Global Climate Change Evaluation

for the

San Marcos Highlands Project

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List of Acronyms

APCD	Air Pollution Control District
AB	Assembly Bill
AB 32	Assembly Bill 32, Global Warming Solutions Act of 2006
ARB	Air Resources Board
ASTM	American Society of Testing and Materials
CAPCOA	California Air Pollution Control Officers Association
CAT	Climate Action Team
CCAP	Center for Clean Air Policy
CCAR	California Climate Action Registry
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DWR	Department of Water Resources
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
EV	Electric Vehicles
GCC	Global Climate Change
GHG	Greenhouse Gas
GGEP	Greenhouse Gas Emissions Policy
GGRP	Greenhouse Gas Reduction Plan
GP	General Plan
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LEED	Leadership in Energy and Environmental Design
MMT	Million Metric Tons
MW	Megawatts
N_2O	Nitrous Oxide
NOx	Oxides of Nitrogen
OPR	State Office of Planning and Research
PDFs	Project Design Features
PFCs	Perfluorocarbons
PM	Particulate Matter
ROG	Reactive Organic Gas
RPS	Renewable Portfolio Standards
S-3-05	Executive Order S-3-05
SB	Senate Bill
SDCGHGI	San Diego County Greenhouse Gas Inventory
SRI	Solar Reflective Index
THC	Total Hydrocarbon

UNFCCC	United Nations Framework Convention on Climate Change
URBEMIS	Urban Emissions Model
USBGC	U.S. Green Building Council
VMT	Vehicle Miles Traveled

1.0 INTRODUCTION

This report presents an assessment of potential greenhouse gas (GHG) impacts associated with the San Marcos Highlands Project in the City of San Marcos. The project is located in North San Diego County, partly within the City of San Marcos and partly within the County of San Diego. The site is located at the northern terminus of Las Posas Road, immediately north of the Santa Fe Hills residential community. North of the site are single-family rural residential homes in the County of San Diego. West of site are single-family low-density residential homes in the County of San Diego. South of the site is the Santa Fe Hills community with single-family residences. East of the site is undeveloped land in the City of San Marcos. The applicant proposes a Specific Plan Amendment and Tentative Subdivision Map for 189 clustered single-family lots and open space on 262-acres located at the northern end of Las Posas Road within the San Marcos Highlands Specific Plan Area (SPA), and an additional 26 acres of open space on an adjacent property to the northwest. Project components include the following:

Residential **-** The Specific Plan Amendment (SPA) proposes 189 residential units (109 units west of Las Posas Road and 80 units east of Las Posas Road) within two residential classification types. The average lot size on the west side of Las Posas Road will be 5,732 s.f. and the average lot size east of Las Posas Road will be 8,127 s.f. Proposed architectural styles will be a mix of Spanish, Italianate, and Craftsman styles. The Specific Plan identifies design guidelines related to roof treatments, color, wall surfaces, garages, and architectural detailing.

Open Space **-** Total open space within the project area covers 243.24 acres. Open space areas within the Specific Plan area are divided into five categories: conserved open space that will be subject to a biological conservation easement, primary and secondary ridgelines as established by the Ridgeline Overlay Zone, fuel modification areas, manufactured exterior slopes, water quality lots, and parks.

Roadway Improvements **-** The project proposes the extension of Las Posas Road approximately 3,000 feet from its current terminus north of Via Artista to serve the project. The extension of Las Posas Road to Buena Creek Road is not proposed as part of the project. The Las Posas Road

extension will have an 84-foot right-of-way (ROW). The project will construct a network of internal minor streets, including Streets A, B and C west of Las Posas Road and street A, E and F east of Las Posas Road. The internal minor streets will have a 60-foot right of way. Proposed roadways include a sidewalk. Portions of Las Posas Road and Street A will also have a trail component which is part of the larger trail network within the community. Primary emergency ingress/egress to the project site is via Las Posas Road. Secondary emergency ingress/egress will be via Ardilla Way in the south and Robinhood Road to the north.

Utility Improvements **-** The project includes water, sewer and storm drain improvements to serve the project. The project will connect with existing infrastructure in Las Posas Road and Ardilla Way for water and sewer. Water service for the project would be split between Vallecitos Water District (VWD) and the Vista Irrigation District (VID). The project will require annexation and boundary adjustments for the portion that will be served by VWD. The project proposes to annex into VWD for sewer service (all 106.93 acres).

Grading and Rock Crushing **-** The project will be graded in two phases. Phase 1 is the rough grading of the Las Posas Road extension and the subdivision lots and roads west of Los Posas Road. Phase 2 is the rough grading of the subdivision lots and roads east of Las Posas Road. Grading for the project includes 543,680 cubic yards (cy) of cut and 654,360 cy of fill. Since there is a bulking factor to the cut material and recommendations from the soils engineer will be implemented, there will actually be 659,725 cy of material available on the site. The project will require 661,275 cy of material. This leaves a balance of 1,550 cy that would come from onsite utility trenching. Thus the project will balance on site. No import or export of earthwork will be required. Due to bedrock condition on the project site, rock crushing will be required during project construction.

The project proposes an annexation for part of the project site into the City as well as adjustment to water, sewer, fire protection, and school district boundaries. The Specific Plan area contains 262.14 acres. A portion of the project site (121 acres) lies within the County of San Diego; therefore, annexation of the 121 acres or a portion thereof into the City will require approval by

the Local Agency Formation Commission (LAFCO). Annexations will also be required for water and sewer services and will require LAFCO approval.

1.1 General Principles and Existing Conditions

Global climate change (GCC) refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns, precipitation and storms. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), which are known as greenhouse gases (GHGs). These gases allow solar radiation (sunlight) into the Earth's atmosphere, but prevent radiative heat from escaping, thus warming the Earth's atmosphere. Gases that trap heat in the atmosphere are often called greenhouse gases, analogous to a greenhouse. The accumulation of GHGs in the atmosphere regulates the Earth's temperature. Without these natural GHGs, the Earth's temperature would be about 61º Fahrenheit cooler (California Environmental Protection Agency 2006). Emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere.

GCC may result from natural factors, natural processes, and/or human activities that change the composition of the atmosphere and alter the surface and features of land. Although the conceptual existence of GCC is generally accepted, the extent to which global climate change attributable to anthropogenic (human) emissions of GHGs (mainly CO_2, CH_4 and N_2O) is currently one of the most important and widely debated scientific, economic and political issues in the United States. Historical records indicate that global climate changes have occurred in the past due to natural phenomena (such as during previous ice ages). Some data indicate that the current global conditions differ from past climate changes in rate and magnitude. The State of California has been at the forefront of developing solutions to address potential anthropogenic impacts to GCC.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. The IPCC concluded that a stabilization of GHGs at 400 to 450 ppm CO_2 equivalent concentration is required to keep global mean warming below 3.6º Fahrenheit (2º Celsius), which is assumed to

be necessary to avoid dangerous climate change (Association of Environmental Professionals 2007).

State law defines greenhouse gases as any of the following compounds: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) (California Health and Safety Code Section 38505(g).) CO_2, followed by CH_4 and N_2O, are the most common GHGs that result from human activity.

1.2 Sources and Global Warming Potentials of GHG

As discussed further below, the sources of GHG emissions, GWP, and atmospheric lifetime of GHGs are all important variables to be considered in the process of calculating CO_2e for discretionary land use projects that require a climate change analysis.

The State of California GHG Inventory performed by the California Air Resources Board (ARB), compiled statewide anthropogenic GHG emissions and sinks. It includes estimates for CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs. The current inventory covers the years 1990 to 2012, and is summarized in Table 1. Data sources used to calculate this GHG inventory include state and federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with guidance from the IPCC. The 1990 emissions level is the sum total of sources and sinks from all sectors and categories in the inventory. The inventory is divided into seven broad sectors and categories in the inventory. These sectors include: Agriculture; Commercial; Electricity Generation; Forestry; Industrial; Residential; and Transportation.

Table 1 State of California GHG Emissions by Sector				
Sector	**Total 1990 Emissions ($MMTCO_2e$)**	**Percent of Total 1990 Emissions**	**Total 2012 Emissions ($MMTCO_2e$)**	**Percent of Total 2012 Emissions**
Agriculture	23.4	5%	37.86	8%
Commercial	14.4	3%	14.20	3%
Electricity Generation	110.6	26%	95.09	21%
Forestry (excluding sinks)	0.2	<1%		
Industrial	103.0	24%	89.16	19%
Residential	29.7	7%	28.09	6%
Transportation	150.7	35%	167.38	36%
Recycling and Waste			8.49	2%
High GWP Gases			18.41	4%
Forestry Sinks	(6.7)			

When accounting for GHGs, all types of GHG emissions are expressed in terms of CO_2 equivalents (CO_2e) and are typically quantified in metric tons (MT) or millions of metric tons (MMT).

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2006). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH_4, which has a GWP of 28, and N_2O, which has a GWP of 265. Table 2 presents the GWP and atmospheric lifetimes of common GHGs.

Table 2 Global Warming Potentials and Atmospheric Lifetimes of GHGs			
GHG	**Formula**	**100-Year Global Warming Potential**	**Atmospheric Lifetime (Years)**
Carbon Dioxide	CO_2	1	Variable
Methane	CH_4	28	12
Nitrous Oxide	N_2O	265	121
Sulfur Hexafluoride	SF_6	23,500	3,200
Hydrofluorocarbons	HFCs	100 to 12,000	1 to 100
Perfluorocarbons	PFCs	7,000 to 11,000	3.000 to 50,000
Nitrogen Trifluoride	NF_3	16,100	500
Source:First Update to the Climate Change Scoping Plan, ARB 2014			

Human-caused sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the industrial revolution.

CH_4 is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure and cattle farming. Human-caused sources of N_2O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid.

Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses.

In addition to the State of California GHG Inventory, a more specific regional GHG inventory was prepared by the University of San Diego School of Law Energy Policy Initiative Center, a non-regulatory, academic and research center (University of San Diego 2008). This San Diego County Greenhouse Gas Inventory (SDCGHGI) is a detailed inventory that takes into account the unique characteristics of the region in calculating emissions. The SDCGHGI calculated GHG emissions for 1990, 2006, and projected 2020 emissions.

Areas where feasible reductions can occur and the strategies for achieving those reductions are outlined in the SDCGHGI. A summary of the various sectors that contribute GHG emissions in San Diego County for the year 2006 is provided in Table 3. Total GHGs in San Diego County are estimated at 34 $MMTCO_2e$.

Table 3
San Diego County 2006 GHG Emissions by Category

Sector	Total Emissions ($MMTCO_2e$)	Percent of Total Emissions
On-Road Transportation	16	46%
Electricity	9	25%
Natural Gas Consumption	3	9%
Civil Aviation	1.7	5%
Industrial Processes & Products	1.6	5%
Other Fuels/Other	1.1	4%
Off-Road Equipment & Vehicles	1.3	4%
Waste	0.7	2%
Agriculture/Forestry/Land Use	0.7	2%
Rail	0.3	1%
Water-Born Navigation	0.13	0.4%

According to the SDCGHGI, a majority of the region's emissions are attributable to on-road transportation, with the next largest source of GHG emissions attributable to electricity generation. Similarly, a majority of the emissions resulting from land development projects will be attributable to on-road transportation emissions. According to the SDCGHGI study, the emission reductions for on-road transportation will be achieved in a variety of ways, including through regulations aimed at increasing fuel efficiency standards and decreasing vehicle emissions. These regulations are outside the control of project applicants.

Similar to on-road emissions, the SDCGHGI indicated that the necessary emission reductions for electricity generation will be achieved in a variety of ways, including through implementation of the renewable portfolio standard (RPS), cleaner electricity purchases by San Diego Gas & Electric, replacement of the Boardman Contract (which allows the purchase of electricity from coal-fired power plants), and implementation of 400 MW of photovoltaics. These measures are also outside

the control of project applicants. The SDCGHGI indicates that reduction in electricity consumption of 10 percent would contribute to the required reduction in GHG emissions required to reduce emissions to 1990 levels by 2020.

1.3 Regulatory Framework

All levels of government have some responsibility for the protection of air quality, and each level (Federal, State, and regional/local) has specific responsibilities relating to air quality regulation. GHG emissions and the regulation of GHGs is a relatively new component of this air quality regulatory framework.

1.3.1 National and International Efforts

In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis for human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

On March 21, 1994, the United States joined a number of countries around the world in signing the United Nations Framework Convention on Climate Change. Under the Convention, governments agreed to gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of global climate change. The U.S. Supreme Court rules in *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (2007), that USEPA has the ability to regulate GHG emissions. In addition to the national and international efforts described above, many local jurisdictions have adopted climate change policies and programs.

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

> **Endangerment Finding:** USEPA found that the current and projected concentrations of the six key well-mixed GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations.
>
> **Cause or Contribute Finding:** USEPA found 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.

The endangerment findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing USEPA's proposed GHG emission standards for light-duty vehicles, which were jointly proposed by USEPA and the U.S. Department of Transportation (DOT)'s National Highway Safety Administration on September 15, 2009.

These findings do not themselves impose any requirements on industry or other entities. However, this action was a prerequisite to finalizing the EPA's proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009 and adopted on April 1, 2010. As finalized in April 2010, the emissions standards rule for vehicles will improve average fuel economy standards to 35.5 miles per gallon by 2016. In addition, the rule will require model year 2016 vehicles to meet an estimated combined average emission level of 250 grams of carbon dioxide per mile.

Mandatory GHG Reporting Rule. On March 10, 2009, in response to the FY2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110–161), the EPA proposed a rule that requires mandatory reporting of greenhouse gas (GHG) emissions from large sources in the United States. On September 22, 2009, the Final Mandatory Reporting of Greenhouse Gases Rule was signed, and was published in the Federal Register on October 30, 2009. The rule became effective on

December 29, 2009. The rule will collect accurate and comprehensive emissions data to inform future policy decisions.

The EPA is requiring suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual reports to EPA. The gases covered by the proposed rule are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF_6), and other fluorinated gases, including nitrogen trifluoride (NF_3) and hydrofluorinated ethers (HFE).

1.3.2 State Regulations and Standards

Legislation and Standards

Assembly Bill 32, the California Global Warming Solutions Act of 2006. In September 2006, Governor Schwarzenegger signed AB 32 into law. AB 32 directed the ARB to do the following:

- Make publicly available a list of discrete early action GHG emission reduction measures that can be implemented prior to the adoption of the statewide GHG limit and the measures required to achieve compliance with the statewide limit.
- Make publicly available a GHG inventory for the year 1990 and determine target levels for 2020.
- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures.
- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020, to become operative on January 1, 2012, at the latest. The emission reduction measures may include direct emission reduction measures, alternative compliance mechanisms, and potential monetary and non-monetary incentives that reduce GHG emissions from any sources or categories of sources that ARB finds necessary to achieve the statewide GHG emissions limit.

- Monitor compliance with and enforce any emission reduction measure adopted pursuant to AB 32.

AB 32 required that, by January 1, 2008, the ARB determine what the statewide GHG emissions level was in 1990, and approve a statewide GHG emissions limit that is equivalent to that level, to be achieved by 2020. The ARB adopted its Scoping Plan in December 2008 (ARB 2008a), which provided estimates of the 1990 GHG emissions level and identified sectors for the reduction of GHG emissions. The ARB estimated that the 1990 GHG emissions level was 427 MMT net CO_2e (ARB 2007). The ARB estimates that a reduction of 173 MMT net CO_2e emissions below business-as-usual would be required by 2020 to meet the 1990 levels. This amounts to roughly a 28.35 percent reduction from projected business-as-usual levels in 2020. In 2011, the ARB developed a supplement to the AB 32 Scoping Plan (ARB 2011). The Supplement updated the emissions inventory based on current projections for "business as usual" emissions to 506.8 metric tons of CO_2e. The updated projection included adopted measures (Pavley 1 fuel efficiency standards, 20% Renewable Portfolio Standard requirement), and estimated that an additional 16 percent reduction below the estimated "business as usual" levels would be necessary to return to 1990 levels by 2020.

In 2014, the ARB published its First Update to the Climate Change Scoping Plan (ARB 2014). The Update indicates that the State is on target to meet the goal of reducing GHG emissions to 1990 level by 2020. The First Update tracks progress in achieving the goals of AB 32, and lays out a new set of actions that will move the State further along the path to achieving the 2050 goal of reducing emissions to 80% below 1990 levels. While the Update discusses setting a mid-term target, the plan does not yet set a quantifiable target toward meeting the 2050 goal.

Senate Bill 1078, Senate Bill 107, and Executive Order S-14-08. SB 1078, enacted in 2002, initially set a target of 20% of energy to be sold from renewable sources by the year 2017. The schedule for implementation of the RPS was accelerated in 2006 with the Governor's signing of SB 107 on September 26, 2006, which accelerated the 20% RPS goal from 2017 to 2010. On November 17, 2008, the Governor signed Executive Order S-14-08, which requires all retail sellers of electricity to serve 33 percent of their load with renewable energy by 2020. The Governor

signed Executive Order S-21-09 on September 15, 2009, which directed ARB to implement a regulation consistent with the 2020 33% renewable energy target by July 31, 2010. The 33% RPS was adopted in 2010.

Senate Bill 1. California's Million Solar Roofs plan is enhanced by PUC and CEC's adoption of the California Solar Initiative, SB1 enacted in 2006, to encourage the use of solar panels as an energy efficient measure. SB1 directs PUC and CEC to expand this program to more customers, and requiring the state's municipal utilities to create their own solar rebate programs. Beginning January 1, 2011, this bill requires a seller of new homes to offer the option of a solar energy system to all customers negotiating to purchase a new home constructed on land meeting certain criteria and to disclose certain information.

Senate Bill 97. Senate Bill (SB) 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. SB 97 directed the Governor's Office of Planning and Research (OPR) to develop draft CEQA guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009, and directed the California Natural Resources Agency (CNRA) to certify and adopt the CEQA guidelines by January 1, 2010.

OPR published a technical advisory on CEQA and climate change on June 19, 2008. The guidance did not include a suggested threshold, but stated that the OPR had asked the ARB to "recommend a method for setting thresholds which will encourage consistency and uniformity in the CEQA analysis of greenhouse gas emissions throughout the state." The OPR technical advisory does recommend that CEQA analyses include the following components:

- Identification of greenhouse gas emissions;
- Determination of significance; and
- Mitigation of impacts, as needed and as feasible.

On December 31, 2009, the CNRA adopted the proposed amendments to the State CEQA Guidelines. These amendments became effective on March 18, 2010.

Senate Bill 375. The Sustainable Communities & Climate Protection Act, SB 375, enacted on September 30, 2008, requires Air Resources Board to develop regional greenhouse gas emission reduction targets for passenger vehicles. SB 375 finds that GHG from autos and light trucks can be substantially reduced by new vehicle technology, but even so "it will be necessary to achieve significant additional greenhouse gas reductions from changed land use patterns and improved transportation. Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." Therefore, SB 375 requires that regions with metropolitan planning organizations adopt sustainable communities strategies, as part of their regional transportation plans, which are designed to achieve certain goals for the reduction of GHG emissions from mobile sources.

The San Diego Association of Governments adopted a Sustainable Communities Strategy (SCS) in its 2050 Regional Transportation Plan (SANDAG 2011). The Regional Transportation Plan and its SCS were the subject of a lawsuit in 2012 that overturned the SCS. Subsequent to that lawsuit, SANDAG adopted the San Diego Forward Regional Plan (SANDAG 2015). The SCS addresses how development patterns and transportation network, policies, and programs can work together to achieve greenhouse gas reduction targets set by the California Air Resources Board from cars and light trucks. The SCS includes a land use component that accommodates the Regional Housing Needs Assessment. The project will meet housing needs in the San Marcos community.

SB 375 also includes CEQA streamlining provisions for "transit priority projects" that are consistent with an adopted sustainable communities strategy. As defined in SB 375, a "transit priority project" shall: (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a maximum net density of at least 20 dwelling units per acre; and (3) be within 0.5 mile of a major transit stop or high quality transit corridor.

The San Marcos Highlands Project is not a transit priority project because it is not within 0.5 miles of a major transit stop or high quality transit corridor.

Senate Bill X1-2. Governor Edmund G. Brown, Jr. signed Senate Bill X1-2 into law on April 12, 2011 to codify the ambitious goal of providing 33% of the state's electricity from renewable resources by 2020. SBX1-2 directs California Public Utilities Commission's Renewable Energy Resources Program to increase the amount of electricity generated from eligible renewable energy resources per year to an amount that equals at least 20% of the total electricity sold to retail customers in California per year by December 31, 2013, 25% by December 31, 2016 and 33% by December 31, 2020. The RPS goals apply to all electricity retailers in the state including publicly owned utilities (POUs), investor-owned utilities, electricity service providers, and community choice aggregators. This new RPS preempts the California Air Resources Boards' 33 percent Renewable Electricity Standard.

The San Marcos Highland project will include solar photovoltaic panels to generate 88% of the project's electrical needs, and thus contributes to the advancement of the goals of Senate Bill X1-2.

Assembly Bill 1092. AB 1092, enacted on September 28, 2013, addresses building standards for electric vehicle charging infrastructure. AB 1092 requires the Building Standards Commission to adopt mandatory building standards for the installation of future electric vehicle charging infrastructure for parking spaces in multifamily dwellings and nonresidential development.

Because the project is not a multifamily development, it is not required to provide EV charging stations under AB 1092.

Senate Bill 350. SB 350 is the Clean Energy and Pollution Reduction Act of 2015. Enacted on October 7, 2015, SB350 establishes targets to increase retail sales of renewable electricity to 50 percent by 2030 and double the energy efficiency savings in electricity and natural gas end uses by 2030. Because utilities will be required to provide 50% of their retail electricity from renewable sources, and because the residences will purchase electricity from San Diego Gas and Electric, purchased electricity for the project will be 50% renewable.

California Code of Regulations Title 24. Although not originally intended to reduce greenhouse gas emissions, Title 24 of the California Code of Regulations, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow for the consideration and possible incorporation of new energy efficiency technologies and methods. Energy efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for water heating) results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

State Standards Addressing Vehicular Emissions. California Assembly Bill 1493 (Pavley) enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce greenhouse gases emitted by passenger vehicles and light duty trucks. Regulations adopted by ARB would apply to 2009 and later model year vehicles. ARB estimated that the regulation would reduce climate change emissions from light duty passenger vehicle fleet by an estimated 18% in 2020 and by 27% in 2030 (AEP 2007). Once implemented, emissions from new light-duty vehicles are expected to be reduced in San Diego County by up to 21 percent by 2020[1].

The ARB has adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. The amendments, approved by the ARB Board on September 24, 2009, are part of California's commitment toward a nation-wide program to reduce new passenger vehicle GHGs from 2012 through 2016, and prepare California to harmonize its rules with the federal rules for passenger vehicles. Because the project generates passenger vehicle trips, the reductions that are attributable to the Pavley regulations have been included in the GHG emissions analysis for the project.

Executive Orders

[1] SDCGHGI, An Analysis of Regional Emissions and Strategies to Achieve AB 32 Targets, On-Road Transportation Report. Sean Tanaka, Tanaka Research and Consulting, September 2008, Page 7.

Executive Order S-3-05. Executive Order S-3-05, signed by Governor Schwarzenegger on June 1, 2005, calls for a reduction in GHG emissions to 1990 levels by 2020 and for an 80 percent reduction in GHG emissions below 1990 levels by 2050. Executive Order S-3-05 also calls for the California EPA (CalEPA) to prepare biennial science reports on the potential impact of continued GCC on certain sectors of the California economy. The first of these reports, "Our Changing Climate: Assessing Risks to California", and its supporting document "Scenarios of Climate Change in California: An Overview" were published by the California Climate Change Center in 2006.

Executive Order S-21-09. Executive Order S-21-09 was enacted by the Governor on September 15, 2009. Executive Order S-21-09 requires that the ARB, under its AB 32 authority, adopt a regulation by July 31, 2010 that sets a 33 percent renewable energy target. Under Executive Order S-21-09, the ARB will work with the Public Utilities Commission and California Energy Commission to encourage the creation and use of renewable energy sources, and will regulate all California utilities. The ARB will also consult with the Independent System Operator and other load balancing authorities on the impacts on reliability, renewable integration requirements, and interactions with wholesale power markets in carrying out the provisions of the Executive Order. The order requires the ARB to establish highest priority for those resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health. Because utilities will be required to provide 33% of their retail electricity from renewable sources by 2020, and because the residences will purchase electricity from San Diego Gas and Electric, purchased electricity for the project will be 33% renewable.

Executive Order B-16-12. Executive Order B-16-12, signed on March 23, 2012, orders State agencies to facilitate the rapid commercialization of zero-emission vehicles (ZEVs). The Executive Order sets a target for the number of 1.5 million ZEVs in California by 2025. Also the Executive Order sets as a target for 2050 a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels. It is anticipated that some of the vehicles used by residents at the project would be ZEVs. To account for the penetration of ZEVs and other Advanced Clean Cars into the fleet, a reduction of 3% (based on ARB documentation) was assumed for the project's vehicle emissions.

Executive Order B-30-15. Executive Order B-30-15 was enacted by the Governor on April 29, 2015. Executive Order B-30-15 establishes an interim GHG emission reduction goal for the state of California to reduce GHG emissions to 40 percent below 1990 levels by the year 2030. This Executive Order directs all state agencies with jurisdiction over GHG-emitting sources to implement measures designed to achieve the new interim 2030 goal, as well as the pre-existing, long-term 2050 goal identified in Executive Order S-3-05 to reduce GHG emissions to 80 percent below 1990 levels by the year 2050. The Executive Order directs ARB to update its Scoping Plan to address the 2030 goal. It is anticipated that ARB will develop statewide inventory projection data for 2030 and commence efforts to identify reduction strategies capable of securing emission reductions that allow for achievement of the new interim goal for 2030.

The project would continue to experience reductions in GHG emissions due to purchase of electricity from San Diego Gas and Electric, which will be required to provide 50% renewable electricity by 2030. The project would also continue to experience reductions in GHG emissions due to implementation of additional motor vehicle GHG reduction requirements and increasing market penetration of the Advanced Clean Cars program. However, to date, the ARB has not developed its updated strategy or inventory projection. This project is analyzed on the basis of the goal to meet 1990 levels by 2020 under AB 32.

1.3.3 Local Regulations and Standards

The City of San Marcos has adopted its General Plan Update. As part of the General Plan, the City has adopted a Conservation and Open Space Element, which includes a goal (Goal COS-4) to improve air quality and reduce GHG emissions within the City. As part of the Conservation and Open Space Element, the City has adopted the following General Plan Policies designed to achieve the goal of reducing GHG emissions:

Policy COS-4.3: Participate in regional efforts to reduce greenhouse gas emissions.

Policy COS-4.4: Quantify community-wide and municipal greenhouse gas (GHG) emissions, set a reduction goal, identify and implement measures to reduce greenhouse gas emissions as required by governing legislation.

Policy COS-4.5: Encourage energy conservation and the use of alternative energy sources within the community.

Policy COS-4.6: Promote efficient use of energy and conservation of available resources in the design, construction, maintenance and operation of public and private facilities, infrastructure and equipment.

Policy COS-4.7: As City facilities and services are constructed or upgraded, incorporate energy and resource conservation standards and practices by:

- Taking a leadership role in implementing programs for energy and water conservation, waste reduction, recycling and reuse and increased reliance on renewable energy.
- Upgrading City buildings and infrastructure facilities to comply with State of California green building standards.
- Implementing landscaping that reduces demands on potable water; this may include the use of drought tolerant landscaping and/or use of well water for irrigation, favoring recycling and energy-efficient products and practices when issuing City purchase agreements.

Policy COS-4.8: Encourage and support the generation, transmission and use of renewable energy.

Policy COS-4.9: Encourage use and retrofitting of existing buildings under Title 24 of the California Building Energy Code.

The City of San Marcos has adopted a Climate Action Plan (CAP) (City of San Marcos 2013) that presents the City's plan for reducing emissions as required under Executive Order S-3-05, i.e., a reduction in GHG emissions to 1990 levels by 2020 and an 80% reduction in GHG emissions below 1990 levels by 2050. The Plan presents the City's 2005 baseline emissions, and adopts Climate Action Measures designed to reduce GHG emissions. These measures would reduce GHG emissions by 15 percent below 2005 levels by 2020, and 28 percent below 2005 levels by 2030. It should be noted that this value was established prior to the passage of Executive Order S-3-05.. The GHG reduction measures in the CAP are organized into the following focus areas, or categories: Local Government Operations, Energy, Transportation and Land Use, Off-Road Equipment, Water and Wastewater, Solid Waste, Urban Greening, Community Education and Outreach, and Adaptation.

2.0 POTENTIAL CLIMATE CHANGE IMPACTS TO PROJECT SITE

2.1 Existing Conditions

The site is currently undeveloped and includes disturbed areas and native vegetation, consisting mainly of coastal sage scrub and grassland. Natural vegetation and soils temporarily store carbon as part of the terrestrial carbon cycle. Carbon is assimilated into plants and animals as they grow and then dispersed back into the environment when they die. There are two existing sources of carbon storage at the Project site: natural vegetation and soils. It is difficult to assess net changes in carbon storage associated with the San Marcos Highlands Project, but carbon sequestration rates for native vegetation in the southern California region are relatively low in comparison to heavily vegetated areas such as forests. For example, according to the U.S. EPA (http://www.epa.gov/sequestration/rates.html), riparian areas are estimated to sequester from 0.1 to 0.3 metric tons of CO_2e per acre per year in comparison to forests, which are estimated to sequester 0.6 to 2.6 metric tons of CO_2e per acre per year. Native vegetation in the Otay Ranch region, which consists mainly of scrub, would be expected to provide a low level of carbon sequestration. The key issue is the balance between the loss of natural vegetation and future carbon storage associated with landscaping. The situation is further complicated by changes in fire regime. Carbon in natural vegetation is likely to be released into the atmosphere through wildfire every 20 to 150 years. Carbon in landscaped areas will be protected from wildfire. The balance between these factors will influence the long-term carbon budget on the site.

The majority of carbon within the site is stored in the soil. Soil carbon accumulates from inputs of plant and animal matter, roots, and other living components of the soil ecosystem (e.g., bacteria, worms, etc.). Soil carbon is lost through biological respiration, erosion, and other forms of disturbance. Overall, soil carbon moves more slowly through the carbon cycle, and it offers greater potential for long-term carbon storage. Field observations suggest that urban soils can sequester relatively large amounts of carbon. Observations from across the United States suggest that warmer and drier climates (such as southern California) may have slightly higher soil organic matter levels when compared to equivalent areas before development.

2.2 Typical Adverse Effects

The Climate Scenarios Report (CCCC 2006), uses a range of emissions scenarios developed by the IPCC to project a series of potential warming ranges (i.e., temperature increases) that may occur in California during the 21st century. Three warming ranges were identified: Lower warming range (3.0 to 5.5 degrees Fahrenheit (ºF)); medium warming range (5.5 to 8.0 ºF); and higher warming range (8.0 to 10.5 ºF). The Climate Scenarios Report then presents an analysis of the future projected climate changes in California under each warming range scenario.

According to the report, substantial temperature increases would result in a variety of impacts to the people, economy, and environment of California. These impacts would result from a projected increase in extreme conditions, with the severity of the impacts depending upon actual future emissions of GHGs and associated warming. These impacts are described below.

Public Health. Higher temperatures are expected to increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to O_3 formation are projected to increase by 25 to 35 percent under the lower warming range and 75 to 85 percent under the medium warming range. In addition, if global background O_3 levels increase as is predicted in some scenarios, it may become impossible to meet local air quality standards. An increase in wildfires could also occur, and the corresponding increase in the release of pollutants including $PM_{2.5}$ could further compromise air quality. The Climate Scenarios Report indicates that large wildfires could become up to 55 percent more frequent if GHG emissions are not significantly reduced.

Potential health effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems (e.g., heat rash and heat stroke). In addition, climate sensitive diseases (such as malaria, dengue fever, yellow fever, and encephalitis) may increase, such as those spread by mosquitoes and other disease-carrying insects.

Residents and occupants of the project site would have the potential for increased exposure to public health impacts due to global climate change, as would all residents of San Diego County.

Water Resources. A vast network of reservoirs and aqueducts capture and transport water throughout the State from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada mountain snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages. In addition, if temperatures continue to rise, more precipitation would fall as rain instead of snow, further reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. The State's water resources are also at risk from rising sea levels. An influx of seawater would degrade California's estuaries, wetlands, and groundwater aquifers. Impacts to water resources within the State could have the potential to affect the project through limitation of water available at the site.

Agriculture. Increased GHG and associated increases in temperature are expected to cause widespread changes to the agricultural industry, reducing the quantity and quality of agricultural products statewide. Significant reductions in available water supply to support agriculture would also impact production. Crop growth and development will change as will the intensity and frequency of pests and diseases. The project is not an agricultural development, although impacts on agriculture could affect residents in the region in the future.

Ecosystems/Habitats. Continued global warming will likely shift the ranges of existing invasive plants and weeds, thus alternating competition patterns with native plants. Range expansion is expected in many species while range contractions are less likely in rapidly evolving species with significant populations already established. Continued global warming is also likely to increase the populations of and types of pests. Continued global warming would also affect natural ecosystems and biological habitats throughout the State. The Richmar Specific Plan includes park and green areas that could potentially be affected by changes in ecosystems and habitats at the site.

Wildland Fires. Global warming is expected to increase the risk of wildfire and alter the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55 percent, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the State. Increased risk of wildfire will have the potential to affect all development within the State.

Rising Sea Levels. Rising sea levels, more intense coastal storms, and warmer water temperatures will increasing threaten the State's coastal regions. Under the high warming scenario, sea level is anticipated to rise 22 to 35 inches by 2100. A sea level risk of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten levees and inland water systems, and disrupt wetlands and natural habitats. While the project site itself would not be directly affected by rising sea levels, rising levels would affect San Diego County, potentially forcing increased development inland.

2.3 California Climate Adaptation Strategy

As part of its climate change planning process, the California Natural Resources Agency prepared its California Climate Adaptation Strategy (CNRA 2009) to summarize the best known science on climate change impacts in California, with the goal of assessing vulnerability to climate change impacts. The Climate Adaptation Strategy also outlines possible solutions that can be implemented within and across state agencies to promote resiliency.

The California Climate Adaptation Strategy takes into account the long-term, complex, and uncertain nature of climate change and establishes a proactive foundation for an ongoing adaptation process. The strategy made preliminary recommendations as a first step in addressing responses to impacts of global climate change within the state. Key recommendations include:

1. A Climate Adaptation Advisory Panel (CAAP) will be appointed to assess the greatest risks to California from climate change and recommend strategies to reduce those risks building on California's Climate Adaptation Strategy.
2. Identify necessary changes to California's water management and uses.
3. Consider project alternatives that avoid significant new development in areas that cannot be adequately protected (planning, permitting, development, and building) from flooding, wildfire and erosion due to climate change.
4. All state agencies responsible for the management and regulation of public health, infrastructure or habitat subject to significant climate change should prepare as appropriate agency-specific adaptation plans, guidance, or criteria by September 2010.
5. To the extent required by CEQA Guidelines Section 15126.2, all significant state projects, including infrastructure projects, must consider the potential impacts of locating such projects in areas susceptible to hazards resulting from climate change.
6. The California Emergency Management Agency (Cal EMA) will collaborate with the California Natural Resources Agency, the Climate Action Team, the Energy Commission, and the CAAP to assess California's vulnerability to climate change, identify impacts to state assets, and promote climate adaptation/mitigation awareness through the Hazard Mitigation Web Portal and My Hazards Website as well as other appropriate sites.
7. Using existing research the state should identify key California land and aquatic habitats that could change significantly during this century due to climate change. Based on this identification, the state should develop a plan for expanding existing protected areas or altering land and water management practices to minimize adverse effects from climate change induced phenomena.
8. The best long-term strategy to avoid increased health impacts associated with climate change is to ensure communities are healthy to build resilience to increased spread of disease and temperature increases.
9. Communities with General Plans and Local Coastal Plans should begin, when possible, to amend their plans to assess climate change impacts, identify areas most vulnerable to these impacts, and develop reasonable and rational risk reduction strategies using the CAS as guidance.

10. State fire fighting agencies should begin immediately to include climate change impact information into fire program planning to inform future planning efforts.
11. State agencies should meet projected population growth and increased energy demand with greater energy conservation and an increased use of renewable energy.
12. Existing and planned climate change research can and should be used for state planning and public outreach purposes; new climate change impact research should be broadened and funded.

Climate adaptation plans are not developed on a project-specific basis. Rather, they are adopted by the state of California to address climate change impacts.

3.0 CLIMATE CHANGE SIGNIFICANCE CRITERIA

The requirements of AB 32 to address GCC under CEQA address the potential cumulative impacts that a project's GHG emissions could have on GCC. Since GCC is a global phenomenon, no direct impact would be identified for an individual land development project. According to Appendix G of the CEQA Guidelines, the following criteria are considered to establish a significance threshold for GCC impacts:

Would the project:

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

As discussed in Section 15064.4 of the CEQA Regulations, the determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether
to:

(1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model or methodology it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; and/or

(2) Rely on a qualitative analysis or performance based standards.

The City has adopted GHG significance thresholds under CEQA (Appendix E of the CAP). These thresholds represent new development's share of the established CAP targets on a per service population (resident and/or employee) basis.

According to the CAP, the applicant must demonstrate to the City's satisfaction how the project will achieve consistency with a project-level GHG efficiency threshold of 2.76 MT CO2e per service population for projects built by 2020 in order to find that the project's GHG impacts are less than significant. This threshold was used to evaluate the significance of GHG impacts for the San Marcos Highlands Project.

As stated in Appendix E a project can demonstrate that it is consistent with the CAP and therefore has no significant impacts; however, "Generally, only projects that are consistent with the General Plan land use designations and population and employment projections, upon which the GHG emissions modeling and CAP is based, can apply for a determination of consistency with the CAP." Because the San Marcos Highlands Project is requesting a Specific Plan Amendment, it cannot demonstrate consistency with the General Plan. If it is determined that the proposed project is not consistent with the CAP, further CEQA analysis would be required.

If it is determined that the proposed project is not consistent with the CAP, further analysis would be required to determine whether its GHG emissions would exceed the project-level GHG emissions thresholds set forth in this section. The applicant would also be required to demonstrate that the project would not substantially interfere with implementation of the CAP measures and actions. Specifically, the applicant must demonstrate how the project will achieve its share of the established CAP targets by demonstrating that the project's emissions would be equal to or less than the GHG emissions thresholds identified in the following section.

4.0 GREENHOUSE GAS INVENTORY

The San Marcos Highlands Project proposes to construct 189 residences along with 26 acres of open space as a passive park. The project also includes a total of 243.24 acres of open space. GHG emissions associated with the San Marcos Highlands Project were estimated separately for six categories of emissions: (1) construction; (2) area sources, including landscaping; (3) energy use, including electricity and natural gas usage; (4) water consumption; (5) solid waste handling; and (6) transportation. Emissions from the project construction and operation were calculated using the CalEEMod Model (ENVIRON 2013).

4.1 Existing Conditions

As discussed in Section 2.0, the project site is currently undeveloped and is not a source of GHG emissions.

4.2 Construction Emissions

Construction GHG emissions include emissions from heavy construction equipment, truck traffic, and worker trips. Emissions were calculated using the CalEEMod Model, which is the approved land use emissions model developed by ENVIRON and the SCAQMD (ENVIRON 2013), for completed and proposed construction. CalEEMod contains emission factors from the OFFROAD model for heavy construction equipment, and from the EMFAC2011 model for on-road vehicles. Table 4 presents the construction-related emissions associated with construction of the project.

Lead agencies, including the City of San Marcos, the SCAQMD, and the City of San Diego recommends that construction emissions be amortized over a 30-year period to account for the contribution of construction emissions over the lifetime of the project. These emissions are added to operational emissions to account for the contribution of construction to GHG emissions for the lifetime of the project.

Table 4 Construction GHG Emissions Metric tons/year		
Scenario	**CO_2e Emissions, metric tons**	**Amortized CO_2e Emissions, metric tons/year**
Construction Emissions	1,547	52

4.3 Operational Greenhouse Gas Emissions

GHG emissions for the project were estimated for five categories of emissions for operations: (1) area sources; (2) energy use, including electricity and natural gas usage; (3) water consumption; (4) solid waste management, and (5) transportation. GHG emissions were calculated with the CalEEMod Model, accounting for the following GHG federal, state, and local regulations:

- The 33% Renewable Portfolio Standard would be achieved within the City of San Marcos, resulting in a reduction in GHG emissions of 27% from the default values within the CalEEMod Model based on the SDCGHGI, which indicates that SDG&E was already achieving a 6% renewable goal (University of San Diego 2008).
- Residences would meet the energy efficiency requirements of Title 24 as of 2016. Title 24 as of 2013 results in a 36.4% decrease in electricity use over Title 24 as of 2008, and a 6.5% decrease in natural gas use over Title 24 as of 2008 (CEC 2013). Title 24 as of 2016 is estimated to reduce energy use from residential uses by 25%. The decreases in energy use were accounted for in the model.
- Vehicles would meet the Pavley I, Low Carbon Fuel Standard, and Advanced Clean Cars standards. The default emission factors within the CalEEMod model were adjusted by 3% downward to account for the Advanced Clean Cars program (ARB 2011).
- The project would include low-flow plumbing fixtures, including hybrid waterless urinals, low-flow toilets, low-flow sinks, and low-flow showers in accordance with the requirements of Title 24.
- The project would meet the AB 341 goal of 75% solid waste diversion through recycling and waste reduction programs.

Based on the traffic impact analysis (RBF Consulting 2014), the project will generate 10 trips per dwelling unit for the residential portion of the project, and 5 trips per acre for the park use. The estimated ADT, under business as usual conditions is therefore 1,998. It was assumed that the average trip length would be 5.8 miles, based on the SANDAG average trip length (SANDAG 2012). Emission factors from the EMFAC2011 model were used with the San Joaquin Valley Air Pollution Control District's vehicle mix[2] for residential developments. Because the City of San Marcos does not have a specific vehicle mix for residential developments, this vehicle mix was considered the best representation of the vehicle mix that would travel to the residential development. Residential developments do not generate substantial heavy-duty truck trips, and the default vehicle mix within the EMFAC2011 model represents both light- and heavy-duty vehicles traveling throughout the County. The vehicle mix does include some trips for medium- and heavy-duty trucks that would service the project for deliveries and other purposes.

The results of the inventory for operational emissions, assuming implementation of federal, state, and local regulations to reduce GHG emissions, are presented in Table 5. These include GHG emissions associated with buildings (natural gas, purchased electricity), water consumption (energy embodied in potable water), solid waste management (including transport and landfill gas generation), and vehicles.

[2] SJVAPCD. 2009. Accepted URBEMIS Default Values.

Table 5 SUMMARY OF ESTIMATED OPERATIONAL GREENHOUSE GAS EMISSIONS ASSUMING TITLE 24 AS OF 2016 PROPOSED PROJECT				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Operational Emissions				
Area Sources	57	0.0033	0.0010	57
Electricity Use	301	0.0120	0.0029	302
Natural Gas Use	213	0.0041	0.0039	214
Water Use	53	0.3230	0.0080	64
Solid Waste Management	11	0.6652	0.0000	30
Vehicle Emissions	1,162	0.0550	0.0000	1,164
Amortized Construction Emissions	52	0.0000	0.0000	52
Total	**1,849**	**1.0626**	**0.0158**	**1,883**
Global Warming Potential Factor	**1**	**28**	**265**	
CO_2 Equivalent Emissions	1,849	30	4	1,883
TOTAL CO_2 Equivalent Emissions	**1,883**			
Service Population (3.10 residents per unit)	**586**			
Metric CO_2e tons per service population	**3.21**			

As shown in Table 5, the net emissions associated with the San Marcos Highlands Project result in 3.21 metric tons of CO2e per service population. Because the estimated CO2e emissions associated with the proposed project would be above the City of San Marcos' threshold, the project must implement mitigation measures to reduce GHG emissions.

Accordingly, the project will include solar photovoltaic panels that will replace 88% of the electricity requirements with solar power. This measure will reduce the GHG emissions associated with electricity use by 88%. Table 6 presents the mitigated GHG emissions.

Table 6 SUMMARY OF ESTIMATED OPERATIONAL GREENHOUSE GAS EMISSIONS WITH SOLAR PANELS PROPOSED PROJECT				
Emission Source	**Annual Emissions (Metric tons/year)**			
	CO_2	**CH_4**	**N_2O**	**CO_2e**
Operational Emissions				
Area Sources	57	0.0033	0.0010	57
Electricity Use	36	0.0014	0.0003	36
Natural Gas Use	213	0.0041	0.0039	214
Water Use	53	0.3230	0.0080	64
Solid Waste Management	11	0.6652	0.0000	30
Vehicle Emissions	1,162	0.0550	0.0000	1,164
Amortized Construction Emissions	52	0.0000	0.0000	52
Total	**1,584**	**1.0520**	**0.0132**	**1,617**
Global Warming Potential Factor	**1**	**28**	**265**	
CO_2 Equivalent Emissions	1,584	29	3	1,617
TOTAL CO_2 Equivalent Emissions	**1,617**			
Service Population (3.10 residents per unit)	**586**			
Metric CO_2e tons per service population	**2.76**			

With inclusion of the solar panels, the project will meet the City of San Marcos' significance threshold of 2.76 metric tons of CO2e per service population. The project would therefore be consistent with the CAP and the policies therein to reduce GHG emissions and meet the City's goals under AB 32. The San Marcos Highlands Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Impacts will therefore be less than significant.

5.0 CONCLUSIONS

Emissions of GHGs would result in a net increase in emissions from construction and operations from the project. Emissions were calculated using the CalEEMod Model. Based on the analysis, the emissions attributable to the project meet the City of San Marcos' significance threshold of 2.76 metric tons of CO2e per service population, with implementation of the mitigation measures. The project is therefore consistent with the City's Climate Action Plan. The project would therefore not:

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

The San Marcos Highlands Project will be consistent with the goals of AB 32, and would not result in a significant global climate change impact.

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Appendix A

Greenhouse Gas Emission Calculations

San Marcos Highlands Construction

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	26.00	Acre	26.00	1,132,560.00	0
Single Family Housing	189.00	Dwelling Unit	61.36	340,200.00	541

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2017
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Trips and VMT - Based on reasonable assumptions regarding worker trips and vendor trips

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	1698840	0
tblAreaCoating	Area_Residential_Exterior	229635	0
tblAreaCoating	Area_Residential_Interior	688905	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExterior	250	0
tblAreaMitigation	UseLowVOCPaintNonresidentialInterior	250	0
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	250	0
tblConstructionPhase	NumDays	110.00	261.00

tblConstructionPhase	NumDays	1,550.00	522.00
tblConstructionPhase	NumDays	155.00	239.00
tblConstructionPhase	NumDays	110.00	261.00
tblConstructionPhase	NumDays	60.00	21.00
tblConstructionPhase	PhaseEndDate	9/29/2017	9/30/2017
tblConstructionPhase	PhaseEndDate	12/30/2020	12/31/2018
tblConstructionPhase	PhaseEndDate	12/29/2017	12/31/2017
tblConstructionPhase	PhaseStartDate	1/1/2020	1/1/2018
tblGrading	AcresOfGrading	597.50	100.00
tblGrading	AcresOfGrading	10.50	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblTripsAndVMT	VendorTripNumber	206.00	2.00
tblTripsAndVMT	WorkerTripNumber	13.00	10.00
tblTripsAndVMT	WorkerTripNumber	23.00	18.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	544.00	26.00
tblTripsAndVMT	WorkerTripNumber	23.00	15.00
tblTripsAndVMT	WorkerTripNumber	109.00	4.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1842	2.0271	1.3647	1.7200e-003	0.3367	0.1004	0.4371	0.1605	0.0930	0.2535	0.0000	159.9043	159.9043	0.0449	0.0000	160.8467
2017	0.5914	6.4136	4.4026	6.4200e-003	0.1623	0.3227	0.4850	0.0603	0.2993	0.3596	0.0000	587.3056	587.3056	0.1641	0.0000	590.7513
2018	0.4618	4.0357	3.5421	5.7600e-003	0.0446	0.2411	0.2857	0.0119	0.2261	0.2380	0.0000	496.1649	496.1649	0.1188	0.0000	498.6600
2019	18.7252	2.2499	2.1007	3.5100e-003	0.0331	0.1384	0.1715	8.8300e-003	0.1321	0.1409	0.0000	295.8508	295.8508	0.0549	0.0000	297.0035
Total	**19.9626**	**14.7263**	**11.4101**	**0.0174**	**0.5767**	**0.8026**	**1.3793**	**0.2415**	**0.7505**	**0.9921**	**0.0000**	**1,539.2256**	**1,539.2256**	**0.3827**	**0.0000**	**1,547.2615**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1842	2.0271	1.3647	1.7200e-003	0.1338	0.1004	0.2342	0.0633	0.0930	0.1563	0.0000	159.9041	159.9041	0.0449	0.0000	160.8465
2017	0.5914	6.4136	4.4026	6.4200e-003	0.0751	0.3227	0.3978	0.0266	0.2993	0.3259	0.0000	587.3049	587.3049	0.1641	0.0000	590.7506
2018	0.4618	4.0357	3.5421	5.7600e-003	0.0446	0.2411	0.2857	0.0119	0.2261	0.2380	0.0000	496.1644	496.1644	0.1188	0.0000	498.6594
2019	18.7252	2.2499	2.1007	3.5100e-003	0.0331	0.1384	0.1715	8.8300e-003	0.1321	0.1409	0.0000	295.8505	295.8505	0.0549	0.0000	297.0032
Total	**19.9626**	**14.7263**	**11.4101**	**0.0174**	**0.2865**	**0.8026**	**1.0891**	**0.1106**	**0.7505**	**0.8612**	**0.0000**	**1,539.2238**	**1,539.2238**	**0.3827**	**0.0000**	**1,547.2598**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	50.32	0.00	21.04	54.20	0.00	13.20	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2016	10/31/2016	5	21	
2	Grading	Grading	11/1/2016	9/30/2017	5	239	
3	Utilities	Trenching	10/1/2017	12/31/2017	5	65	
4	Building Construction	Building Construction	1/1/2018	12/31/2019	5	522	
5	Paving	Paving	1/1/2018	12/31/2018	5	261	
6	Architectural Coating	Architectural Coating	1/1/2019	12/31/2019	5	261	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 100

Acres of Paving: 0

Residential Indoor: 688,905; Residential Outdoor: 229,635; Non-Residential Indoor: 1,698,840; Non-Residential Outdoor: 566,280

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73

Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Utilities	Excavators	1	8.00	162	0.38
Utilities	Rollers	1	8.00	80	0.38
Utilities	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Utilities	Trenchers	1	8.00	80	0.50
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	5	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Utilities	4	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	26.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	9	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1897	0.0000	0.1897	0.1043	0.0000	0.1043	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0533	0.5801	0.4074	3.8000e-004		0.0291	0.0291		0.0268	0.0268	0.0000	35.6573	35.6573	0.0108	0.0000	35.8832
Total	**0.0533**	**0.5801**	**0.4074**	**3.8000e-004**	**0.1897**	**0.0291**	**0.2188**	**0.1043**	**0.0268**	**0.1310**	**0.0000**	**35.6573**	**35.6573**	**0.0108**	**0.0000**	**35.8832**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	4.8000e-004	4.5300e-003	1.0000e-005	8.4000e-004	1.0000e-005	8.5000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7847	0.7847	4.0000e-005	0.0000	0.7856
Total	**3.6000e-004**	**4.8000e-004**	**4.5300e-003**	**1.0000e-005**	**8.4000e-004**	**1.0000e-005**	**8.5000e-004**	**2.2000e-004**	**1.0000e-005**	**2.3000e-004**	**0.0000**	**0.7847**	**0.7847**	**4.0000e-005**	**0.0000**	**0.7856**

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					0.0740	0.0000	0.0740	0.0407	0.0000	0.0407	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0533	0.5801	0.4074	3.8000e-004		0.0291	0.0291		0.0268	0.0268	0.0000	35.6573	35.6573	0.0108	0.0000	35.8832
Total	**0.0533**	**0.5801**	**0.4074**	**3.8000e-004**	**0.0740**	**0.0291**	**0.1031**	**0.0407**	**0.0268**	**0.0674**	**0.0000**	**35.6573**	**35.6573**	**0.0108**	**0.0000**	**35.8832**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6000e-004	4.8000e-004	4.5300e-003	1.0000e-005	8.4000e-004	1.0000e-005	8.5000e-004	2.2000e-004	1.0000e-005	2.3000e-004	0.0000	0.7847	0.7847	4.0000e-005	0.0000	0.7856
Total	**3.6000e-004**	**4.8000e-004**	**4.5300e-003**	**1.0000e-005**	**8.4000e-004**	**1.0000e-005**	**8.5000e-004**	**2.2000e-004**	**1.0000e-005**	**2.3000e-004**	**0.0000**	**0.7847**	**0.7847**	**4.0000e-005**	**0.0000**	**0.7856**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.1430	0.0000	0.1430	0.0552	0.0000	0.0552	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1292	1.4448	0.9357	1.2900e-003		0.0713	0.0713		0.0662	0.0662	0.0000	120.5029	120.5029	0.0339	0.0000	121.2153
Total	**0.1292**	**1.4448**	**0.9357**	**1.2900e-003**	**0.1430**	**0.0713**	**0.2143**	**0.0552**	**0.0662**	**0.1214**	**0.0000**	**120.5029**	**120.5029**	**0.0339**	**0.0000**	**121.2153**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3600e-003	1.7900e-003	0.0171	4.0000e-005	3.1800e-003	2.0000e-005	3.2000e-003	8.4000e-004	2.0000e-005	8.7000e-004	0.0000	2.9594	2.9594	1.6000e-004	0.0000	2.9626
Total	**1.3600e-003**	**1.7900e-003**	**0.0171**	**4.0000e-005**	**3.1800e-003**	**2.0000e-005**	**3.2000e-003**	**8.4000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.9594**	**2.9594**	**1.6000e-004**	**0.0000**	**2.9626**

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					0.0558	0.0000	0.0558	0.0215	0.0000	0.0215	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1292	1.4448	0.9357	1.2900e-003		0.0713	0.0713		0.0662	0.0662	0.0000	120.5028	120.5028	0.0339	0.0000	121.2152

Total	**0.1292**	**1.4448**	**0.9357**	**1.2900e-003**	**0.0558**	**0.0713**	**0.1271**	**0.0215**	**0.0662**	**0.0877**	**0.0000**	**120.5028**	**120.5028**	**0.0339**	**0.0000**	**121.2152**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3600e-003	1.7900e-003	0.0171	4.0000e-005	3.1800e-003	2.0000e-005	3.2000e-003	8.4000e-004	2.0000e-005	8.7000e-004	0.0000	2.9594	2.9594	1.6000e-004	0.0000	2.9626
Total	**1.3600e-003**	**1.7900e-003**	**0.0171**	**4.0000e-005**	**3.1800e-003**	**2.0000e-005**	**3.2000e-003**	**8.4000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.9594**	**2.9594**	**1.6000e-004**	**0.0000**	**2.9626**

3.3 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1430	0.0000	0.1430	0.0552	0.0000	0.0552	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5343	5.9268	3.9643	5.7200e-003		0.2899	0.2899		0.2691	0.2691	0.0000	526.3375	526.3375	0.1498	0.0000	529.4837
Total	**0.5343**	**5.9268**	**3.9643**	**5.7200e-003**	**0.1430**	**0.2899**	**0.4329**	**0.0552**	**0.2691**	**0.3243**	**0.0000**	**526.3375**	**526.3375**	**0.1498**	**0.0000**	**529.4837**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4500e-003	7.2300e-003	0.0683	1.7000e-004	0.0141	1.0000e-004	0.0142	3.7400e-003	1.0000e-004	3.8400e-003	0.0000	12.6086	12.6086	6.4000e-004	0.0000	12.6220
Total	**5.4500e-003**	**7.2300e-003**	**0.0683**	**1.7000e-004**	**0.0141**	**1.0000e-004**	**0.0142**	**3.7400e-003**	**1.0000e-004**	**3.8400e-003**	**0.0000**	**12.6086**	**12.6086**	**6.4000e-004**	**0.0000**	**12.6220**

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					0.0558	0.0000	0.0558	0.0215	0.0000	0.0215	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5343	5.9268	3.9643	5.7200e-003		0.2899	0.2899		0.2691	0.2691	0.0000	526.3368	526.3368	0.1498	0.0000	529.4830
Total	**0.5343**	**5.9268**	**3.9643**	**5.7200e-003**	**0.0558**	**0.2899**	**0.3456**	**0.0215**	**0.2691**	**0.2906**	**0.0000**	**526.3368**	**526.3368**	**0.1498**	**0.0000**	**529.4830**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4500e-003	7.2300e-003	0.0683	1.7000e-004	0.0141	1.0000e-004	0.0142	3.7400e-003	1.0000e-004	3.8400e-003	0.0000	12.6086	12.6086	6.4000e-004	0.0000	12.6220
Total	**5.4500e-003**	**7.2300e-003**	**0.0683**	**1.7000e-004**	**0.0141**	**1.0000e-004**	**0.0142**	**3.7400e-003**	**1.0000e-004**	**3.8400e-003**	**0.0000**	**12.6086**	**12.6086**	**6.4000e-004**	**0.0000**	**12.6220**

3.4 Utilities - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0496	0.4769	0.3447	4.7000e-004		0.0327	0.0327		0.0301	0.0301	0.0000	43.6897	43.6897	0.0134	0.0000	43.9708
Total	**0.0496**	**0.4769**	**0.3447**	**4.7000e-004**		**0.0327**	**0.0327**		**0.0301**	**0.0301**	**0.0000**	**43.6897**	**43.6897**	**0.0134**	**0.0000**	**43.9708**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0200e-003	2.6800e-003	0.0253	6.0000e-005	5.2100e-003	4.0000e-005	5.2500e-003	1.3900e-003	4.0000e-005	1.4200e-003	0.0000	4.6698	4.6698	2.4000e-004	0.0000	4.6748
Total	**2.0200e-003**	**2.6800e-003**	**0.0253**	**6.0000e-005**	**5.2100e-003**	**4.0000e-005**	**5.2500e-003**	**1.3900e-003**	**4.0000e-005**	**1.4200e-003**	**0.0000**	**4.6698**	**4.6698**	**2.4000e-004**	**0.0000**	**4.6748**

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	0.0496	0.4769	0.3447	4.7000e-004		0.0327	0.0327		0.0301	0.0301	0.0000	43.6896	43.6896	0.0134	0.0000	43.9708
Total	**0.0496**	**0.4769**	**0.3447**	**4.7000e-004**		**0.0327**	**0.0327**		**0.0301**	**0.0301**	**0.0000**	**43.6896**	**43.6896**	**0.0134**	**0.0000**	**43.9708**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0200e-003	2.6800e-003	0.0253	6.0000e-005	5.2100e-003	4.0000e-005	5.2500e-003	1.3900e-003	4.0000e-005	1.4200e-003	0.0000	4.6698	4.6698	2.4000e-004	0.0000	4.6748
Total	**2.0200e-003**	**2.6800e-003**	**0.0253**	**6.0000e-005**	**5.2100e-003**	**4.0000e-005**	**5.2500e-003**	**1.3900e-003**	**4.0000e-005**	**1.4200e-003**	**0.0000**	**4.6698**	**4.6698**	**2.4000e-004**	**0.0000**	**4.6748**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2644	2.1863	1.7396	2.6700e-003		0.1411	0.1411		0.1337	0.1337	0.0000	233.3137	233.3137	0.0521	0.0000	234.4069
Total	**0.2644**	**2.1863**	**1.7396**	**2.6700e-003**		**0.1411**	**0.1411**		**0.1337**	**0.1337**	**0.0000**	**233.3137**	**233.3137**	**0.0521**	**0.0000**	**234.4069**

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	2.5500e-003	0.0206	0.0323	6.0000e-005	1.7000e-003	3.0000e-004	2.0000e-003	4.9000e-004	2.8000e-004	7.6000e-004	0.0000	5.4407	5.4407	4.0000e-005	0.0000	5.4416
Worker	9.5800e-003	0.0128	0.1195	3.3000e-004	0.0272	2.0000e-004	0.0274	7.2300e-003	1.8000e-004	7.4100e-003	0.0000	23.4612	23.4612	1.1500e-003	0.0000	23.4854
Total	**0.0121**	**0.0333**	**0.1518**	**3.9000e-004**	**0.0289**	**5.0000e-004**	**0.0294**	**7.7200e-003**	**4.6000e-004**	**8.1700e-003**	**0.0000**	**28.9019**	**28.9019**	**1.1900e-003**	**0.0000**	**28.9270**

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	0.2644	2.1863	1.7396	2.6700e-003		0.1411	0.1411		0.1337	0.1337	0.0000	233.3134	233.3134	0.0521	0.0000	234.4066

Total	**0.2644**	**2.1863**	**1.7396**	**2.6700e-003**		**0.1411**	**0.1411**		**0.1337**	**0.1337**	**0.0000**	**233.3134**	**233.3134**	**0.0521**	**0.0000**	**234.4066**

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	2.5500e-003	0.0206	0.0323	6.0000e-005	1.7000e-003	3.0000e-004	2.0000e-003	4.9000e-004	2.8000e-004	7.6000e-004	0.0000	5.4407	5.4407	4.0000e-005	0.0000	5.4416
Worker	9.5800e-003	0.0128	0.1195	3.3000e-004	0.0272	2.0000e-004	0.0274	7.2300e-003	1.8000e-004	7.4100e-003	0.0000	23.4612	23.4612	1.1500e-003	0.0000	23.4854
Total	**0.0121**	**0.0333**	**0.1518**	**3.9000e-004**	**0.0289**	**5.0000e-004**	**0.0294**	**7.7200e-003**	**4.6000e-004**	**8.1700e-003**	**0.0000**	**28.9019**	**28.9019**	**1.1900e-003**	**0.0000**	**28.9270**

3.5 Building Construction - 2019

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	0.2325	1.9781	1.7028	2.6700e-003		0.1211	0.1211		0.1148	0.1148	0.0000	231.0926	231.0926	0.0508	0.0000	232.1591
Total	**0.2325**	**1.9781**	**1.7028**	**2.6700e-003**		**0.1211**	**0.1211**		**0.1148**	**0.1148**	**0.0000**	**231.0926**	**231.0926**	**0.0508**	**0.0000**	**232.1591**

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	2.3800e-003	0.0187	0.0308	6.0000e-005	1.7000e-003	2.8000e-004	1.9800e-003	4.9000e-004	2.6000e-004	7.4000e-004	0.0000	5.3470	5.3470	4.0000e-005	0.0000	5.3478
Worker	8.8900e-003	0.0118	0.1099	3.3000e-004	0.0272	2.0000e-004	0.0274	7.2300e-003	1.8000e-004	7.4100e-003	0.0000	22.6124	22.6124	1.0800e-003	0.0000	22.6352
Total	**0.0113**	**0.0305**	**0.1407**	**3.9000e-004**	**0.0289**	**4.8000e-004**	**0.0294**	**7.7200e-003**	**4.4000e-004**	**8.1500e-003**	**0.0000**	**27.9594**	**27.9594**	**1.1200e-003**	**0.0000**	**27.9830**

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	0.2325	1.9781	1.7028	2.6700e-003		0.1211	0.1211		0.1148	0.1148	0.0000	231.0923	231.0923	0.0508	0.0000	232.1588
Total	**0.2325**	**1.9781**	**1.7028**	**2.6700e-003**		**0.1211**	**0.1211**		**0.1148**	**0.1148**	**0.0000**	**231.0923**	**231.0923**	**0.0508**	**0.0000**	**232.1588**

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	2.3800e-003	0.0187	0.0308	6.0000e-005	1.7000e-003	2.8000e-004	1.9800e-003	4.9000e-004	2.6000e-004	7.4000e-004	0.0000	5.3470	5.3470	4.0000e-005	0.0000	5.3478
Worker	8.8900e-003	0.0118	0.1099	3.3000e-004	0.0272	2.0000e-004	0.0274	7.2300e-003	1.8000e-004	7.4100e-003	0.0000	22.6124	22.6124	1.0800e-003	0.0000	22.6352
Total	**0.0113**	**0.0305**	**0.1407**	**3.9000e-004**	**0.0289**	**4.8000e-004**	**0.0294**	**7.7200e-003**	**4.4000e-004**	**8.1500e-003**	**0.0000**	**27.9594**	**27.9594**	**1.1200e-003**	**0.0000**	**27.9830**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1798	1.8087	1.5818	2.5000e-003		0.0994	0.0994		0.0919	0.0919	0.0000	220.4141	220.4141	0.0649	0.0000	221.7769
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1798**	**1.8087**	**1.5818**	**2.5000e-003**		**0.0994**	**0.0994**		**0.0919**	**0.0919**	**0.0000**	**220.4141**	**220.4141**	**0.0649**	**0.0000**	**221.7769**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5300e-003	7.3500e-003	0.0689	1.9000e-004	0.0157	1.1000e-004	0.0158	4.1700e-003	1.1000e-004	4.2800e-003	0.0000	13.5353	13.5353	6.7000e-004	0.0000	13.5493
Total	**5.5300e-003**	**7.3500e-003**	**0.0689**	**1.9000e-004**	**0.0157**	**1.1000e-004**	**0.0158**	**4.1700e-003**	**1.1000e-004**	**4.2800e-003**	**0.0000**	**13.5353**	**13.5353**	**6.7000e-004**	**0.0000**	**13.5493**

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	0.1798	1.8087	1.5818	2.5000e-003		0.0994	0.0994		0.0919	0.0919	0.0000	220.4138	220.4138	0.0649	0.0000	221.7766
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1798**	**1.8087**	**1.5818**	**2.5000e-003**		**0.0994**	**0.0994**		**0.0919**	**0.0919**	**0.0000**	**220.4138**	**220.4138**	**0.0649**	**0.0000**	**221.7766**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5300e-003	7.3500e-003	0.0689	1.9000e-004	0.0157	1.1000e-004	0.0158	4.1700e-003	1.1000e-004	4.2800e-003	0.0000	13.5353	13.5353	6.7000e-004	0.0000	13.5493
Total	**5.5300e-003**	**7.3500e-003**	**0.0689**	**1.9000e-004**	**0.0157**	**1.1000e-004**	**0.0158**	**4.1700e-003**	**1.1000e-004**	**4.2800e-003**	**0.0000**	**13.5353**	**13.5353**	**6.7000e-004**	**0.0000**	**13.5493**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	18.4453					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0348	0.2395	0.2403	3.9000e-004		0.0168	0.0168		0.0168	0.0168	0.0000	33.3200	33.3200	2.8100e-003	0.0000	33.3791
Total	**18.4801**	**0.2395**	**0.2403**	**3.9000e-004**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**33.3200**	**33.3200**	**2.8100e-003**	**0.0000**	**33.3791**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3700e-003	1.8100e-003	0.0169	5.0000e-005	4.1900e-003	3.0000e-005	4.2200e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.4788	3.4788	1.7000e-004	0.0000	3.4823
Total	**1.3700e-003**	**1.8100e-003**	**0.0169**	**5.0000e-005**	**4.1900e-003**	**3.0000e-005**	**4.2200e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.4788**	**3.4788**	**1.7000e-004**	**0.0000**	**3.4823**

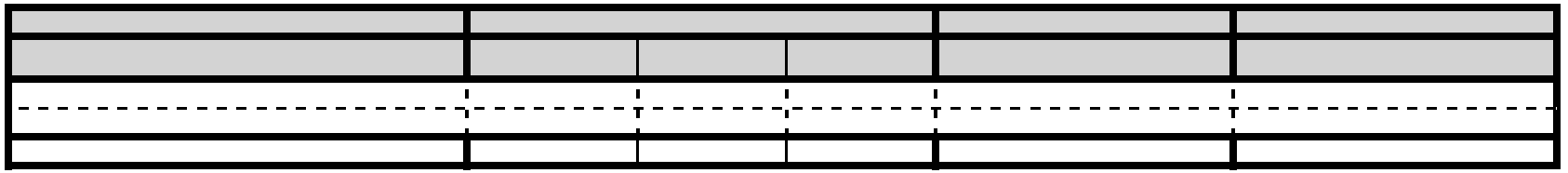
Mitigated Construction On-Site

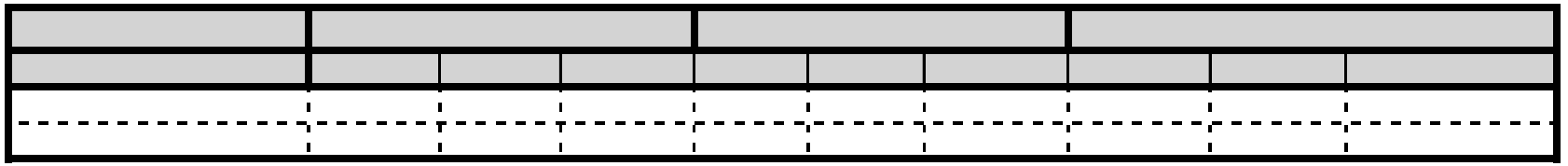
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	18.4453					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

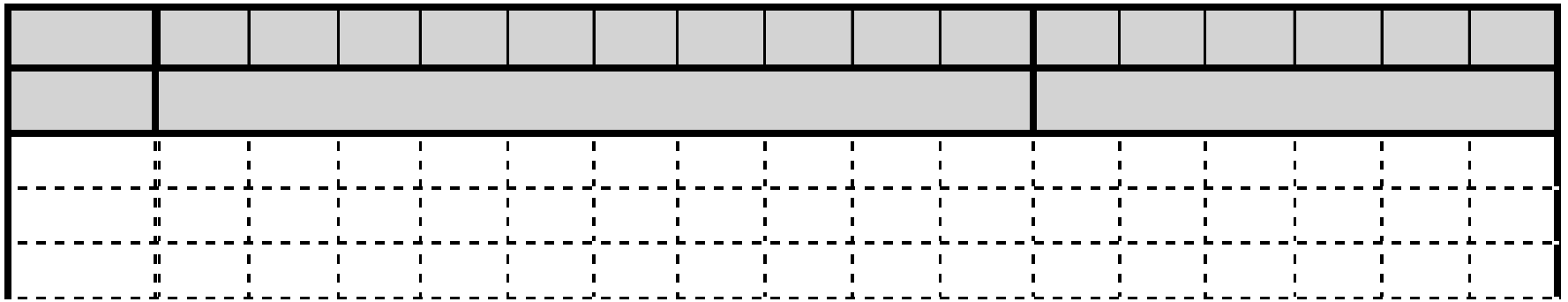
Off-Road	0.0348	0.2395	0.2403	3.9000e-004		0.0168	0.0168		0.0168	0.0168	0.0000	33.3199	33.3199	2.8100e-003	0.0000	33.3790
Total	**18.4801**	**0.2395**	**0.2403**	**3.9000e-004**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**33.3199**	**33.3199**	**2.8100e-003**	**0.0000**	**33.3790**

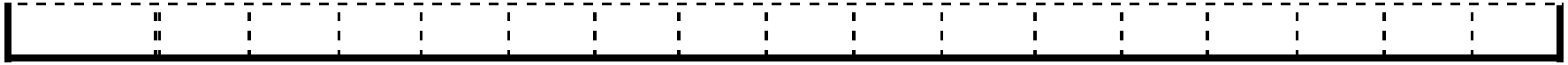
Mitigated Construction Off-Site

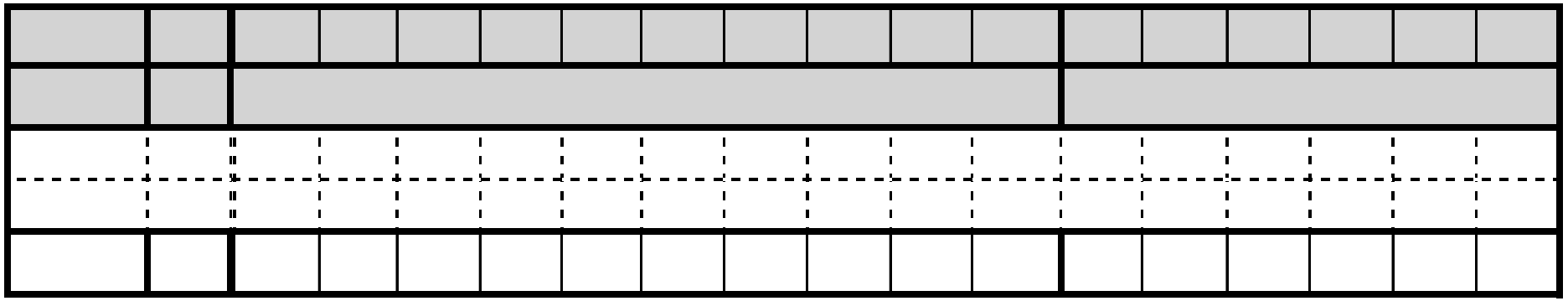
	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3700e-003	1.8100e-003	0.0169	5.0000e-005	4.1900e-003	3.0000e-005	4.2200e-003	1.1100e-003	3.0000e-005	1.1400e-003	0.0000	3.4788	3.4788	1.7000e-004	0.0000	3.4823
Total	**1.3700e-003**	**1.8100e-003**	**0.0169**	**5.0000e-005**	**4.1900e-003**	**3.0000e-005**	**4.2200e-003**	**1.1100e-003**	**3.0000e-005**	**1.1400e-003**	**0.0000**	**3.4788**	**3.4788**	**1.7000e-004**	**0.0000**	**3.4823**

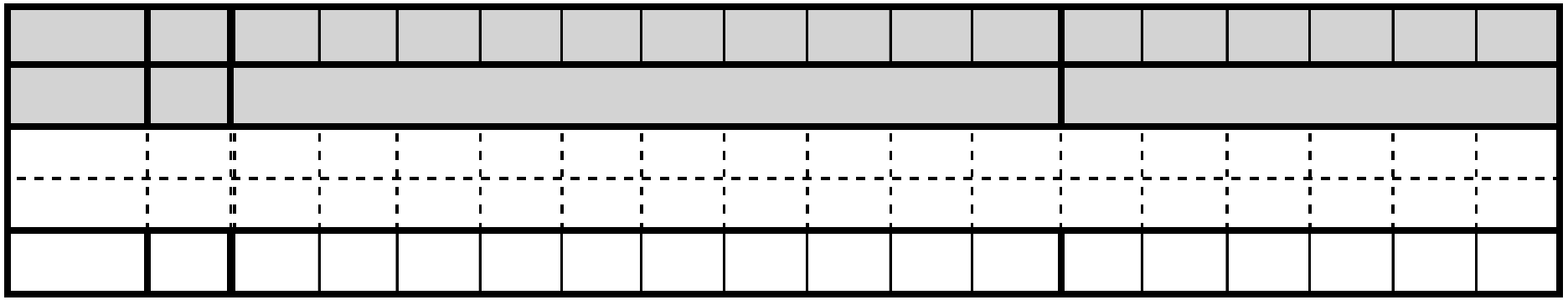


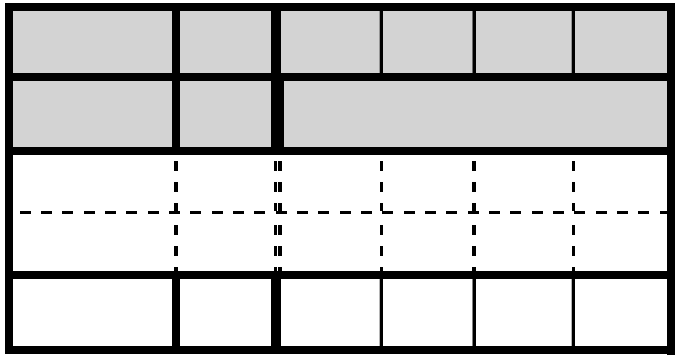


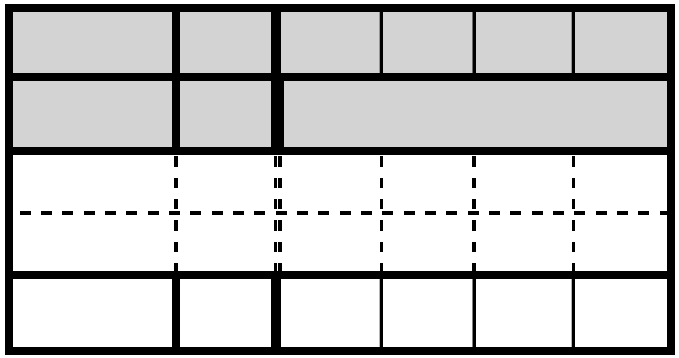


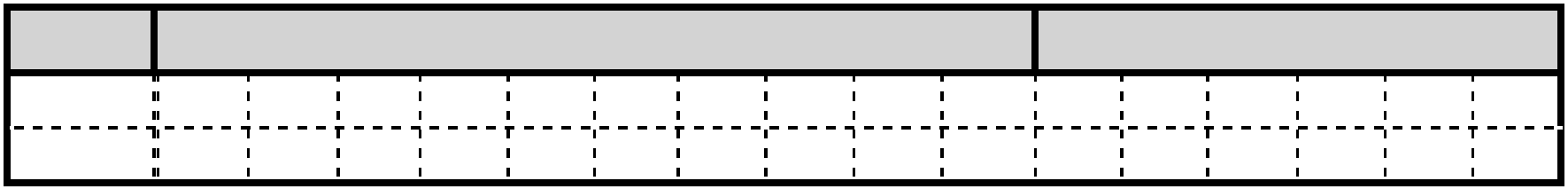


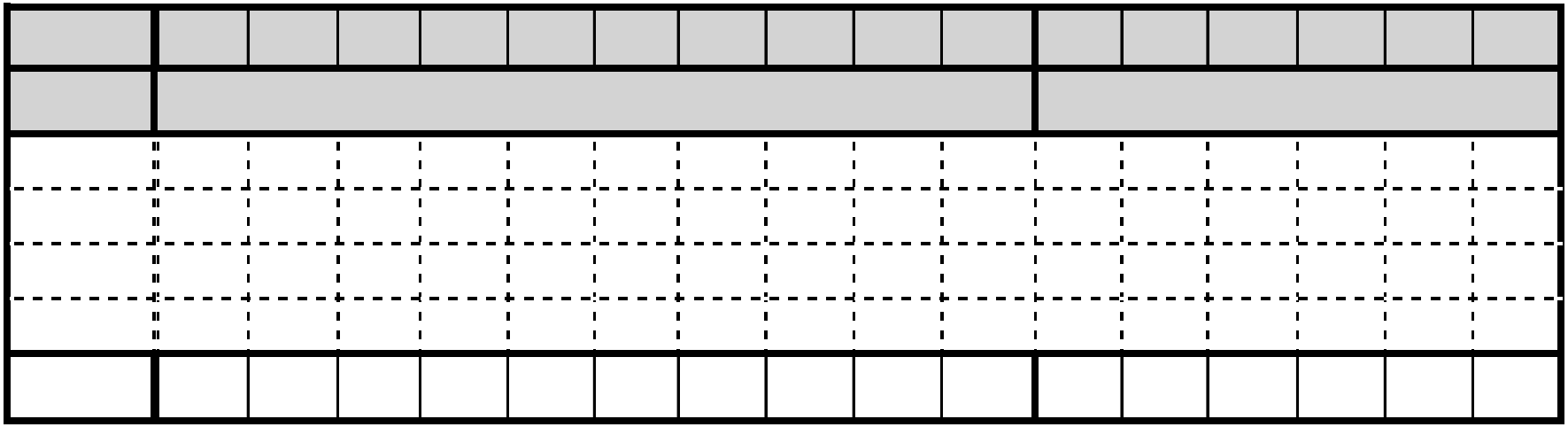


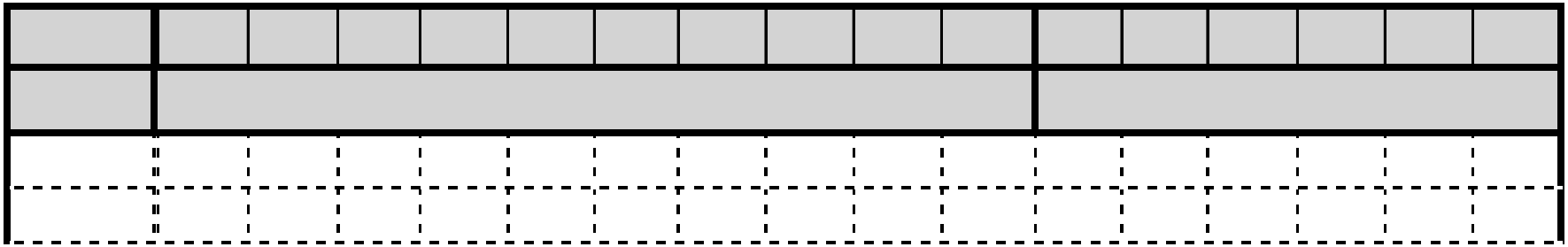


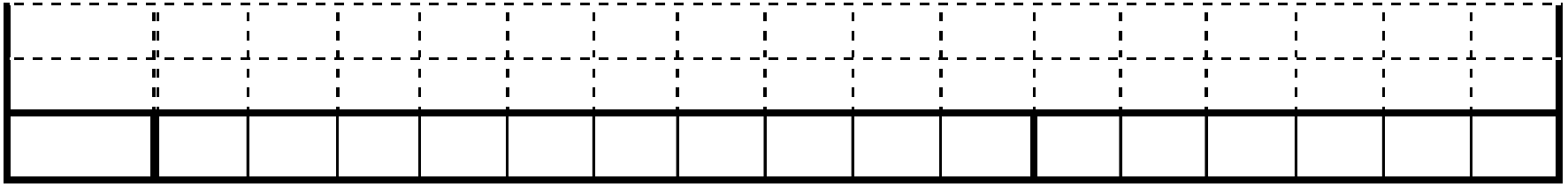


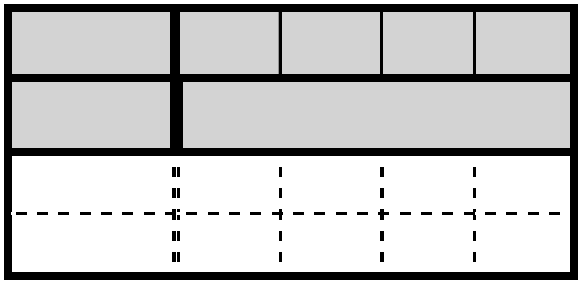


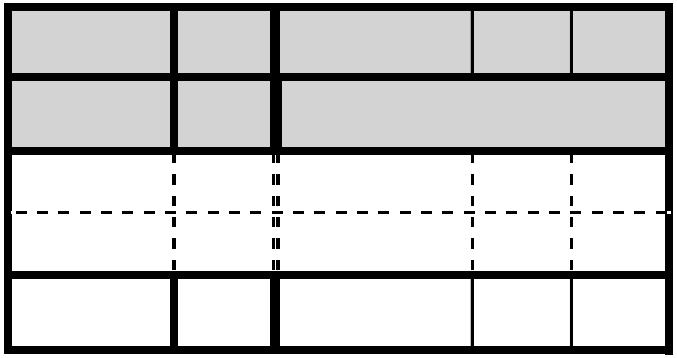


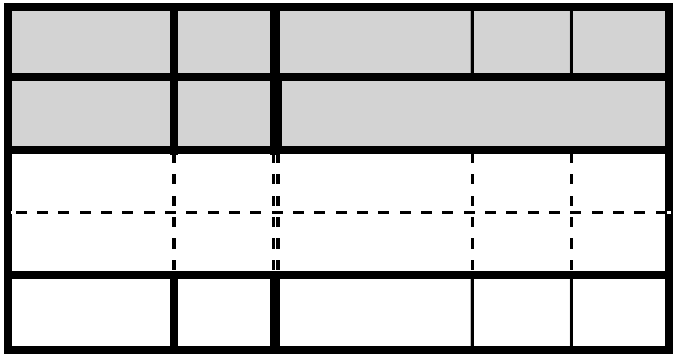


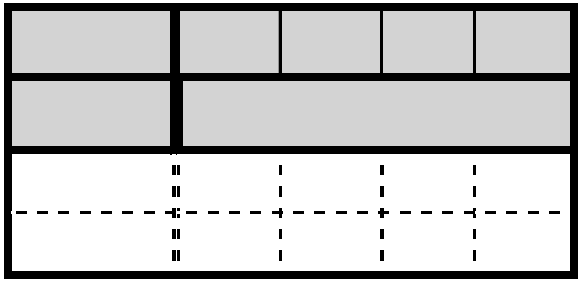


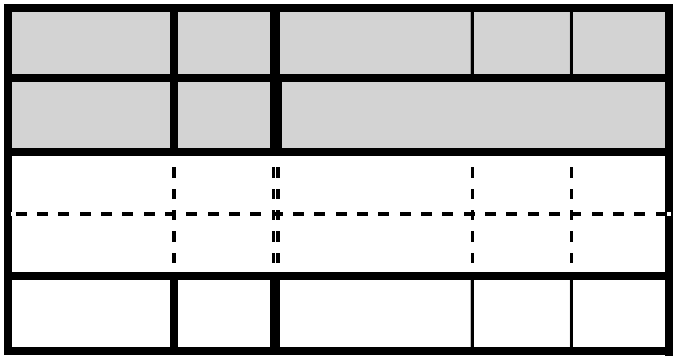


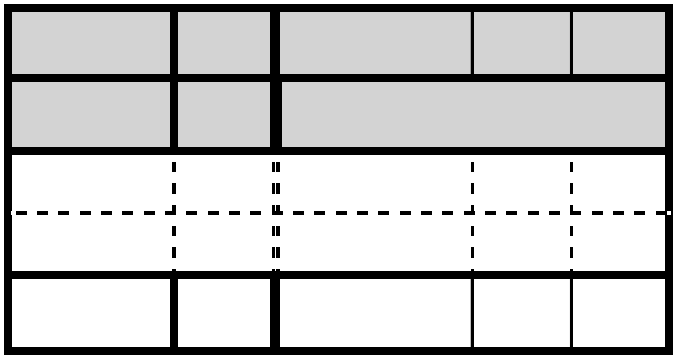












San Marcos Highlands

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	189.00	Dwelling Unit	18.76	340,200.00	541

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2020
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	525.96	**CH4 Intensity (lb/MWhr)**	0.021	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Residential_Exterior	229635	0
tblAreaCoating	Area_Residential_Interior	688905	0
tblAreaMitigation	UseLowVOCPaintNonresidentialExterioValue	250	0
tblAreaMitigation	UseLowVOCPaintNonresidentialInteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialExteriorValue	250	0
tblAreaMitigation	UseLowVOCPaintResidentialInteriorValue	250	0
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	30.00	0.00

tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	10.00	0.00
tblConstructionPhase	PhaseEndDate	12/30/2016	12/31/2010
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2017	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblConstructionPhase	PhaseStartDate	1/1/2011	1/2/2011
tblEnergyUse	T24E	425.62	203.02
tblEnergyUse	T24NG	21,834.49	15,311.44
tblFireplaces	FireplaceDayYear	82.00	30.00
tblFireplaces	NumberGas	103.95	189.00
tblFireplaces	NumberNoFireplace	18.90	0.00
tblFireplaces	NumberWood	66.15	0.00
tblLandUse	LotAcreage	61.36	18.76
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	8.00	6.00

tblProjectCharacteristics	CH4IntensityFactor	0.029	0.021
tblProjectCharacteristics	CO2IntensityFactor	720.49	525.96
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblProjectCharacteristics	OperationalYear	2014	2020
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	5.00
tblTripsAndVMT	WorkerTripNumber	23.00	10.00
tblTripsAndVMT	WorkerTripNumber	68.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	18.00
tblTripsAndVMT	WorkerTripNumber	14.00	0.00
tblVehicleEF	HHD	0.01	9.9580e-003
tblVehicleEF	HHD	1,547.78	1,501.35
tblVehicleEF	HHD	0.02	5.0000e-003
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	244.25	236.93
tblVehicleEF	LDA	0.51	0.51
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	297.79	288.86
tblVehicleEF	LDT1	0.07	0.23
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	364.72	353.78
tblVehicleEF	LDT2	0.19	0.16
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	734.00	711.98
tblVehicleEF	LHD1	0.04	2.0000e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	623.36	604.66
tblVehicleEF	LHD2	5.1400e-003	1.0000e-003
tblVehicleEF	MCY	156.52	151.82
tblVehicleEF	MCY	6.5640e-003	0.01

tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	489.56	474.87
tblVehicleEF	MDV	0.13	0.06
tblVehicleEF	MH	681.06	660.63
tblVehicleEF	MH	3.4460e-003	7.0000e-003
tblVehicleEF	MHD	5.1900e-003	5.0343e-003
tblVehicleEF	MHD	995.11	965.26
tblVehicleEF	MHD	0.01	7.0000e-003
tblVehicleEF	OBUS	2.8860e-003	2.7994e-003
tblVehicleEF	OBUS	1,037.87	1,006.74
tblVehicleEF	OBUS	1.8710e-003	0.00
tblVehicleEF	SBUS	5.3930e-003	5.2312e-003
tblVehicleEF	SBUS	1,024.49	993.76
tblVehicleEF	SBUS	5.8600e-004	1.0000e-003
tblVehicleEF	UBUS	1,981.57	1,922.12
tblVehicleEF	UBUS	2.0620e-003	1.0000e-003
tblVehicleTrips	HO_TL	7.50	5.80
tblVehicleTrips	HS_TL	7.30	5.80
tblVehicleTrips	HW_TL	10.80	5.80
tblVehicleTrips	ST_TR	10.08	10.57
tblVehicleTrips	SU_TR	8.77	10.57
tblVehicleTrips	WD_TR	9.57	10.57
tblWoodstoves	NumberCatalytic	9.45	0.00
tblWoodstoves	NumberNoncatalytic	9.45	0.00

2.0 Emissions Summary

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.3770	0.0163	1.4083	7.0000e-005		0.0115	0.0115		0.0115	0.0115	0.0000	56.7555	56.7555	3.2800e-003	1.0000e-003	57.1338
Energy	0.0215	0.1840	0.0783	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	524.3129	524.3129	0.0165	6.8700e-003	526.7879
Mobile	1.0310	1.0412	8.3399	0.0182	1.3977	0.0159	1.4136	0.3725	0.0147	0.3873	0.0000	1,172.8903	1,172.8903	0.0555	0.0000	1,174.0551
Waste						0.0000	0.0000		0.0000	0.0000	45.0254	0.0000	45.0254	2.6609	0.0000	100.9049
Water						0.0000	0.0000		0.0000	0.0000	3.9067	58.8297	62.7364	0.4036	0.0100	74.3226
Total	**2.4296**	**1.2415**	**9.8265**	**0.0195**	**1.3977**	**0.0424**	**1.4401**	**0.3725**	**0.0411**	**0.4136**	**48.9321**	**1,812.7883**	**1,861.7204**	**3.1398**	**0.0179**	**1,933.2043**

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	1.3770	0.0163	1.4083	7.0000e-005		0.0115	0.0115		0.0115	0.0115	0.0000	56.7555	56.7555	3.2800e-003	1.0000e-003	57.1338
Energy	0.0215	0.1840	0.0783	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	513.8624	513.8624	0.0161	6.7700e-003	516.2979
Mobile	1.0283	1.0329	8.2819	0.0180	1.3837	0.0158	1.3995	0.3688	0.0146	0.3834	0.0000	1,161.6629	1,161.6629	0.0550	0.0000	1,162.8177
Waste						0.0000	0.0000		0.0000	0.0000	11.2564	0.0000	11.2564	0.6652	0.0000	25.2262
Water						0.0000	0.0000		0.0000	0.0000	3.1254	49.9240	53.0493	0.3230	8.0400e-003	62.3250

Total	2.4269	1.2332	9.7685	0.0193	1.3837	0.0422	1.4260	0.3688	0.0410	0.4098	14.3817	1,782.2047	1,796.5864	1.0626	0.0158	1,823.8006

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.11	0.67	0.59	0.87	1.00	0.31	0.98	1.00	0.29	0.93	70.61	1.69	3.50	66.16	11.68	5.66

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2011	12/31/2010	5	0	
2	Site Preparation	Site Preparation	1/2/2011	12/31/2010	5	0	
3	Grading	Grading	1/2/2011	12/31/2010	5	0	
4	Building Construction	Building Construction	1/2/2011	12/31/2010	5	0	
5	Paving	Paving	1/2/2011	12/31/2010	5	0	
6	Architectural Coating	Architectural Coating	1/2/2011	12/31/2010	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 688,905; Residential Outdoor: 229,635; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	4.00	226	0.29

Building Construction	Forklifts	2	6.00	89	0.20
Site Preparation	Graders	1	8.00	174	0.41
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demolition	Excavators	3	8.00	162	0.38
Grading	Excavators	2	8.00	162	0.38
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	174	0.41
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Building Construction	Welders	1	8.00	46	0.45

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
Demolition	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	0.00	20.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	9	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	ROG	NOx	CO	SO2	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	1.0283	1.0329	8.2819	0.0180	1.3837	0.0158	1.3995	0.3688	0.0146	0.3834	0.0000	1,161.6629	1,161.6629	0.0550	0.0000	1,162.8177
Unmitigated	1.0310	1.0412	8.3399	0.0182	1.3977	0.0159	1.4136	0.3725	0.0147	0.3873	0.0000	1,172.8903	1,172.8903	0.0555	0.0000	1,174.0551

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	1,997.73	1,997.73	1997.73	3,745,308	3,707,855
Total	1,997.73	1,997.73	1,997.73	3,745,308	3,707,855

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	5.80	5.80	5.80	41.60	18.80	39.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511000	0.225000	0.164000	0.064000	0.002000	0.001000	0.007000	0.005000	0.000000	0.001000	0.012000	0.001000	0.007000

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	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					
NaturalGas Mitigated	0.0215	0.1840	0.0783	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.1165	213.1165	4.0800e-003	3.9100e-003	214.4135
NaturalGas Unmitigated	0.0215	0.1840	0.0783	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.1165	213.1165	4.0800e-003	3.9100e-003	214.4135
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	300.7459	300.7459	0.0120	2.8600e-003	301.8844
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	311.1964	311.1964	0.0124	2.9600e-003	312.3744

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.99365e+006	0.0215	0.1840	0.0783	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.1165	213.1165	4.0800e-003	3.9100e-003	214.4135
Total		**0.0215**	**0.1840**	**0.0783**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**	**0.0000**	**213.1165**	**213.1165**	**4.0800e-003**	**3.9100e-003**	**214.4135**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.99365e+006	0.0215	0.1840	0.0783	1.1700e-003		0.0149	0.0149		0.0149	0.0149	0.0000	213.1165	213.1165	4.0800e-003	3.9100e-003	214.4135
Total		**0.0215**	**0.1840**	**0.0783**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**	**0.0000**	**213.1165**	**213.1165**	**4.0800e-003**	**3.9100e-003**	**214.4135**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	1.30442e+006	311.1964	0.0124	2.9600e-003	312.3744
Total		**311.1964**	**0.0124**	**2.9600e-003**	**312.3744**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
Single Family Housing	1.26061e+006	300.7459	0.0120	2.8600e-003	301.8844
Total		**300.7459**	**0.0120**	**2.8600e-003**	**301.8844**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	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	1.3770	0.0163	1.4083	7.0000e-005		0.0115	0.0115		0.0115	0.0115	0.0000	56.7555	56.7555	3.2800e-003	1.0000e-003	57.1338
Unmitigated	1.3770	0.0163	1.4083	7.0000e-005		0.0115	0.0115		0.0115	0.0115	0.0000	56.7555	56.7555	3.2800e-003	1.0000e-003	57.1338

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3287					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Hearth	5.5000e-003	0.0000	3.0000e-004	0.0000		3.8000e-003	3.8000e-003		3.7600e-003	3.7600e-003	0.0000	54.4631	54.4631	1.0400e-003	1.0000e-003	54.7946
Landscaping	0.0429	0.0163	1.4080	7.0000e-005		7.7400e-003	7.7400e-003		7.7400e-003	7.7400e-003	0.0000	2.2923	2.2923	2.2400e-003	0.0000	2.3393
Total	**1.3770**	**0.0163**	**1.4083**	**7.0000e-005**		**0.0115**	**0.0115**		**0.0115**	**0.0115**	**0.0000**	**56.7554**	**56.7554**	**3.2800e-003**	**1.0000e-003**	**57.1338**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3287					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	5.5000e-003	0.0000	3.0000e-004	0.0000		3.8000e-003	3.8000e-003		3.7600e-003	3.7600e-003	0.0000	54.4631	54.4631	1.0400e-003	1.0000e-003	54.7946
Landscaping	0.0429	0.0163	1.4080	7.0000e-005		7.7400e-003	7.7400e-003		7.7400e-003	7.7400e-003	0.0000	2.2923	2.2923	2.2400e-003	0.0000	2.3393
Total	**1.3770**	**0.0163**	**1.4083**	**7.0000e-005**		**0.0115**	**0.0115**		**0.0115**	**0.0115**	**0.0000**	**56.7554**	**56.7554**	**3.2800e-003**	**1.0000e-003**	**57.1338**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	62.7364	0.4036	0.0100	74.3226
Mitigated	53.0493	0.3230	8.0400e-003	62.3250

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	12.3141 / 7.76324	62.7364	0.4036	0.0100	74.3226
Total		**62.7364**	**0.4036**	**0.0100**	**74.3226**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	9.85129 / 7.28969	53.0493	0.3230	8.0400e-003	62.3250
Total		**53.0493**	**0.3230**	**8.0400e-003**	**62.3250**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	11.2564	0.6652	0.0000	25.2262
Unmitigated	45.0254	2.6609	0.0000	100.9049

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	221.81	45.0254	2.6609	0.0000	100.9049
Total		**45.0254**	**2.6609**	**0.0000**	**100.9049**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	55.4525	11.2564	0.6652	0.0000	25.2262
Total		**11.2564**	**0.6652**	**0.0000**	**25.2262**

9.0 Operational Offroad

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

10.0 Vegetation