600e-003</b> | <b>0.0766</b> | <b>0.0536</b> | <b>1.3000e-004</b> | <b>6.3600e-003</b> | <b>2.5100e-003</b> | <b>8.8700e-003</b> | <b>6.9000e-004</b> | <b>2.3100e-003</b> | <b>3.0000e-003</b> | <b>0.0000</b> | <b>11.3416</b> | <b>11.3416</b> | <b>3.6700e-003</b> | <b>0.0000</b> | <b>11.4333</b> |

**Unmitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2                | Fugitive PM10      | Exhaust PM10       | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5      | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |                    |                    |                    |                    |                    |                    |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 5.0000e-005        | 1.7700e-003        | 5.4000e-004        | 1.0000e-005        | 1.4000e-004        | 0.0000             | 1.5000e-004        | 4.0000e-005        | 0.0000             | 4.0000e-005        | 0.0000        | 0.5593        | 0.5593        | 4.0000e-005        | 0.0000        | 0.5602        |
| Worker       | 5.3000e-004        | 3.7000e-004        | 3.7500e-003        | 1.0000e-005        | 1.5000e-003        | 1.0000e-005        | 1.5100e-003        | 4.0000e-004        | 1.0000e-005        | 4.1000e-004        | 0.0000        | 1.1992        | 1.1992        | 3.0000e-005        | 0.0000        | 1.2000        |
| <b>Total</b> | <b>5.8000e-004</b> | <b>2.1400e-003</b> | <b>4.2900e-003</b> | <b>2.0000e-005</b> | <b>1.6400e-003</b> | <b>1.0000e-005</b> | <b>1.6600e-003</b> | <b>4.4000e-004</b> | <b>1.0000e-005</b> | <b>4.5000e-004</b> | <b>0.0000</b> | <b>1.7585</b> | <b>1.7585</b> | <b>7.0000e-005</b> | <b>0.0000</b> | <b>1.7602</b> |

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**3.2 Clearing Grubbing WP Measures - 2023**

**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 |                    |               |               |                    | 2.8600e-003        | 0.0000             | 2.8600e-003        | 3.1000e-004        | 0.0000             | 3.1000e-004        | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Off-Road      | 6.1600e-003        | 0.0766        | 0.0536        | 1.3000e-004        |                    | 2.5100e-003        | 2.5100e-003        |                    | 2.3100e-003        | 2.3100e-003        | 0.0000        | 11.3416        | 11.3416        | 3.6700e-003        | 0.0000        | 11.4333        |
| <b>Total</b>  | <b>6.1600e-003</b> | <b>0.0766</b> | <b>0.0536</b> | <b>1.3000e-004</b> | <b>2.8600e-003</b> | <b>2.5100e-003</b> | <b>5.3700e-003</b> | <b>3.1000e-004</b> | <b>2.3100e-003</b> | <b>2.6200e-003</b> | <b>0.0000</b> | <b>11.3416</b> | <b>11.3416</b> | <b>3.6700e-003</b> | <b>0.0000</b> | <b>11.4333</b> |

**Mitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2                | Fugitive PM10      | Exhaust PM10       | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5      | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |                    |                    |                    |                    |                    |                    |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 5.0000e-005        | 1.7700e-003        | 5.4000e-004        | 1.0000e-005        | 1.4000e-004        | 0.0000             | 1.5000e-004        | 4.0000e-005        | 0.0000             | 4.0000e-005        | 0.0000        | 0.5593        | 0.5593        | 4.0000e-005        | 0.0000        | 0.5602        |
| Worker       | 5.3000e-004        | 3.7000e-004        | 3.7500e-003        | 1.0000e-005        | 1.5000e-003        | 1.0000e-005        | 1.5100e-003        | 4.0000e-004        | 1.0000e-005        | 4.1000e-004        | 0.0000        | 1.1992        | 1.1992        | 3.0000e-005        | 0.0000        | 1.2000        |
| <b>Total</b> | <b>5.8000e-004</b> | <b>2.1400e-003</b> | <b>4.2900e-003</b> | <b>2.0000e-005</b> | <b>1.6400e-003</b> | <b>1.0000e-005</b> | <b>1.6600e-003</b> | <b>4.4000e-004</b> | <b>1.0000e-005</b> | <b>4.5000e-004</b> | <b>0.0000</b> | <b>1.7585</b> | <b>1.7585</b> | <b>7.0000e-005</b> | <b>0.0000</b> | <b>1.7602</b> |





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**3.4 Traffic Control Set Up 1B - 2023**

**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 |               |               |               |               | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Off-Road      | 0.0000        | 0.0000        | 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>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Unmitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2           | Fugitive PM10      | Exhaust PM10  | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5 | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|---------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |               |                    |               |                    |                    |               |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 1.0000e-005        | 4.4000e-004        | 1.4000e-004        | 0.0000        | 4.0000e-005        | 0.0000        | 4.0000e-005        | 1.0000e-005        | 0.0000        | 1.0000e-005        | 0.0000        | 0.1398        | 0.1398        | 1.0000e-005        | 0.0000        | 0.1401        |
| Worker       | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 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>1.0000e-005</b> | <b>4.4000e-004</b> | <b>1.4000e-004</b> | <b>0.0000</b> | <b>4.0000e-005</b> | <b>0.0000</b> | <b>4.0000e-005</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>0.1398</b> | <b>0.1398</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>0.1401</b> |

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**3.4 Traffic Control Set Up 1B - 2023**

**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 |               |               |               |               | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Off-Road      | 0.0000        | 0.0000        | 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>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Mitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2           | Fugitive PM10      | Exhaust PM10  | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5 | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|---------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |               |                    |               |                    |                    |               |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 1.0000e-005        | 4.4000e-004        | 1.4000e-004        | 0.0000        | 4.0000e-005        | 0.0000        | 4.0000e-005        | 1.0000e-005        | 0.0000        | 1.0000e-005        | 0.0000        | 0.1398        | 0.1398        | 1.0000e-005        | 0.0000        | 0.1401        |
| Worker       | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 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>1.0000e-005</b> | <b>4.4000e-004</b> | <b>1.4000e-004</b> | <b>0.0000</b> | <b>4.0000e-005</b> | <b>0.0000</b> | <b>4.0000e-005</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>0.1398</b> | <b>0.1398</b> | <b>1.0000e-005</b> | <b>0.0000</b> | <b>0.1401</b> |



















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**3.9 Traffic Control Set Up 2B - 2023**

**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 |               |               |               |               | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Off-Road      | 0.0000        | 0.0000        | 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>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Unmitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2           | Fugitive PM10      | Exhaust PM10  | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5 | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|---------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |               |                    |               |                    |                    |               |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 1.0000e-005        | 3.7000e-004        | 1.1000e-004        | 0.0000        | 3.0000e-005        | 0.0000        | 3.0000e-005        | 1.0000e-005        | 0.0000        | 1.0000e-005        | 0.0000        | 0.1165        | 0.1165        | 1.0000e-005        | 0.0000        | 0.1167        |
| Worker       | 1.1000e-004        | 8.0000e-005        | 7.8000e-004        | 0.0000        | 3.1000e-004        | 0.0000        | 3.1000e-004        | 8.0000e-005        | 0.0000        | 8.0000e-005        | 0.0000        | 0.2498        | 0.2498        | 1.0000e-005        | 0.0000        | 0.2500        |
| <b>Total</b> | <b>1.2000e-004</b> | <b>4.5000e-004</b> | <b>8.9000e-004</b> | <b>0.0000</b> | <b>3.4000e-004</b> | <b>0.0000</b> | <b>3.4000e-004</b> | <b>9.0000e-005</b> | <b>0.0000</b> | <b>9.0000e-005</b> | <b>0.0000</b> | <b>0.3663</b> | <b>0.3663</b> | <b>2.0000e-005</b> | <b>0.0000</b> | <b>0.3667</b> |



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**3.9 Traffic Control Set Up 2B - 2023**

**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 |               |               |               |               | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Off-Road      | 0.0000        | 0.0000        | 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>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Mitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2           | Fugitive PM10      | Exhaust PM10  | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5 | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|---------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |               |                    |               |                    |                    |               |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 1.0000e-005        | 3.7000e-004        | 1.1000e-004        | 0.0000        | 3.0000e-005        | 0.0000        | 3.0000e-005        | 1.0000e-005        | 0.0000        | 1.0000e-005        | 0.0000        | 0.1165        | 0.1165        | 1.0000e-005        | 0.0000        | 0.1167        |
| Worker       | 1.1000e-004        | 8.0000e-005        | 7.8000e-004        | 0.0000        | 3.1000e-004        | 0.0000        | 3.1000e-004        | 8.0000e-005        | 0.0000        | 8.0000e-005        | 0.0000        | 0.2498        | 0.2498        | 1.0000e-005        | 0.0000        | 0.2500        |
| <b>Total</b> | <b>1.2000e-004</b> | <b>4.5000e-004</b> | <b>8.9000e-004</b> | <b>0.0000</b> | <b>3.4000e-004</b> | <b>0.0000</b> | <b>3.4000e-004</b> | <b>9.0000e-005</b> | <b>0.0000</b> | <b>9.0000e-005</b> | <b>0.0000</b> | <b>0.3663</b> | <b>0.3663</b> | <b>2.0000e-005</b> | <b>0.0000</b> | <b>0.3667</b> |





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**3.11 Roadway Opening - 2023**

**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 |               |               |               |               | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Off-Road      | 0.0000        | 0.0000        | 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>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Unmitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2                | Fugitive PM10      | Exhaust PM10  | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5 | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|---------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |                    |                    |               |                    |                    |               |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 5.0000e-005        | 1.6200e-003        | 5.0000e-004        | 1.0000e-005        | 1.3000e-004        | 0.0000        | 1.3000e-004        | 4.0000e-005        | 0.0000        | 4.0000e-005        | 0.0000        | 0.5127        | 0.5127        | 4.0000e-005        | 0.0000        | 0.5136        |
| Worker       | 2.4000e-004        | 1.7000e-004        | 1.7200e-003        | 1.0000e-005        | 6.9000e-004        | 0.0000        | 6.9000e-004        | 1.8000e-004        | 0.0000        | 1.9000e-004        | 0.0000        | 0.5496        | 0.5496        | 1.0000e-005        | 0.0000        | 0.5500        |
| <b>Total</b> | <b>2.9000e-004</b> | <b>1.7900e-003</b> | <b>2.2200e-003</b> | <b>2.0000e-005</b> | <b>8.2000e-004</b> | <b>0.0000</b> | <b>8.2000e-004</b> | <b>2.2000e-004</b> | <b>0.0000</b> | <b>2.3000e-004</b> | <b>0.0000</b> | <b>1.0623</b> | <b>1.0623</b> | <b>5.0000e-005</b> | <b>0.0000</b> | <b>1.0635</b> |

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**3.11 Roadway Opening - 2023**

**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 |               |               |               |               | 0.0000        | 0.0000        | 0.0000        | 0.0000         | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| Off-Road      | 0.0000        | 0.0000        | 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>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b>  | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Mitigated Construction Off-Site**

|              | ROG                | NOx                | CO                 | SO2                | Fugitive PM10      | Exhaust PM10  | PM10 Total         | Fugitive PM2.5     | Exhaust PM2.5 | PM2.5 Total        | Bio- CO2      | NBio- CO2     | Total CO2     | CH4                | N2O           | CO2e          |
|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------|--------------------|--------------------|---------------|--------------------|---------------|---------------|---------------|--------------------|---------------|---------------|
| Category     | tons/yr            |                    |                    |                    |                    |               |                    |                    |               |                    | MT/yr         |               |               |                    |               |               |
| Hauling      | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| Vendor       | 5.0000e-005        | 1.6200e-003        | 5.0000e-004        | 1.0000e-005        | 1.3000e-004        | 0.0000        | 1.3000e-004        | 4.0000e-005        | 0.0000        | 4.0000e-005        | 0.0000        | 0.5127        | 0.5127        | 4.0000e-005        | 0.0000        | 0.5136        |
| Worker       | 2.4000e-004        | 1.7000e-004        | 1.7200e-003        | 1.0000e-005        | 6.9000e-004        | 0.0000        | 6.9000e-004        | 1.8000e-004        | 0.0000        | 1.9000e-004        | 0.0000        | 0.5496        | 0.5496        | 1.0000e-005        | 0.0000        | 0.5500        |
| <b>Total</b> | <b>2.9000e-004</b> | <b>1.7900e-003</b> | <b>2.2200e-003</b> | <b>2.0000e-005</b> | <b>8.2000e-004</b> | <b>0.0000</b> | <b>8.2000e-004</b> | <b>2.2000e-004</b> | <b>0.0000</b> | <b>2.3000e-004</b> | <b>0.0000</b> | <b>1.0623</b> | <b>1.0623</b> | <b>5.0000e-005</b> | <b>0.0000</b> | <b>1.0635</b> |

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**3.12 Roadway Excavation - 2023**

**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 |               |               |               |                    | 0.2663        | 0.0000        | 0.2663        | 0.1459         | 0.0000        | 0.1459        | 0.0000        | 0.0000         | 0.0000         | 0.0000        | 0.0000        | 0.0000         |
| Off-Road      | 0.0365        | 0.3545        | 0.1750        | 4.5000e-004        |               | 0.0157        | 0.0157        |                | 0.0146        | 0.0146        | 0.0000        | 39.0267        | 39.0267        | 0.0116        | 0.0000        | 39.3172        |
| <b>Total</b>  | <b>0.0365</b> | <b>0.3545</b> | <b>0.1750</b> | <b>4.5000e-004</b> | <b>0.2663</b> | <b>0.0157</b> | <b>0.2821</b> | <b>0.1459</b>  | <b>0.0146</b> | <b>0.1604</b> | <b>0.0000</b> | <b>39.0267</b> | <b>39.0267</b> | <b>0.0116</b> | <b>0.0000</b> | <b>39.3172</b> |

**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      | 6.0500e-003        | 0.1969        | 0.0719        | 8.7000e-004        | 0.0205        | 3.6000e-004        | 0.0209        | 5.6400e-003        | 3.5000e-004        | 5.9900e-003        | 0.0000        | 87.1372        | 87.1372        | 7.7900e-003        | 0.0000        | 87.3321        |
| Vendor       | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Worker       | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 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>6.0500e-003</b> | <b>0.1969</b> | <b>0.0719</b> | <b>8.7000e-004</b> | <b>0.0205</b> | <b>3.6000e-004</b> | <b>0.0209</b> | <b>5.6400e-003</b> | <b>3.5000e-004</b> | <b>5.9900e-003</b> | <b>0.0000</b> | <b>87.1372</b> | <b>87.1372</b> | <b>7.7900e-003</b> | <b>0.0000</b> | <b>87.3321</b> |

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**3.12 Roadway Excavation - 2023**

**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 |               |               |               |                    | 0.1198        | 0.0000        | 0.1198        | 0.0656         | 0.0000        | 0.0656        | 0.0000        | 0.0000         | 0.0000         | 0.0000        | 0.0000        | 0.0000         |
| Off-Road      | 0.0365        | 0.3545        | 0.1750        | 4.5000e-004        |               | 0.0157        | 0.0157        |                | 0.0146        | 0.0146        | 0.0000        | 39.0267        | 39.0267        | 0.0116        | 0.0000        | 39.3171        |
| <b>Total</b>  | <b>0.0365</b> | <b>0.3545</b> | <b>0.1750</b> | <b>4.5000e-004</b> | <b>0.1198</b> | <b>0.0157</b> | <b>0.1356</b> | <b>0.0656</b>  | <b>0.0146</b> | <b>0.0802</b> | <b>0.0000</b> | <b>39.0267</b> | <b>39.0267</b> | <b>0.0116</b> | <b>0.0000</b> | <b>39.3171</b> |

**Mitigated Construction Off-Site**

|              | ROG                | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5     | Exhaust PM2.5      | PM2.5 Total        | Bio- CO2      | NBio- CO2      | Total CO2      | CH4                | N2O           | CO2e           |
|--------------|--------------------|---------------|---------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|----------------|----------------|--------------------|---------------|----------------|
| Category     | tons/yr            |               |               |                    |               |                    |               |                    |                    |                    | MT/yr         |                |                |                    |               |                |
| Hauling      | 6.0500e-003        | 0.1969        | 0.0719        | 8.7000e-004        | 0.0205        | 3.6000e-004        | 0.0209        | 5.6400e-003        | 3.5000e-004        | 5.9900e-003        | 0.0000        | 87.1372        | 87.1372        | 7.7900e-003        | 0.0000        | 87.3321        |
| Vendor       | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Worker       | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 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>6.0500e-003</b> | <b>0.1969</b> | <b>0.0719</b> | <b>8.7000e-004</b> | <b>0.0205</b> | <b>3.6000e-004</b> | <b>0.0209</b> | <b>5.6400e-003</b> | <b>3.5000e-004</b> | <b>5.9900e-003</b> | <b>0.0000</b> | <b>87.1372</b> | <b>87.1372</b> | <b>7.7900e-003</b> | <b>0.0000</b> | <b>87.3321</b> |















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**3.16 Bridge Construction A - 2023**

**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     | 0.0704        | 0.6277        | 0.5894        | 1.8300e-003        |               | 0.0250        | 0.0250        |                | 0.0230        | 0.0230        | 0.0000        | 160.4421        | 160.4421        | 0.0519        | 0.0000        | 161.7393        |
| <b>Total</b> | <b>0.0704</b> | <b>0.6277</b> | <b>0.5894</b> | <b>1.8300e-003</b> |               | <b>0.0250</b> | <b>0.0250</b> |                | <b>0.0230</b> | <b>0.0230</b> | <b>0.0000</b> | <b>160.4421</b> | <b>160.4421</b> | <b>0.0519</b> | <b>0.0000</b> | <b>161.7393</b> |

**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      | 2.6600e-003   | 0.0865        | 0.0316        | 3.8000e-004        | 9.0300e-003   | 1.6000e-004        | 9.1900e-003   | 2.4800e-003    | 1.5000e-004        | 2.6300e-003   | 0.0000        | 38.3041        | 38.3041        | 3.4300e-003        | 0.0000        | 38.3897        |
| Vendor       | 1.3500e-003   | 0.0474        | 0.0145        | 1.5000e-004        | 3.8500e-003   | 5.0000e-005        | 3.9100e-003   | 1.1100e-003    | 5.0000e-005        | 1.1600e-003   | 0.0000        | 14.9603        | 14.9603        | 1.0400e-003        | 0.0000        | 14.9863        |
| Worker       | 0.0142        | 9.8700e-003   | 0.1004        | 3.5000e-004        | 0.0400        | 2.6000e-004        | 0.0403        | 0.0106         | 2.4000e-004        | 0.0109        | 0.0000        | 32.0787        | 32.0787        | 8.1000e-004        | 0.0000        | 32.0989        |
| <b>Total</b> | <b>0.0182</b> | <b>0.1438</b> | <b>0.1464</b> | <b>8.8000e-004</b> | <b>0.0529</b> | <b>4.7000e-004</b> | <b>0.0534</b> | <b>0.0142</b>  | <b>4.4000e-004</b> | <b>0.0147</b> | <b>0.0000</b> | <b>85.3431</b> | <b>85.3431</b> | <b>5.2800e-003</b> | <b>0.0000</b> | <b>85.4749</b> |

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**3.16 Bridge Construction A - 2023**

**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     | 0.0704        | 0.6277        | 0.5894        | 1.8300e-003        |               | 0.0250        | 0.0250        |                | 0.0230        | 0.0230        | 0.0000        | 160.4419        | 160.4419        | 0.0519        | 0.0000        | 161.7391        |
| <b>Total</b> | <b>0.0704</b> | <b>0.6277</b> | <b>0.5894</b> | <b>1.8300e-003</b> |               | <b>0.0250</b> | <b>0.0250</b> |                | <b>0.0230</b> | <b>0.0230</b> | <b>0.0000</b> | <b>160.4419</b> | <b>160.4419</b> | <b>0.0519</b> | <b>0.0000</b> | <b>161.7391</b> |

**Mitigated Construction Off-Site**

|              | ROG           | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5      | PM2.5 Total   | Bio- CO2      | NBio- CO2      | Total CO2      | CH4                | N2O           | CO2e           |
|--------------|---------------|---------------|---------------|--------------------|---------------|--------------------|---------------|----------------|--------------------|---------------|---------------|----------------|----------------|--------------------|---------------|----------------|
| Category     | tons/yr       |               |               |                    |               |                    |               |                |                    |               | MT/yr         |                |                |                    |               |                |
| Hauling      | 2.6600e-003   | 0.0865        | 0.0316        | 3.8000e-004        | 9.0300e-003   | 1.6000e-004        | 9.1900e-003   | 2.4800e-003    | 1.5000e-004        | 2.6300e-003   | 0.0000        | 38.3041        | 38.3041        | 3.4300e-003        | 0.0000        | 38.3897        |
| Vendor       | 1.3500e-003   | 0.0474        | 0.0145        | 1.5000e-004        | 3.8500e-003   | 5.0000e-005        | 3.9100e-003   | 1.1100e-003    | 5.0000e-005        | 1.1600e-003   | 0.0000        | 14.9603        | 14.9603        | 1.0400e-003        | 0.0000        | 14.9863        |
| Worker       | 0.0142        | 9.8700e-003   | 0.1004        | 3.5000e-004        | 0.0400        | 2.6000e-004        | 0.0403        | 0.0106         | 2.4000e-004        | 0.0109        | 0.0000        | 32.0787        | 32.0787        | 8.1000e-004        | 0.0000        | 32.0989        |
| <b>Total</b> | <b>0.0182</b> | <b>0.1438</b> | <b>0.1464</b> | <b>8.8000e-004</b> | <b>0.0529</b> | <b>4.7000e-004</b> | <b>0.0534</b> | <b>0.0142</b>  | <b>4.4000e-004</b> | <b>0.0147</b> | <b>0.0000</b> | <b>85.3431</b> | <b>85.3431</b> | <b>5.2800e-003</b> | <b>0.0000</b> | <b>85.4749</b> |

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**3.17 Bridge Construction B - 2023**

**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     | 0.0441        | 0.3931        | 0.3690        | 1.1400e-003        |               | 0.0157        | 0.0157        |                | 0.0144        | 0.0144        | 0.0000        | 100.4637        | 100.4637        | 0.0325        | 0.0000        | 101.2760        |
| <b>Total</b> | <b>0.0441</b> | <b>0.3931</b> | <b>0.3690</b> | <b>1.1400e-003</b> |               | <b>0.0157</b> | <b>0.0157</b> |                | <b>0.0144</b> | <b>0.0144</b> | <b>0.0000</b> | <b>100.4637</b> | <b>100.4637</b> | <b>0.0325</b> | <b>0.0000</b> | <b>101.2760</b> |

**Unmitigated Construction Off-Site**

|              | ROG                | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5     | Exhaust PM2.5      | PM2.5 Total        | Bio- CO2      | NBio- CO2      | Total CO2      | CH4                | N2O           | CO2e           |
|--------------|--------------------|---------------|---------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|----------------|----------------|--------------------|---------------|----------------|
| Category     | tons/yr            |               |               |                    |               |                    |               |                    |                    |                    | MT/yr         |                |                |                    |               |                |
| Hauling      | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Vendor       | 8.5000e-004        | 0.0297        | 9.0500e-003   | 1.0000e-004        | 2.4100e-003   | 3.0000e-005        | 2.4500e-003   | 7.0000e-004        | 3.0000e-005        | 7.3000e-004        | 0.0000        | 9.3676         | 9.3676         | 6.5000e-004        | 0.0000        | 9.3840         |
| Worker       | 8.8600e-003        | 6.1800e-003   | 0.0629        | 2.2000e-004        | 0.0251        | 1.6000e-004        | 0.0252        | 6.6600e-003        | 1.5000e-004        | 6.8100e-003        | 0.0000        | 20.0867        | 20.0867        | 5.0000e-004        | 0.0000        | 20.0993        |
| <b>Total</b> | <b>9.7100e-003</b> | <b>0.0359</b> | <b>0.0719</b> | <b>3.2000e-004</b> | <b>0.0275</b> | <b>1.9000e-004</b> | <b>0.0277</b> | <b>7.3600e-003</b> | <b>1.8000e-004</b> | <b>7.5400e-003</b> | <b>0.0000</b> | <b>29.4543</b> | <b>29.4543</b> | <b>1.1500e-003</b> | <b>0.0000</b> | <b>29.4833</b> |



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**3.17 Bridge Construction B - 2023**

**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     | 0.0441        | 0.3931        | 0.3690        | 1.1400e-003        |               | 0.0157        | 0.0157        |                | 0.0144        | 0.0144        | 0.0000        | 100.4636        | 100.4636        | 0.0325        | 0.0000        | 101.2759        |
| <b>Total</b> | <b>0.0441</b> | <b>0.3931</b> | <b>0.3690</b> | <b>1.1400e-003</b> |               | <b>0.0157</b> | <b>0.0157</b> |                | <b>0.0144</b> | <b>0.0144</b> | <b>0.0000</b> | <b>100.4636</b> | <b>100.4636</b> | <b>0.0325</b> | <b>0.0000</b> | <b>101.2759</b> |

**Mitigated Construction Off-Site**

|              | ROG                | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5     | Exhaust PM2.5      | PM2.5 Total        | Bio- CO2      | NBio- CO2      | Total CO2      | CH4                | N2O           | CO2e           |
|--------------|--------------------|---------------|---------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|----------------|----------------|--------------------|---------------|----------------|
| Category     | tons/yr            |               |               |                    |               |                    |               |                    |                    |                    | MT/yr         |                |                |                    |               |                |
| Hauling      | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Vendor       | 8.5000e-004        | 0.0297        | 9.0500e-003   | 1.0000e-004        | 2.4100e-003   | 3.0000e-005        | 2.4500e-003   | 7.0000e-004        | 3.0000e-005        | 7.3000e-004        | 0.0000        | 9.3676         | 9.3676         | 6.5000e-004        | 0.0000        | 9.3840         |
| Worker       | 8.8600e-003        | 6.1800e-003   | 0.0629        | 2.2000e-004        | 0.0251        | 1.6000e-004        | 0.0252        | 6.6600e-003        | 1.5000e-004        | 6.8100e-003        | 0.0000        | 20.0867        | 20.0867        | 5.0000e-004        | 0.0000        | 20.0993        |
| <b>Total</b> | <b>9.7100e-003</b> | <b>0.0359</b> | <b>0.0719</b> | <b>3.2000e-004</b> | <b>0.0275</b> | <b>1.9000e-004</b> | <b>0.0277</b> | <b>7.3600e-003</b> | <b>1.8000e-004</b> | <b>7.5400e-003</b> | <b>0.0000</b> | <b>29.4543</b> | <b>29.4543</b> | <b>1.1500e-003</b> | <b>0.0000</b> | <b>29.4833</b> |









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**3.20 Bridge Interior/Exterior Sidewalk - 2023**

**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     | 3.7400e-003        | 0.0339        | 0.0604        | 9.0000e-005        |               | 1.6700e-003        | 1.6700e-003        |                | 1.5300e-003        | 1.5300e-003        | 0.0000        | 8.0000        | 8.0000        | 2.5900e-003        | 0.0000        | 8.0647        |
| Paving       | 1.9400e-003        |               |               |                    |               | 0.0000             | 0.0000             |                | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| <b>Total</b> | <b>5.6800e-003</b> | <b>0.0339</b> | <b>0.0604</b> | <b>9.0000e-005</b> |               | <b>1.6700e-003</b> | <b>1.6700e-003</b> |                | <b>1.5300e-003</b> | <b>1.5300e-003</b> | <b>0.0000</b> | <b>8.0000</b> | <b>8.0000</b> | <b>2.5900e-003</b> | <b>0.0000</b> | <b>8.0647</b> |

**Unmitigated Construction Off-Site**

|              | ROG                | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5     | Exhaust PM2.5      | PM2.5 Total        | Bio- CO2      | NBio- CO2      | Total CO2      | CH4                | N2O           | CO2e           |
|--------------|--------------------|---------------|---------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|----------------|----------------|--------------------|---------------|----------------|
| Category     | tons/yr            |               |               |                    |               |                    |               |                    |                    |                    | MT/yr         |                |                |                    |               |                |
| Hauling      | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Vendor       | 3.7000e-004        | 0.0130        | 3.9600e-003   | 4.0000e-005        | 1.0600e-003   | 1.0000e-005        | 1.0700e-003   | 3.1000e-004        | 1.0000e-005        | 3.2000e-004        | 0.0000        | 4.1013         | 4.1013         | 2.9000e-004        | 0.0000        | 4.1084         |
| Worker       | 5.8200e-003        | 4.0600e-003   | 0.0413        | 1.5000e-004        | 0.0165        | 1.1000e-004        | 0.0166        | 4.3700e-003        | 1.0000e-004        | 4.4700e-003        | 0.0000        | 13.1913        | 13.1913        | 3.3000e-004        | 0.0000        | 13.1995        |
| <b>Total</b> | <b>6.1900e-003</b> | <b>0.0171</b> | <b>0.0452</b> | <b>1.9000e-004</b> | <b>0.0175</b> | <b>1.2000e-004</b> | <b>0.0176</b> | <b>4.6800e-003</b> | <b>1.1000e-004</b> | <b>4.7900e-003</b> | <b>0.0000</b> | <b>17.2925</b> | <b>17.2925</b> | <b>6.2000e-004</b> | <b>0.0000</b> | <b>17.3079</b> |

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**3.20 Bridge Interior/Exterior Sidewalk - 2023**

**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     | 3.7400e-003        | 0.0339        | 0.0604        | 9.0000e-005        |               | 1.6700e-003        | 1.6700e-003        |                | 1.5300e-003        | 1.5300e-003        | 0.0000        | 8.0000        | 8.0000        | 2.5900e-003        | 0.0000        | 8.0647        |
| Paving       | 1.9400e-003        |               |               |                    |               | 0.0000             | 0.0000             |                | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000        |
| <b>Total</b> | <b>5.6800e-003</b> | <b>0.0339</b> | <b>0.0604</b> | <b>9.0000e-005</b> |               | <b>1.6700e-003</b> | <b>1.6700e-003</b> |                | <b>1.5300e-003</b> | <b>1.5300e-003</b> | <b>0.0000</b> | <b>8.0000</b> | <b>8.0000</b> | <b>2.5900e-003</b> | <b>0.0000</b> | <b>8.0647</b> |

**Mitigated Construction Off-Site**

|              | ROG                | NOx           | CO            | SO2                | Fugitive PM10 | Exhaust PM10       | PM10 Total    | Fugitive PM2.5     | Exhaust PM2.5      | PM2.5 Total        | Bio- CO2      | NBio- CO2      | Total CO2      | CH4                | N2O           | CO2e           |
|--------------|--------------------|---------------|---------------|--------------------|---------------|--------------------|---------------|--------------------|--------------------|--------------------|---------------|----------------|----------------|--------------------|---------------|----------------|
| Category     | tons/yr            |               |               |                    |               |                    |               |                    |                    |                    | MT/yr         |                |                |                    |               |                |
| Hauling      | 0.0000             | 0.0000        | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000        | 0.0000             | 0.0000             | 0.0000             | 0.0000        | 0.0000         | 0.0000         | 0.0000             | 0.0000        | 0.0000         |
| Vendor       | 3.7000e-004        | 0.0130        | 3.9600e-003   | 4.0000e-005        | 1.0600e-003   | 1.0000e-005        | 1.0700e-003   | 3.1000e-004        | 1.0000e-005        | 3.2000e-004        | 0.0000        | 4.1013         | 4.1013         | 2.9000e-004        | 0.0000        | 4.1084         |
| Worker       | 5.8200e-003        | 4.0600e-003   | 0.0413        | 1.5000e-004        | 0.0165        | 1.1000e-004        | 0.0166        | 4.3700e-003        | 1.0000e-004        | 4.4700e-003        | 0.0000        | 13.1913        | 13.1913        | 3.3000e-004        | 0.0000        | 13.1995        |
| <b>Total</b> | <b>6.1900e-003</b> | <b>0.0171</b> | <b>0.0452</b> | <b>1.9000e-004</b> | <b>0.0175</b> | <b>1.2000e-004</b> | <b>0.0176</b> | <b>4.6800e-003</b> | <b>1.1000e-004</b> | <b>4.7900e-003</b> | <b>0.0000</b> | <b>17.2925</b> | <b>17.2925</b> | <b>6.2000e-004</b> | <b>0.0000</b> | <b>17.3079</b> |

**4.0 Operational Detail - Mobile**

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**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   | 0.0000  | 0.0000 | 0.0000 | 0.0000 | 0.0000        | 0.0000       | 0.0000     | 0.0000         | 0.0000        | 0.0000      | 0.0000   | 0.0000    | 0.0000    | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000  | 0.0000 | 0.0000 | 0.0000 | 0.0000        | 0.0000       | 0.0000     | 0.0000         | 0.0000        | 0.0000      | 0.0000   | 0.0000    | 0.0000    | 0.0000 | 0.0000 | 0.0000 |

**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   |             |            |
| Total                  | 0.00                    | 0.00     | 0.00   |             |            |

**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 | 14.70      | 6.60       | 6.60        | 0.00       | 0.00       | 0.00        | 0              | 0        | 0       |

**4.4 Fleet Mix**

| Land Use               | LDA      | LDT1     | LDT2     | MDV      | LHD1     | LHD2     | MHD      | HHD      | OBUS     | UBUS     | MCY      | SBUS     | MH       |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Other Asphalt Surfaces | 0.593936 | 0.041843 | 0.182569 | 0.108325 | 0.016436 | 0.005513 | 0.015940 | 0.023523 | 0.001912 | 0.001972 | 0.006090 | 0.000748 | 0.001193 |



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**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

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



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**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               | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b>           |                 | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Mitigated**

|                        | Electricity Use | Total CO2     | CH4           | N2O           | CO2e          |
|------------------------|-----------------|---------------|---------------|---------------|---------------|
| Land Use               | kWh/yr          | MT/yr         |               |               |               |
| Other Asphalt Surfaces | 0               | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b>           |                 | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

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|             | 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   | 6.4200e-003 | 0.0000 | 1.0000e-005 | 0.0000 |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 0.0000   | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |
| Unmitigated | 6.4200e-003 | 0.0000 | 1.0000e-005 | 0.0000 |               | 0.0000       | 0.0000     |                | 0.0000        | 0.0000      | 0.0000   | 3.0000e-005 | 3.0000e-005 | 0.0000 | 0.0000 | 3.0000e-005 |

6.2 Area by SubCategory

Unmitigated

|                       | ROG                | NOx           | CO                 | SO2           | Fugitive PM10 | Exhaust PM10  | PM10 Total    | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total   | Bio- CO2      | NBio- CO2          | Total CO2          | CH4           | N2O           | CO2e               |
|-----------------------|--------------------|---------------|--------------------|---------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|--------------------|--------------------|---------------|---------------|--------------------|
| SubCategory           | tons/yr            |               |                    |               |               |               |               |                |               |               | MT/yr         |                    |                    |               |               |                    |
| Architectural Coating | 2.2400e-003        |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Consumer Products     | 4.1700e-003        |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Landscaping           | 0.0000             | 0.0000        | 1.0000e-005        | 0.0000        |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 3.0000e-005        | 3.0000e-005        | 0.0000        | 0.0000        | 3.0000e-005        |
| <b>Total</b>          | <b>6.4100e-003</b> | <b>0.0000</b> | <b>1.0000e-005</b> | <b>0.0000</b> |               | <b>0.0000</b> | <b>0.0000</b> |                | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</b> | <b>3.0000e-005</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</b> |

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**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           | tons/yr            |               |                    |               |               |               |               |                |               |               | MT/yr         |                    |                    |               |               |                    |
| Architectural Coating | 2.2400e-003        |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Consumer Products     | 4.1700e-003        |               |                    |               |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 0.0000             | 0.0000             | 0.0000        | 0.0000        | 0.0000             |
| Landscaping           | 0.0000             | 0.0000        | 1.0000e-005        | 0.0000        |               | 0.0000        | 0.0000        |                | 0.0000        | 0.0000        | 0.0000        | 3.0000e-005        | 3.0000e-005        | 0.0000        | 0.0000        | 3.0000e-005        |
| <b>Total</b>          | <b>6.4100e-003</b> | <b>0.0000</b> | <b>1.0000e-005</b> | <b>0.0000</b> |               | <b>0.0000</b> | <b>0.0000</b> |                | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</b> | <b>3.0000e-005</b> | <b>0.0000</b> | <b>0.0000</b> | <b>3.0000e-005</b> |

**7.0 Water Detail**

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**7.1 Mitigation Measures Water**

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|             | Total CO2 | CH4    | N2O    | CO2e   |
|-------------|-----------|--------|--------|--------|
| Category    | MT/yr     |        |        |        |
| Mitigated   | 0.0000    | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000    | 0.0000 | 0.0000 | 0.0000 |

**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              | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b>           |                    | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

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**7.2 Water by Land Use**

**Mitigated**

|                        | Indoor/Outdoor Use | Total CO2     | CH4           | N2O           | CO2e          |
|------------------------|--------------------|---------------|---------------|---------------|---------------|
| Land Use               | Mgal               | MT/yr         |               |               |               |
| Other Asphalt Surfaces | 0 / 0              | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b>           |                    | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

**Category/Year**

|             | Total CO2 | CH4    | N2O    | CO2e   |
|-------------|-----------|--------|--------|--------|
|             | MT/yr     |        |        |        |
| Mitigated   | 0.0000    | 0.0000 | 0.0000 | 0.0000 |
| Unmitigated | 0.0000    | 0.0000 | 0.0000 | 0.0000 |

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**8.2 Waste by Land Use**

**Unmitigated**

|                        | Waste Disposed | Total CO2     | CH4           | N2O           | CO2e          |
|------------------------|----------------|---------------|---------------|---------------|---------------|
| Land Use               | tons           | MT/yr         |               |               |               |
| Other Asphalt Surfaces | 0              | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b>           |                | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**Mitigated**

|                        | Waste Disposed | Total CO2     | CH4           | N2O           | CO2e          |
|------------------------|----------------|---------------|---------------|---------------|---------------|
| Land Use               | tons           | MT/yr         |               |               |               |
| Other Asphalt Surfaces | 0              | 0.0000        | 0.0000        | 0.0000        | 0.0000        |
| <b>Total</b>           |                | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> | <b>0.0000</b> |

**9.0 Operational Offroad**

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



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**10.0 Stationary Equipment**

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**Fire Pumps and Emergency Generators**

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

**Boilers**

| Equipment Type | Number | Heat Input/Day | Heat Input/Year | Boiler Rating | Fuel Type |
|----------------|--------|----------------|-----------------|---------------|-----------|
|----------------|--------|----------------|-----------------|---------------|-----------|

**User Defined Equipment**

| Equipment Type | Number |
|----------------|--------|
|----------------|--------|

**11.0 Vegetation**

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