Grant K-8 School Whole Site Modernization Project
Final MND/IS

Appendix A

Air Quality and Greenhouse Gas Study

Prepared by Rincon Consultants, Inc.

July 2015

BRG Consulting, Inc.

Grant K-8 Whole Site Modernization Project

Air Quality and Greenhouse Gas Study

July 2015

rincon

Environmental Scientists Planners Engineers

AIR QUALITY AND GREENHOUSE GAS STUDY

GRANT K-8 WHOLE SITE MODERNIZATION PROJECT
SAN DIEGO, CALIFORNIA

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Grant K-8 Whole Site Modernization Project
San Diego, California

AIR QUALITY and GREENHOUSE GAS STUDY

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Grant K-8 Whole Site Modernization Project
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AIR QUALITY and GREENHOUSE GAS STUDY

This report is an analysis of the potential air quality and greenhouse gas impacts associated with the proposed Grant K-8 Whole Site Modernization Project in the City of San Diego. The report has been prepared by Rincon Consultants, Inc. under contract to BRG Consulting, Inc. to support preparation of the environmental documentation pursuant to the California Environmental Quality Act (CEQA). This study analyzes the potential for temporary impacts associated with construction as well as long-term impacts associated with the operation of the proposed improvements.

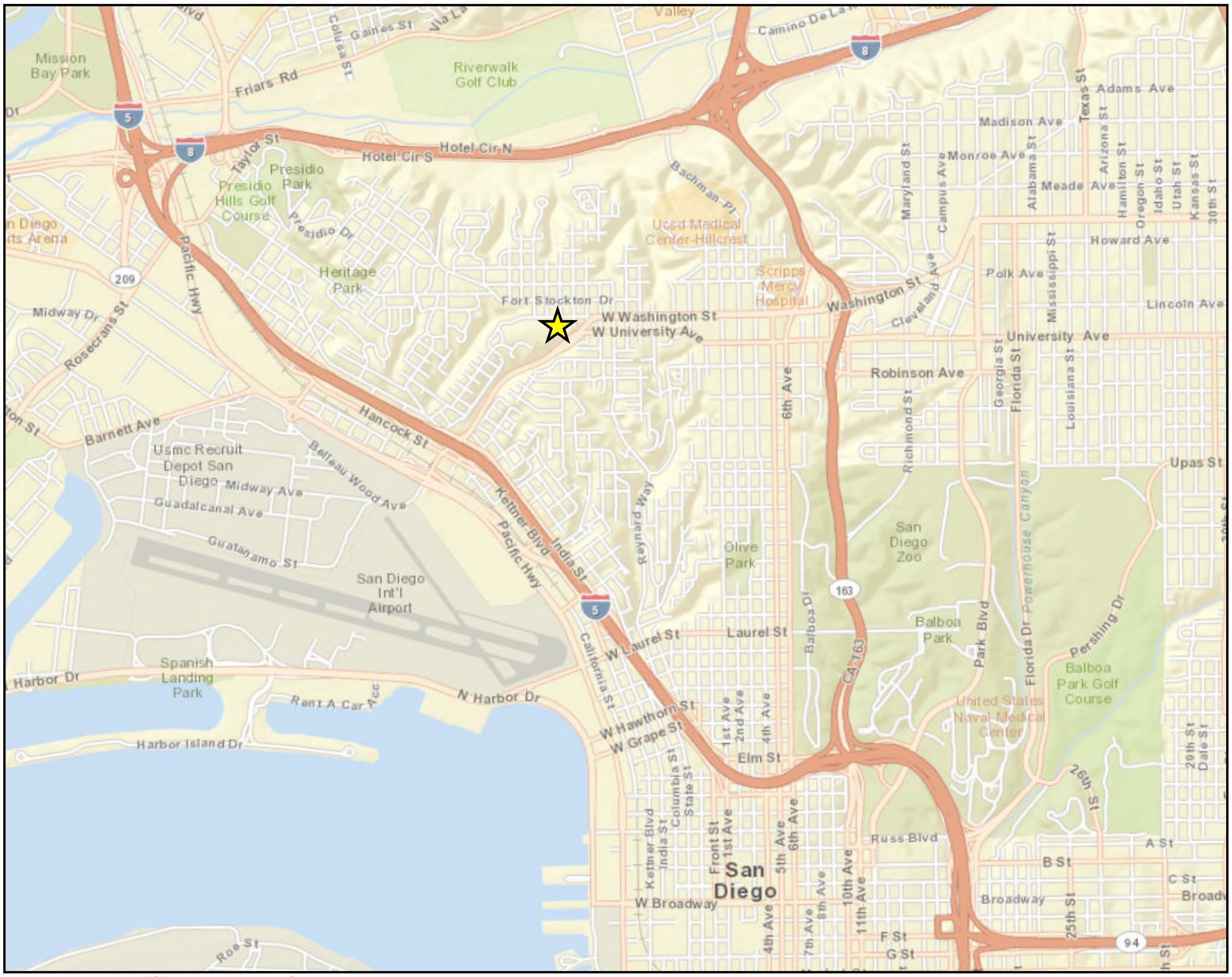
PROJECT DESCRIPTION

The San Diego Unified School District (District) proposes a multi-phase whole site modernization of the Grant K-8 School campus in the City of San Diego. The school is located at 1425 Washington Place in the Mission Hills neighborhood of San Diego. The existing school campus is part of a relatively built-out urban area and is surrounded by residential uses to the north and east. Pioneer Park is located adjacent to and west of the site and an undeveloped canyon is located to the south. Washington Street runs northeast to southwest just south of the canyon. The project site is depicted in Figure 1, Vicinity Map. The proposed project would be implemented in four phases over a span of approximately 20 years. The following describes each phase of the project:

- Phase 1A of the proposed project will include construction of a two-story elementary school building with eight classrooms, restrooms, a staff lounge, materials storage, a kitchen, a cafe/multi-purpose room, an outdoor covered lunch shelter, and an elevator. In addition, a turf field will be installed upon completion of the construction of Phase 1A. The eight (8) new permanent classrooms will replace eight (8) portable classrooms.
- Phase 1B will include construction of elementary play courts and gecko gardens.
- Phase 2A will include construction of a middle school and kindergarten classroom facilities, restrooms, and an elevator. Phase 2A will include the demolition of two (2) permanent classrooms and eight (8) relocatable classrooms and replace them with 14 new permanent classrooms.
- Phase 2B will include construction of middle school hard courts and greens.
- Phase 3A will include construction of administration, instructional support, special education, elementary science, music, art, and digital media facilities, P.E. offices and lockers, an amphitheater, and a quad. Additionally, a marquee sign will be installed upon completion of the construction of Phase 3A. The proposed marquee sign will include on/off/dimming controls provided by photocells, time clocks, and/or computer controls, and will be generally turned off by 10:00 pm. Phase 3A will include the demolition of eight (8) existing permanent classrooms and the construction of one (1) new permanent classroom.
- Phase 3B will include construction of sidewalk improvements, a field, an ADA ramp and seating to Pioneer Park.

- Phase 4 will include construction of a gym, storage, community rooms, and a stage. Phase 4 will include the demolition of two (2) portable classrooms and the construction of five (5) new permanent classrooms.

Grant K-8 School is located in the Uptown community of the City of San Diego and serves grades Kindergarten through 8. The existing enrollment capacity of the school is approximately 768 students, with 35 classrooms. However, it should be noted that the school is not currently operating at full enrollment capacity. The existing enrollment at Grant K-8 School is approximately 717 students (academic year 2014-15). The proposed WSM of the existing campus would replace existing classrooms with new modernized classrooms and would not result in a net change in the number of classrooms. Upon completion of the WSM, the enrollment capacity of the school would be approximately 770 students with 35 classrooms. While the estimated enrollment capacity would minimally increase (less than 1% from existing), projected future enrollment of the school would remain below 770 students. Due to the minimal increase in the estimated enrollment capacity of the school (less than 1% from existing), it is stated throughout this document that the proposed project would not result in an increase in enrollment capacity. As such, the proposed project would not increase the existing school's capacity or the net number of classrooms.



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Project Location

N

0 0.35 0.7
Miles

Vicinity Map

Figure 1

AIR QUALITY ANALYSIS

This report analyzes both temporary air quality impacts relating to construction activity and possible long-term air quality impacts associated with implementation of the proposed improvements.

SETTING

Current Air Quality

The project area is located within the San Diego County Air Pollution Control District (SDCAPCD) which has 11 monitoring stations located throughout the District. The distinctive climate of the San Diego Air Basin ("Basin") is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean on the western quadrant with mountains and canyons forming the eastern boundary. The climate of the SDCAPCD is strongly influenced by its proximity to the Pacific Ocean and the location of the semi-permanent high-pressure cells in the northeastern Pacific. With a Mediterranean-type climate, San Diego is characterized by warm, dry summers and cool winters with occasional rainy periods.

The seasonal rainfall is about 10 inches in the City of San Diego, but increases with elevation and distance from the coast. In the mountains to the north and east the average is between 20 and 40 inches, depending on slope and elevation. Most of the precipitation falls in winter, except in the mountains where there is an occasional thunderstorm. Eighty-five percent of the rainfall occurs from November through March, but wide variations take place in monthly and seasonal totals.

Due to the large size and topography within the SDAPCD there is a wide variation in temperature within short distances. The moderating effect of the ocean regulates the coastal temperature to range of 58 °F to 71 °F near the coast. In nearby valleys daytime temperatures are much warmer in summer and nights are noticeably cooler in the winter.

The dominant daily wind pattern for the Basin is a westerly daytime sea breeze and an easterly nighttime land breeze. Generally, wind speed averages are about 25% higher in spring and summer than in fall and winter, with an average wind speed of about 7 miles per hour(mph) at the coast and slightly lower in the inland mountains. This regime is broken by occasional winter storms and infrequent strong, northeasterly "Santa Ana" winds from the mountains and deserts northeast of the Basin. "Santa Ana" winds are typically hot, dry northerly winds which blow offshore at 15-20 mph, but can reach speeds over 60 mph.

Two types of temperature inversions (warmer air on top of cooler air) are created in the area: subsidence and radiational. The subsidence inversion is a regional effect created by the Pacific high in which air is heated as it is compressed when it flows from the high-pressure area to the low pressure areas inland. This type of inversion generally forms at about 1,000 to 2,000 feet and can occur throughout the year, but it is most evident during the summer months. Surface inversions are formed by the more rapid cooling of air near the ground during the night, especially during winter. This type of inversion is typically lower and is generally accompanied by stable air. Both types of inversions limit the dispersal of air pollutants within the regional air shed, with the more stable the air (low wind speeds, uniform temperatures), the lower the amount of pollutant dispersion.

Air Pollution Regulation

The federal and state governments have been empowered by the federal and state Clean Air Acts to regulate the emission of airborne pollutants and have established ambient air quality standards for the protection of public health. The United States Environmental Protection Agency (USEPA) is the federal agency designated to administer air quality regulation, while the Air Resources Board (ARB) is the state equivalent in the California Environmental Protection Agency. Local control in air quality management is provided by the ARB through multi-county and county-level Air Pollution Control Districts (APCDs). The ARB establishes statewide air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The ARB has established 15 air basins statewide. As described above the City of San Diego is located in the San Diego Air Basin ("Basin"), which is under the jurisdiction of the SDCAPCD.

Federal and state standards have been established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), and lead (Pb) (refer to Table 1).

Table 1
Current Federal and State Ambient Air Quality Standards

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

ppm = parts per million
µg/m^3 = micrograms per cubic meter
Source: California Air Resources Board, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf June 4, 2013.

The local air quality management agency is required to monitor air pollutant levels to assure that air quality standards are met and, in the event they are not, to develop strategies to meet these standards. Depending on whether the standards are met or exceeded, the local air basin is classified as in "attainment" or "nonattainment." San Diego County is listed as a federal non-attainment area for ozone (eight hour), and a state non-attainment area for ozone (one hour and eight hour standards), PM_{10}, and $PM_{2.5}$. As shown in Table 2, the Basin is in attainment for the state and federal standards for nitrogen dioxide, and for carbon monoxide.

Non-attainment status for the SDCAPCD is a result of several factors, primarily the naturally adverse meteorological conditions that limit the dispersion and diffusion of pollutants (surface and subsidence inversions), the limited capacity of the local airshed to eliminate pollutants from the air, and the number, type, and density of emission sources within the Basin. The potential health effects of pollutants for which the Basin is in nonattainment are described below.

Table 2
San Diego County Attainment Status

Criteria Pollutant	Federal Designation	State Designation
Ozone (one hour)	Attainment*	Non-Attainment
Ozone (eight hour)	Non-Attainment	Non-Attainment
Carbon Monoxide	Attainment	Attainment
PM_{10}	Unclassified**	Non-Attainment
$PM_{2.5}$	Attainment	Non-Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility	(no federal standard)	Unclassified

** The federal 1-hour standard of 12 ppm was in effect from 1979 through June 1, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in SIPs.*
*** At the time of designation, if the available data does not support a designation of attainment or non-attainment, the area is designated as unclassifiable.*
Source: San Diego Air Pollution Control District. January 2010. http://www.sdapcd.org/info/facts/attain.pdf

Characteristics of ozone, carbon monoxide, nitrogen dioxide, and suspended particulates are described below.

Ozone. Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG)[1]. Nitrogen oxides are formed during the combustion of fuels, while reactive organic compounds are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

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

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

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

[1] Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile, and result in a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). While most of these differ in some significant way from a chemical perspective, from an air quality perspective two groups are important: non-photochemically reactive in the lower atmosphere, or photochemically reactive in the lower atmosphere (HC, RHC, ROG, ROC, and VOC).

body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Local Air Quality

The SDAPCD monitors air quality conditions at locations throughout the Basin. For the purpose of this analysis, data from the Kearney Villa Road monitoring station were used to characterize existing ozone conditions in the vicinity of the site, and to establish a baseline for estimating future conditions both with and without the project. With the exception of PM_{10} data for 2012, all PM data (PM_{10} and $PM_{2.5}$) is reported from the El Cajon Redwood Street monitoring station. A summary of the data recorded at both the Kearney Villa Road and El Cajon Redwood Street monitoring stations from 2011 through 2013 is presented in Table 3.

Table 3
Ambient Air Quality Data

Pollutant	2011	2012	2013
Ozone, ppm - Worst Hour	0.083	0.076	0.070
Number of days of State 1-hour exceedances (>0.09 ppm)*	2	3	1
Number of days of Federal exceedances (>0.075 ppm)*	1	1	0
Particulate Matter <10 microns, $\mu g/m^3$ Worst 24 Hours	-	35	38
Number of samples of State exceedances (>50 $\mu g/m^3$)	-	-	0
Number of samples of Federal exceedances (>150 $\mu g/m^3$)	-	-	0
Particulate Matter <2.5 microns, $\mu g/m^3$ Worst 24 Hours	-	20.1	22.0
Number of samples of State exceedances (>50 $\mu g/m^3$)	N/A	N/A	N/A
Number of samples of Federal exceedances (>150 $\mu g/m^3$)	-	0	0

Ozone and PM10 data for 2011 and 2013 from Kearney Villa Road Monitoring Station
PM10 data for2010/2011 and PM2.5 data from El Cajon Redwood Street monitoring station
Source: California Air Resources Board, 2011, 2012, 2013 Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php

As shown, both the federal and state ozone standards were exceeded at the Kearney Villa Road station during 2011 and 2012. The $PM_{2.5}$ concentration exceeded the state standard on one occasion in January of 2012; however, this was not considered a violation of the state standard.

Air Quality Management Plan/Regional Air Quality Strategy

The federal Clean Air Act Amendments (CAAA) mandate that states submit and implement a State Implementation Plan (SIP) for areas not meeting air quality standards. The SIP includes pollution control measures to demonstrate how the standards will be met through those measures. The SIP is established by incorporating measures established during the preparation of AQMPs and adopted rules and regulations by each local APCD and AQMD, which are submitted for approval to the ARB and the USEPA. The goal of an AQMP is to reduce pollutant concentrations below the National Ambient Air Quality Standards (NAAQS) through the implementation of air pollutant emissions controls.

The San Diego Regional Air Quality Strategy (RAQS) was developed pursuant to California Clean Air Act (CCAA) requirements. The RAQS was initially adopted in 1991 and was updated in 1995, 1998, 2001, 2004, and most recently in 2009 (SDAPCD, 2009). The RAQS identifies feasible emission control measures to provide progress in San Diego County toward attaining the State ozone standard. The pollutants addressed in the RAQS are volatile organic compounds (VOC) and oxides of nitrogen (NOx), precursors to the photochemical formation of ozone (the primary component of smog). The RAQS was initially adopted by the San Diego County Air Pollution Control Board on June 30, 1992, and amended on March 2, 1993, in response to ARB comments (2009 Revision of the Regional Air Quality Strategy, 2009). At present, no attainment plan for PM_{10} or $PM_{2.5}$ is required by the state regulations. However, SDCAPCD has also adopted measure to reduce particulate matter in San Diego County. These measures range from regulation against open burning to incentive programs that introduce cleaner technology. These measures can be found in a report titled “Measures to Reduce Particulate Matter in San Diego County”, December 2005, found at the SDCAPCD website (http://www.sdapcd.org/planning/PM-Measures.pdf).

The RAQS relies on information from ARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and the County as part of the development of the individual General Plans. As such, projects that propose development consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development which is less dense than anticipated within the General Plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the General Plan and SANDAG’s growth projections, the project might be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality.
The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The SIP also includes rules and regulations that have been adopted by the SDAPCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project’s emissions would have the potential to conflict with the SIP and thereby hinder attainment of the NAAQS for ozone.

Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children; the elderly; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. Modernization of the Grant School would subject students, faculty and staff, as well as residents in the surrounding neighborhood to air emissions. The primary emissions associated with the project would be related to construction.

The number of students and faculty would not change from existing conditions; thus, operational emissions would remain similar.

IMPACT ANALYSIS

Methodology and Significance Thresholds

Based on Appendix G of the *CEQA Guidelines*, a project would have a significant air quality impact if it would:

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

Air quality modeling was performed in general accordance with the methodologies outlined in the SDAPCD 2009 Regional Air Quality Strategy (RAQS). Maximum daily emissions were quantified using the CalEEMod version 2013.2.2 emissions model (refer to Appendix A for CalEEMod modeling output sheets).

The SDAPCD has established screening level thresholds (screening criteria) for evaluating air quality emissions (Rules 20.1 et seq.). The City of San Diego has published quantitative thresholds for air pollutant emissions in its *CEQA Significance Determination Thresholds* (2011), shown in Table 4. These thresholds are based on Air Quality Impact Analysis (AQIA) trigger levels for new or modified stationary sources found in SDAPCD Rule 20.2. ROG thresholds are based on those used by South Coast Air Quality Management District (SCAQMD) and the Monterey Bay APCD (MBAPCD), which both have a similar federal and state attainment status as San Diego. A project may have a significant air quality impact if it could violate any air quality standard or contribute substantially to an existing or projected air quality violation, or release substantial quantities of air contaminants beyond the boundaries of the premises. A project's impact would also be significant if the project would conflict with, or obstruct implementation of, the RAQS Revision 2009.

Table 4
City of San Diego Pollutant Thresholds

	Carbon Monoxide (CO)	Nitrogen Oxides (NO_X)	Particulate Matter (PM_{10})	Sulfur Oxides (SO_X)	Reactive Organic Gases (ROG)
Threshold of Significance (lbs/day)	550	250	100	250	137

Source: City of San Diego CEQA Significance Determination Thresholds. http://www.sandiego.gov/development-services/pdf/news/sdtceqa.pdf

Construction Emissions

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

Construction emissions modeling includes air emissions associated with demolition, site preparation, grading, building construction, paving, and application of architectural coatings. The City of San Diego Municipal Code (SDMC) Section 142.0710 requires that during construction "air contaminants including smoke, charred paper, dust, soot, grime, carbon, noxious acids, toxic fumes, gases, odors, and particulate matter, or any emissions that endanger human health, cause damage to vegetation or property, or cause soiling shall not be permitted to emanate beyond the boundaries of the premises upon which the use emitting the contaminants is located."

To reduce particulate matter emissions in accordance with SDMC Section 142.0710, the following may be utilized:

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

CalEEMod assumes that watering would occur at least twice daily to reduce particulate matter emissions in compliance with SDMC Section 142.0710. This analysis also assumes that approximately 4,900 cubic yards of soil would be exported. In addition, it was assumed that architectural coatings would comply with SDAPCD Rule 67.0- Architectural Coatings.

The exact timing of all proposed improvements is unknown; however, phasing is projected to occur over a 20 year period. To provide a conservative estimate of construction emissions, it was assumed that all improvements would occur over a three year period from 2015 through 2017. The overall square footage of improvements was assumed to be 109,390 including outdoor space. This included all improvements defined in Phases 1A, 1B, 2A, 2B, 3A, 3B and 4 defined in the project description.

As shown in Table 5, construction emissions over the three year period is not expected to result in air pollutant emissions that exceed applicable thresholds.

Table 5
Estimated Maximum Daily Construction Emissions

	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions (lbs/day)						
2015	*5.8*	*60.2*	*49.5*	*.03*	*7.9*	*4.9*
2016	*3.9*	*26.2*	*20.1*	*.03*	*2.0*	*1.6*
2017	*36.2*	*24.2*	*19.3*	*.03*	*1.9*	*1.5*
Threshold of Significance (lbs/day)	*137*	*250*	*550*	*250*	*100*	*N/A*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**N/A**

Notes: All calculations were made using CalEEMod. Assumes compliance with City of San Diego Municipal Code Section 142.0710 and with SDAPCD Rule 67.0 – Architectural Coatings. See Table 2.1 "Overall Construction (Maximum Daily Emission) in the appendix for calculations.

Long-Term Regional Impacts

As noted, the project would not add students or faculty; thus, post-construction emissions would be similar to existing conditions. For reporting purposes; however, long-term emissions associated with mobile (vehicle trips), area (landscaping and architectural coating emissions as the structures are repainted over the life of the development) and energy sources (electricity and natural gas consumption) are provided. The estimated operational emissions from the modernization project are shown in Table 6. As shown, operational emissions are not projected to exceed the SDAPCD thresholds.

Table 6
Estimated Operational Emissions

	Estimated Emissions (lbs/day)					
	ROG	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project						
Area	2.5	0.03	0.02	0	0	0
Energy	0.01	0.15	0.12	0.01	0.01	0.01
Mobile	4.9	9.7	46	0.09	6.49	1.81
Maximum lbs/day	**7.41**	**9.88**	**46.22**	**0.1**	**6.5**	**1.82**
SDAPCD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

See Appendix for CalEEMod ver. 2013.2.2 computer model output for the demolition of existing development. Summer emissions shown.

Regional Air Quality Strategy (RAQS) Consistency

The RAQS outlines the SDAPCD's plans and control measures designed to attain the State air quality standards for ozone. In addition, the SDAPCD relies on the SIP, which includes the SDAPCD's plans and control measures for attaining the ozone NAAQS. These plans account for emissions from all sources, including natural sources, through implementation of control measures, where feasible, on stationary sources to attain the standards. (Mobile sources are regulated by the United States EPA and the California ARB, and the emissions and reduction strategies related to mobile sources are considered in the RAQS and the SIP.)

The RAQS relies on information from ARB and SANDAG, including projected growth in the County, mobile, area and all other source emissions in order to project future emissions and determine from that the strategies necessary for the reduction of stationary source emissions through regulatory controls. The ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County during the development of general plans. Therefore, a project that proposes development that is consistent with the growth anticipated by the general plan is consistent with the RAQS.

The proposed whole site modernization project would not add any people to the San Diego population. Accordingly, because the proposed project would not conflict with or obstruct implementation of the applicable air quality plan, impacts would be less than significant.

Objectionable Odors

The proposed project would not include industrial or agricultural uses that have the potential to emit objectionable odors. The project would replace existing school facilities with new school buildings and outdoor areas. The project would not create or emit objectionable odors. Therefore, this impact would be less than significant.

GREENHOUSE GAS ANALYSIS

The purpose of this study is to analyze the proposed project's greenhouse gas (GHG) emissions and the associated impact to global climate change. This study provides an overview of global climate change and GHGs, the current regulatory framework, quantifies GHG emissions associated with the proposed project in a "business-as-usual" scenario, compares forecast emissions to a range of qualitative thresholds, and discusses the project's consistency with applicable mitigation strategies.

SETTING

Overview of Climate Change

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2007), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (90% or greater chance) that the global average net effect of human activities since 1750 has been one of warming. The prevailing scientific opinion on climate change is that most of the observed increase in global average temperatures, since the mid-20th century, is likely due to the observed increase in anthropogenic GHG concentrations (IPCC, 2007).

Greenhouse Gases (GHGs)

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

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and sulfur hexafluoride (SF_6) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2E), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane CH_4 has a GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 2006).

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

<u>Carbon Dioxide.</u> The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO_2 are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (United States Environmental Protection Agency [U.S. EPA], April 2012). CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the last half of the 20th century. Concentrations of CO_2 in the atmosphere have risen approximately 40% since the industrial revolution. The global atmospheric concentration of CO_2 has increased from a pre-industrial value of about 280 parts per million (ppm) to 391 ppm in 2011 (IPCC, 2007; Oceanic and Atmospheric Association [NOAA], 2010). The average annual CO_2 concentration growth rate was larger between 1995 and 2005 (average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates (NOAA, 2010). Currently, CO_2 represents an estimated 82.8% of total GHG emissions (Department of Energy [DOE] Energy Information Administration [EIA], August 2010). The largest source of CO_2, and of overall GHG emissions, is fossil fuel combustion.

<u>Methane.</u> Methane (CH_4) is an effective absorber of radiation, though its atmospheric concentration is less than that of CO_2 and its lifetime in the atmosphere is limited to 10 to 12 years. It has a global warming potential approximately 25 times that of CO_2. Over the last 250 years, the concentration of CH_4 in the atmosphere has increased by 148 percent (IPCC, 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH_4 include enteric

fermentation associated with domestic livestock, landfills, natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, stationary and mobile combustion, and certain industrial processes (U.S. EPA, April 2012).

Nitrous Oxide. Concentrations of nitrous oxide (N_2O) began to rise at the beginning of the industrial revolution and continue to increase at a relatively uniform growth rate (NOAA, 2010). N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes. Use of these fertilizers has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N_2O emissions. The GWP of nitrous oxide is approximately 298 times that of CO_2 (IPCC, 2007).

Fluorinated Gases (HFCS, PFCS and SF_6). Fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfurhexafluoride (SF_6), are powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s because of their ozone-destroying potential and are phased out under the Montreal Protocol (1987) and Clean Air Act Amendments of 1990. Electrical transmission and distribution systems account for most SF_6 emissions, while PFC emissions result from semiconductor manufacturing and as a by-product of primary aluminum production. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but these compounds have much higher GWPs. SF_6 is the most potent GHG the IPCC has evaluated.

Greenhouse Gas Inventory

Worldwide anthropogenic emissions of GHGs were approximately 40,000 million metric tons (MMT) CO_2E in 2004, including ongoing emissions from industrial and agricultural sources, but excluding emissions from land use changes (i.e., deforestation, biomass decay) (IPCC, 2007). CO_2 emissions from fossil fuel use accounts for 56.6 percent of the total emissions of 49,000 MMT CO_2E (includes land use changes) and CO_2 emissions from all sources account for 76.7 percent of the total CO_2E emitted. Methane emissions account for 14.3 percent of GHGs and N_2O emissions account for 7.9 percent (IPCC, 2007).

Total U.S. GHG emissions were 6,821.8 MMT CO_2E in 2009 (U.S. EPA, April 2012). Total U.S. emissions have increased by 10.5 percent since 1990; emissions rose by 3.2 percent from 2009 to 2010 (U.S. EPA, April 2012). This increase was primarily due to (1) an increase in economic output resulting in an increase in energy consumption across all sectors; and (2) much warmer summer conditions resulting in an increase in electricity demand for air conditioning. Since 1990, U.S. emissions have increased at an average annual rate of 0.5 percent. In 2010, the transportation and industrial end-use sectors accounted for 32 percent and 26 percent of CO_2 emissions from fossil fuel combustion, respectively. Meanwhile, the residential and commercial end-use sectors accounted for 22 percent and 19 percent of CO_2 emissions from fossil fuel combustion, respectively (U.S. EPA, April 2012).

Based upon the California Air Resources Board (ARB) California Greenhouse Gas Inventory for 2000-2011 (ARB, October 2011), California produced 448 MMT CO_2E in 2011. The major source of GHG in California is transportation, contributing 38 percent of the state's total GHG emissions.

Industrial activity is the second largest source, contributing 21 percent of the state's GHG emissions (ARB, October 2012). California emissions are due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. The ARB has projected statewide unregulated GHG emissions for the year 2020 will be 507 MMT CO_2E (ARB, August 2013). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

Potential Effects of Climate Change

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

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

Sea Level Rise. According to *The Impacts of Sea-Level Rise on the California Coast*, prepared by the California Climate Change Center (CCCC) (May 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50% higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. The previous IPCC report (2007) identified a sea level rise on the California coast over the past century of approximately eight inches. Based on the results of various global climate change models, sea level rise is expected to continue. The California Climate Adaptation Strategy (December 2009) estimates a sea level rise of up to 55 inches by the end of this century.

Air Quality. Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC], March, 2009).

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

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

Hydrology. As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea level rise may be a product of climate change through two main processes: expansion of sea water as the oceans warm and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. Increased CO_2 emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

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

Ecosystems and Wildlife. Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2004; Parmesan, C. and H. Galbraith, 2004).

While the above discussion identifies the possible effects of climate change at a global and potentially statewide level, current scientific modeling tools are unable to predict with a similar degree of accuracy what local impacts may occur. In general, regional and local predictions are made based on downscaling statewide models (CalEPA, April 2010).

Regulatory Setting

International Regulations. The United States is, and has been, a participant in the United Nations Framework Convention on Climate Change (UNFCCC) since it was produced in 1992. The UNFCCC is an international environmental treaty with the objective of, "stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." This is generally understood to be achieved by stabilizing global GHG concentrations between 350 and 400 ppm to limit the global average temperature increases between 2 and 2.4°C above pre-industrial levels (IPCC, 2007). The UNFCC itself does not set limits on GHG emissions for individual countries or enforcement mechanisms. Instead, the treaty provides for updates, called "protocols," that would identify mandatory emissions limits.

Five years later, the UNFCC brought nations together again to draft the *Kyoto Protocol* (1997). The Kyoto Protocol established commitments for industrialized nations to reduce their collective emissions of six GHGs (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) to 5.2 percent below 1990 levels by 2012. The United States is a signatory of the Kyoto Protocol, but Congress has not ratified it and the United States has not bound itself to the Protocol's commitments (UNFCCC, 2007). The first commitment period of the Kyoto Protocol ended in 2012. Governments, including 38 industrialized countries, agreed to a second commitment period of the Kyoto Protocol beginning January 1, 2013 and ending either on December 31, 2017 or December 31, 2020, to be decided by the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its seventeenth session (UNFCCC, November 2011).

In Durban (17th session of the Conference of the Parties in Durban, South Africa, December 2011), governments decided to adopt a universal legal agreement on climate change as soon as possible, but not later than 2015. Work will begin on this immediately under a new group called the Ad

Hoc Working Group on the Durban Platform for Enhanced Action. Progress was also made regarding the creation of a Green Climate Fund (GCF) for which a management framework was adopted (UNFCCC, December 2011; United Nations, September 2012).

Federal Regulations. The United States is currently using a voluntary and incentive-based approach toward emissions reductions in lieu of the Kyoto Protocol's mandatory framework. The Climate Change Technology Program (CCTP) is a multi-agency research and development coordination effort (led by the Secretaries of Energy and Commerce) that is charged with carrying out the President's National Climate Change Technology Initiative (U.S. EPA, December 2007). However, the voluntary approach to address climate change and GHG emissions may be changing. The United States Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al*. ([2007] 549 U.S. 05-1120) held that the U.S. EPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act.

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

On May 13, 2010, the U.S. EPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 metric tons (MT) CO_2E per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the U.S. EPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The U.S. EPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the U.S. EPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the U.S. EPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 MT CO_2E per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 MT CO_2E per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 MT CO_2E per year.

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

California Regulations. California Air Resources Board (ARB) is responsible for the coordination and oversight of State and local air pollution control programs in California. Various statewide and local initiatives to reduce California's contribution to GHG emissions have raised awareness about climate change and its potential for severe long-term adverse environmental, social, and economic effects.

Assembly Bill (AB) 1493 (2002), referred to as "Pavley," requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025, when the rules would be fully implemented, new automobiles would emit 34% fewer GHGs. Statewide CO_2E emissions would be reduced by 3% by 2020 and by 12% by 2025. The reduction increases to 27% in 2035 and even further to a 33% reduction in 2050 (ARB, 2013).

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

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

After completing a comprehensive review and update process, ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2E. The Scoping Plan was approved by ARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms.

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

EO S-01-07 was enacted on January 18, 2007. The order mandates that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.

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

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

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

In April 2011, Governor Brown signed SB 2X requiring California to generate 33% of its electricity from renewable energy by 2020.

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

Local Regulations and CEQA Requirements. Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *State CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. As noted previously, the adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), the San Luis Obispo Air Pollution Control District

(SLOAPCD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted quantitative significance thresholds for GHGs. On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds contained in the BAAQMD's 2010 CEQA Guidelines. In light of the court's order, it is recommended that lead agencies will need to determine appropriate air quality and GHG thresholds of significance based on substantial evidence in the record. The BAAQMD was ordered to set aside the thresholds and is no longer recommending that these thresholds be used as a general measure of a project's significant air quality impacts. In August 2013, the First District Court of Appeal overturned the trial court and held that the thresholds of significance adopted by the BAAQMD were not subject to CEQA review. However, no further recommendation by the BAAQMD has been issued as of November 15, 2013.

The City of San Diego adopted a Climate Protection Action Plan (CPAP) in 2005 which aims to achieve at least a 15% reduction in CO_2 emissions from City operations through energy efficiency, renewable energy, and cleaner fuels.

In 2010, the City of San Diego released a memorandum titled *Addressing Greenhouse Gas Emissions from Projects Subject to CEQA*, which provides a 900-metric-ton screening criteria for determining which projects require further analysis and mitigation with regard to climate change based on the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper.

In October 2011, the San Diego Association of Governments (SANDAG) adopted a Regional Transportation Plan and Sustainable Communities Strategy (SCS) in accordance with SB 375. The SCS lays out how the region will meet greenhouse gas (GHG) reduction targets set by the California Air Resources Board. ARB's targets call for the region to reduce per capita emissions seven percent by 2020 and 13 percent by 2035 from a 2005 baseline.

In December 2013, the City released a working draft of a Climate Action Plan (CAP) which identifies measures to reduce GHG. The five strategies to reduce GHGs in the CAP include: energy & water efficient buildings, clean & renewable energy, multimodal transportation options, zero waste management, and urban forest & local food production. The CAP does not contain GHG thresholds.

IMPACT ANALYSIS

Thresholds of Significance

The information provided in this section is based on recently established California goals for reducing GHG emissions, as well as a project-specific emissions inventory developed for onsite development. According to the CEQA Guidelines (Appendix G), impacts associated with GHG emissions would be significant if the project would:

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

Determining how a development project might contribute to climate change, and what the overall effect of an individual project would be based on that contribution, is still undergoing debate at this time. An individual project (unless it is a massive construction project, such as a dam or a new freeway project, or a large fossil-fuel fired power plant) does not generate sufficient GHG emissions to directly influence global climate change; therefore, the issue of global climate change typically involves an analysis of whether the contribution toward a cumulative impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

Based on the City of San Diego's memorandum *Addressing Greenhouse Gas Emissions from Projects Subject to CEQA* (August 2010), a 900 metric ton screening threshold for determining when a GHG analysis is required was chosen. The 900 metric ton screening threshold is based on available guidance from the CAPCOA white paper. If GHG emissions associated with a proposed project exceed the 900 metric ton screening threshold, the project would have a significant impact related to climate change unless the project reduces emissions by at least 28.3% from the ARB 2020 "business-as-usual" forecast model, which represents the GHG emissions that would be expected to occur without any GHG project reducing features or mitigation, consistent with AB 32.

Methodology

This analysis is based on the methodologies recommended by CAPCOA (January 2008) *CEQA and Climate Change* white paper. The analysis focuses on CO_2, N_2O, and CH_4 as these are the GHG emissions that onsite development would generate in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6, were also considered for the analysis. However, because the replacement of school facilities, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Calculations were based on the methodologies discussed in the CAPCOA white paper (January 2008) and included the use of the California Climate Action Registry General Reporting Protocol (January 2009).

Construction Emissions. Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches (as discussed below in GHG Cumulative Significance) adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). Nevertheless, the City of San Diego has recommended amortizing construction-related emissions over a 30-year period in conjunction with the proposed project's operational emissions.

Construction of the proposed project would generate temporary GHG emissions primarily resulting from the operation of construction equipment and truck trips. Site grading typically generates the greatest amount of emissions because of the use of grading equipment and soil hauling. As noted in the project description, the proposed improvements are expected to occur over a period of 20 years. However, because the phasing and construction duration for each is unknown, a conservative analysis was prepared which assumes all construction would be concentrated over a three year period of time beginning in 2015 and ending in 2017. Emissions associated with the construction period were estimated using the California Emissions Estimator Model (CalEEMod version 2013.2.2) computer model, based on the projected maximum amount of equipment that would be used onsite at one time. Complete CalEEMod results and assumptions can be viewed in Appendix A.

Indirect Emissions. Operational emissions from electricity and natural gas use were estimated using CalEEMod (see Appendix A). The default values on which CalEEMod are based include the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. CalEEMod calculates operational emissions of CO_2, N_2O and CH_4. This methodology is considered reasonable and reliable for use, as it has been subjected to peer review by numerous public and private stakeholders, and in particular by the CEC. It is also recommended by CAPCOA (January 2008).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2011). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

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

Direct Emissions from Mobile Combustion. Emissions of CO_2 and CH_4 from transportation sources for the business-as-usual scenario were quantified using the CalEEMod computer model. Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see Appendix A). Emission rates for N_2O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

One of the limitations to a quantitative analysis is that emission models, such as CalEEMod, evaluate aggregate emissions and do not demonstrate, with respect to a global impact, what proportion of these emissions are "new" emissions, specifically attributable to the project in question. For most projects, the main contribution of GHG emissions is from motor vehicles and the total vehicle miles traveled (VMT), but the quantity of these emissions appropriately characterized as "new" is uncertain. Traffic associated with a project could be trips that would have been associated with another use, and consequently, the actual VMT associated with the project may be higher or lower than what is included in the model results. For the project analyzed in this report, no new students, faculty, or staff would be added; thus, no additional VMT would occur. No GHG emissions associated with traffic and energy demand would be truly "new" emissions diverted from other locations. Although GHG emissions would be associated with operation of the project, emissions would not represent a global increase. Thus, the estimates generated by CalEEMod are a conservative, "worst-case" estimate to evaluate operation relative to the 900 MT City of San Diego threshold.

Estimate of GHG Emissions

Construction Emissions. Construction activity is assumed to occur over a period of approximately three years between 2015 and 2017. Based on CalEEMod results, construction activity associated with the proposed project would generate an estimated 948 metric tons of carbon dioxide equivalent (CO_2E), as shown in Table 7. Amortized over a 30-year period (the assumed life of the project), construction of the project would generate 31.6 metric tons of CO_2E per year.

Table 7
Estimated Construction Related Greenhouse Gas Emissions

Year	Annual Emissions (MT CO_2E)
2015	549
2016	360
2017	39
Total	948
Amortized over 30 years	**31.6 metric tons per year**

See Appendix for CalEEMod software program output for new construction.

Operational Indirect and Stationary Direct Emissions. Long-term emissions relate to energy use, solid waste, water use, and transportation. Each source is discussed below and includes the emissions associated with the proposed improvements.

Energy Use. School operation would consume both electricity and natural gas (see Appendix A). The generation of electricity through combustion of fossil fuels typically yields CO_2, and to a smaller extent, N_2O and CH_4. Natural gas emissions can be calculated using default values from the CEC sponsored CEUS and RASS studies which are built into CalEEMod. As shown in Table 8, the energy use within project would result in approximately 211 metric tons of CO_2E per year.

Table 8
Estimated Annual Energy-Related Greenhouse Gas Emissions

Emission Source	Annual Emissions (MT CO_2E)
Proposed Project	
Electricity Natural Gas	181 metric tons 30 metric tons
Total	**211 metric tons**

See Appendix for CalEEMod software program output. Numbers may not add up due to rounding.

Area Emissions. CalEEMod was used to calculate direct sources of air emissions located throughout the school. This includes hearths, consumer product use, architectural coatings, and landscape maintenance equipment. For the proposed project, landscape equipment would be the only area source and emissions associated with the operation of landscaping equipment would generate approximately.00017 metric tons of CO_2E per year.

Table 9
Estimated Annual Area Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Landscaping	0.00017 metric tons
Total Area Emissions	**0.00017 metric tons**

See Appendix for CalEEMod software program output.

Solid Waste Emissions. The CalEEMod results indicate that the proposed school would result in the generation of approximately 120 tons of solid waste assuming no on-site recycling. This would equate to 54.8 metric tons of CO_2E per year associated with solid waste disposed within landfills (see Table 10).

Table 10
Estimated Annual Solid Waste Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Proposed Project	54.8 metric tons
Total Emissions	**54.8 metric tons**

See Appendix for CalEEMod software program output
**Assumes existing uses onsite are diverting 50% of waste in accordance with AB 939.*

Water Use Emissions. Based on the amount of electricity generated to supply and convey water for the school, as shown in Table 11, water use would generate approximately 40 metric tons of CO_2E per year.

Table 11
Estimated Annual Water Use Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Proposed Project	40 metric tons
Total Emissions	**40 metric tons**

See Appendix for CalEEMod software program output.

Transportation Emissions. Mobile source GHG emissions were estimated using the average daily trips calculated by CalEEMod. Table 12 shows the estimated mobile emissions of GHGs based on the estimated annual VMT. CalEEMod does not calculate N_2O emissions related to mobile sources. As such, N_2O emissions were calculated based on the VMT using calculation methods provided by the California Climate Action Registry General Reporting Protocol (January 2009). As shown in Table 15, the project would generate 1,033 metric tons per year of mobile source related GHG emissions.

Table 12
Estimated Annual Mobile Emissions of Greenhouse Gases

Emission Source	Annual Emissions (CO_2E)
Proposed Project	
Mobile Emissions (CO_2 & CH_4) Mobile Emissions (N_2O) [1] *Subtotal*	984 metric tons 49 metric tons *1,033 metric tons*
Total	**1,033 metric tons**

See Appendix for CalEEMod software program output.
[1] California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1,January 2009, page 30-35. See Appendix for calculations.

Combined Construction, Stationary and Mobile Source Emissions. Table 13 combines the net construction, operational, and mobile GHG emissions associated with the proposed project. As discussed above, temporary emissions associated with construction activity are amortized over 30 years (the anticipated life of the project).

Table 13
Combined Annual Net New GHG Emissions from Proposed Project

Emission Source	Annual Emissions (CO_2E)
Existing Uses	
Construction	31.6 metric tons
Operation	
Energy	211 metric tons
Area	0.00017 metric tons
Solid Waste	54.8 metric tons
Water	40 metric tons
Mobile	1,033 metric tons
Total Emissions	**1,370.4 metric tons**

The combined annual CO_2E emissions would total approximately 1,370.4 metric tons.

GHG Cumulative Significance. As discussed above, the calculations shown in Tables 7 through 13 assume unmitigated "business as usual" (BAU) emissions. The BAU calculation is an estimate of GHG emissions that would be expected to occur without any GHG reducing features or mitigation, consistent with AB 32. In the absence of specific federal, state or local thresholds, GHG emissions associated with a specific project are not considered cumulatively considerable if design and operational features incorporated into a project reduces emissions by more than approximately 28.3% (the statewide average that is commonly acceptable). As shown in Table 13, BAU GHG emissions would exceed the 900 annual MT screening threshold. Therefore, a 28.3% (388 MT of CO_2E) reduction in BAU emissions must be demonstrated to avoid a significant GHG impact.

GHG emissions would be reduced relative to the BAU scenario as a result of project amenities and design and operational features along with state and federal GHG reduction measures. The project would reduce vehicle trips compared to BAU because of its proximity to existing residential areas and walkability. The school would be required to achieve at least a 50% waste diversion rate in accordance with AB 939 and to incorporate low flow plumbing fixtures in accordance with California Building Standards Code 2014 Edition. Table 14 shows the mitigated GHG emissions associated with implementing the above-referenced design/operational features. With implementation of these features, GHG emissions would be reduced by 78.7 MT CO_2E annually or 5.74%.

Table 15 lists existing State measures for GHG emissions reductions and quantifies the total reduction in metric tons of CO_2E per year that the project would generate in comparison to the BAU scenario. As shown in Table 15, implementation of State measures would reduce project area emissions by an estimated 363.3 CO_2E per year.

As shown in Table 16, design features (Table 14) and State reduction measures (Table 15) would have a combined total reduction of approximately 415 MT CO_2E per year or approximately 30.28%. As such, GHG emissions associated with the project would be reduced by more than 28.3% as compared to the BAU scenario. Therefore, impacts related to GHG emissions would be less than significant based on City criteria.

Table 14
Combined Annual GHG Emissions with Design Features to Reduce Emissions

Emission Source / Design Feature to Reduce GHG Emissions	Reduction in Annual Emissions ($MT\ CO_2E$)
Solid Waste Implement on –site recycling program to achieve 50% landfill diversion.	(27.4)
Water Water Use Reduction a) Low Flow Plumbing Fixtures – Install low flow plumbing fixtures in all building to reduce water use. b) Drought Tolerant Landscaping – Install landscaping throughout the site that would provid shade trees and carbon storage.	(4.5)
Transportation a) Improve pedestrian network b) School bus services Mobile Emissions (CO_2 & CH_4) Mobile Emissions (N_2O)	(44.7) (2.1)
Total Reduction from with Design Features to Reduce GHG Emissions	**(78.7 MT CO_2E)**
Total Emissions from Project with Design Features to Reduce GHG Emissions	**1,291.7 MT CO_2E**
BAU Total	**1,370.4 MT CO_2E**
% Reduction of Emissions Compared to BAU Total	**(5.74%)**

Sources: See Appendix for calculations and for GHG emission factor assumptions
( ) denotes reduction

Table 15
Existing State Measures For Greenhouse Gas Emissions Reductions

Measure	Sector	% Reduction from Business-As-Usual Scenario (Sector Specific)[1]	Total CO_2E from Business-As-Usual Scenario Sector[2]	Reduction in Annual Emissions (MT CO_2E)
Renewable Portfolio Standard (33% by 2020)	Energy Use (Electricity)	15.30%	181.3	(27.7)
Renewable Electricity Standard	Energy Use (Electricity)	14.25%	181.3	(25.8)
2013 Title 24 Energy Code Requirements	Energy Use (Natural Gas and Electricity)	15%	30.8	(4.6)
Assembly Bill 1493: Pavley I & II	Transportation	14.06%	939.2	(132)
Medium/Heavy Duty Vehicles (Aerodynamic Efficiency and Vehicle Hybridization)	Transportation	0.62%	939.2	(58.2)
Regional Transportation Related GHG Targets (SB 375)	Transportation	3.75%	939.2	(35.2)
Vehicle Efficiency Measures	Transportation	5.625%	939.2	(52.8)
State Measure Reduction				**(336.3)**
Total Emissions from Project with Existing State Measures to Reduce GHG Emissions				**1,034.1 MT CO_2E**
Percent Reduction from Total Business As Usual Emissions				**24.5%**

[1] Percent reduction from business as usual calculated based on the ARB Scoping Plan reductions for sector-specific activity. ARB Scoping Plan, December 2008.
[2] Emissions from individual sectors as listed in Table 14: Combined Annual Emissions of Greenhouse Gases Business As Usual Scenario.
( ) denotes reduction

Table 16
Total Reduction of Greenhouse Gases

Business-As-Usual Total GHG from Project	1,370.4 metric tons CO_2E
Combined Reductions from Project Design Features and State Measures	(415 metric tons CO_2E)
Project Total	955.4 metric tons CO_2E
% Reduction from Business-As-Usual	**30.28%**

Consistency with Applicable Mitigation Strategies

As mentioned previously, the City's CPAP, adopted in 2005, aims to achieve at least a 15% reduction in CO_2 emissions through energy efficiency, renewable energy, and cleaner fuels. Specifically, the plan identifies a set of actions that will reduce emissions from City operations. The CPAP does not include specific strategies for the community or for projects within the City to reduce emissions. As the proposed project does not involve City operations, it would not conflict with the CPAP.

As noted, the City of San Diego is currently in the process of developing a CAP. The CAP would identify strategies and measures to meet GHG reduction targets. The draft CAP includes five categories of strategies to reduce GHG sources: energy & water efficient buildings, clean & renewable energy, multimodal transportation options, zero waste management, and urban forest & local food production. The project would include energy efficiency and waste reduction features. Therefore, the project would be generally consistent with the draft CAP.

Table 17 shows project consistency with the City San Diego General Plan's Climate Change and Sustainable Policies (2008). As discussed above, the proposed modernization project would incorporate a number of design features intended to reduce GHG emissions.

Table 17
Proposed Project's Consistency with Applicable
San Diego General Plan Climate Change and Sustainable Policies

Policy	Project Consistency
Conservation Element	
CE-A.2. Reduce the City's carbon footprint. Develop and adopt new or amended regulations, programs, and incentives as appropriate to implement the goals and policies set forth in the General Plan to: • Create sustainable and efficient land use patterns to reduce vehicular trips and preserve open space; • Reduce fuel emission levels by encouraging alternative modes of transportation and increasing fuel efficiency; • Improve energy efficiency, especially in the transportation sector and buildings and appliances; • Reduce the Urban Heat Island effect through sustainable design and building practices, as well as planting trees (consistent with habitat and water conservation policies) for their many environmental benefits, including natural carbon sequestration; • Reduce waste by improving management and recycling programs; • Plan for water supply and emergency reserves.	**Consistent** The proposed project would redevelop an existing school site. The school is located in proximity to residential areas to facilitate walking and pedestrian orientation. The project would promote alternative transportation and would reduce overall vehicle travel by encouraging the use of school buses, bicycling and walking. Development would adhere to current Title 24 California Building Code standards for energy efficiency. The project would be required to divert at least 50% of its solid waste thereby reducing waste by improving management and recycling programs. Development would also be subject to all applicable State and City requirements for solid waste reduction as they change in the future.

Table 17
Proposed Project's Consistency with Applicable
San Diego General Plan Climate Change and Sustainable Policies

Policy	Project Consistency
CE-A.5. Employ sustainable or "green" building techniques for the construction and operation of buildings. a. Develop and implement sustainable building standards for new and significant remodels of residential and commercial buildings to maximize energy efficiency, and to achieve overall net zero energy consumption by 2020 for new residential buildings and 2030 for new commercial buildings. This can be accomplished through factors including, but not limited to: o Designing mechanical and electrical systems that achieve greater energy efficiency with currently available technology; o Minimizing energy use through innovative site design and building orientation that addresses factors such as sun-shade patterns, prevailing winds, landscape, and sun-screens; o Employing self generation of energy using renewable technologies; o Combining energy efficient measures that have longer payback periods with measures that have shorter payback periods; o Reducing levels of non-essential lighting, heating and cooling; and o Using energy efficient appliances and lighting. b. Provide technical services for "green" buildings in partnership with other agencies and organizations.	**Consistent** Development would adhere to current Title 24 California Building Code standards for energy efficiency.
CE-A.9. Reuse building materials, use materials that have recycled content, or use materials that are derived from sustainable or rapidly renewable sources to the extent possible, through factors including: • Scheduling time for deconstruction and recycling activities to take place during project demolition and construction phases; • Using life cycle costing in decision-making for materials and construction techniques. Life cycle costing analyzes the costs and benefits over the life of a particular product, technology, or system; • Removing code obstacles to using recycled materials in buildings and for construction; and • Implementing effective economic incentives to recycle construction and demolition debris.	**Consistent** Development would be required to divert at least 50% of its solid waste in compliance with AB 939.

Table 17
Proposed Project's Consistency with Applicable San Diego General Plan Climate Change and Sustainable Policies

Policy	Project Consistency
CE-A.11. Implement sustainable landscape design and maintenance. a. Use integrated pest management techniques, where feasible, to delay, reduce, or eliminate dependence on the use of pesticides, herbicides, and synthetic fertilizers. b. Encourage composting efforts through education, incentives, and other activities. c. Decrease the amount of impervious surfaces in developments, especially where public places, plazas and amenities are proposed to serve as recreation opportunities d. Strategically plant deciduous shade trees, evergreen trees, and drought tolerant native vegetation, as appropriate, to contribute to sustainable development goals. e. Reduce use of lawn types that require high levels of irrigation. f. Strive to incorporate existing mature trees and native vegetation into site designs. g. Minimize the use of landscape equipment powered by fossil fuels. h. Implement water conservation measures in site/building design and landscaping. i. Encourage the use of high efficiency irrigation technology, and recycled site water to reduce the use of potable water for irrigation. Use recycled water to meet the needs of development projects to the maximum extent feasible.	**Consistent** As required by the City's Municipal Code (Section 147.0301) development would be equipped with ultra low-water use plumbing fixtures, reducing water use at the project site.
CE-A.12. Reduce the San Diego Urban Heat Island, through actions such as: • Using cool roofing materials, such as reflective, low heat retention tiles, membranes and coatings, or vegetated eco-roofs to reduce heat build-up; • Planting trees and other vegetation, to provide shade and cool air temperatures. In particular, properly position trees to shade buildings, air conditioning units, and parking lots; and • Reducing heat build up in parking lots through increased shading or use of cool paving materials as feasible.	**Consistent** The proposed development would include the use of cool roof material and parking lot pavers in the design. Further, the project landscape design would be consistent with San Diego Municipal Code landscaping regulations.
CE-F.2. Continue to upgrade energy conservation in City buildings and support community outreach efforts to achieve similar goals in the community.	**Consistent** Development would adhere to current Title 24 California Building Code standards for energy efficiency.

Table 17
Proposed Project's Consistency with Applicable San Diego General Plan Climate Change and Sustainable Policies

Policy	Project Consistency
CE-F.4. Preserve and plant trees, and vegetation that are consistent with habitat and water conservation policies and that absorb carbon dioxide and pollutants.	**Consistent** Development would be required to landscape in accordance with San Diego Municipal Code landscaping regulations.
CE-F.6. Encourage and provide incentives for the use of alternatives to single-occupancy vehicle use, including using public transit, carpooling, vanpooling, teleworking, bicycling, and walking. Continue to implement programs to provide City employees with incentives for the use of alternatives to single-occupancy vehicles.	**Consistent** The project site is located in proximity to existing residential areas and would emphasize pedestrian orientation. The project would promote alternative transportation and would reduce overall vehicle travel by encouraging the use of bicycling and walking.
CE-I.7. Pursue investments in energy efficiency and direct sustained efforts towards eliminating inefficient energy use.	**Consistent** Development would adhere to current Title 24 California Building Code standards for energy efficiency.
CE-J.1. Develop, nurture, and protect a sustainable urban/community forest. a. Seek resources and take actions needed to plant, care for, and protect trees in the public right-of-way and parks and those of significant importance in our communities. b. Plant large canopy shade trees, where appropriate and with consideration of habitat and water conservation goals, in order to maximize environmental benefits. c. Seek to retain significant and mature trees. d. Provide forest linkages to connect and enhance public parks, plazas, recreation and open space areas.	**Consistent** Development would be required to landscape in accordance with San Diego Municipal Code landscaping regulations.
CE-J.4. Continue to require the planting of trees through the development permit process. a. Consider tree planting as mitigation for air pollution emissions, storm water runoff, and other environmental impacts as appropriate.	**Consistent** Development would be required to landscape in accordance with San Diego Municipal Code landscaping regulations.
Mobility Element	
ME-F.5. Increase the number of bicycle-transit trips by coordinating with transit agencies to provide safe routes to transit stops and stations, to provide secure bicycle parking facilities, and to accommodate bicycles on transit vehicles.	**Consistent** The project is located in proximity to residential areas and would emphasize pedestrian orientation. The project would therefore promote alternative transportation and would reduce overall vehicle travel by encouraging the use of bicycling and walking.

Table 17
Proposed Project's Consistency with Applicable
San Diego General Plan Climate Change and Sustainable Policies

Policy	Project Consistency
ME-E.6. Require new development to have site designs and on-site amenities that support alternative modes of transportation. Emphasize pedestrian and bicycle-friendly design, accessibility to transit, and provision of amenities that are supportive and conducive to implementing TDM strategies such as car sharing vehicles and parking spaces, bike lockers, preferred rideshare parking, showers and lockers, on-site food service, and child care, where appropriate.	**Consistent** The project is located in proximity to residential areas and would emphasize pedestrian orientation. The project would therefore promote alternative transportation and would reduce overall vehicle travel by encouraging the use of bicycling and walking.

In addition to the above policies from the General Plan, the OPR CEQA Guidelines (Appendix F) include recommended mitigation strategies to reduce energy use. According to this document, mitigation measures may include:

1. *Potential measures to reduce wasteful, inefficient and unnecessary consumption of energy during construction, operation, maintenance and/or removal.*
2. *The potential of siting, orientation, and design to minimize energy consumption, including transportation energy, water conservation and solid-waste reduction.*
3. *The potential for reducing peak energy demand.*
4. *Alternative fuels (particularly renewable ones) or energy systems.*
5. *Energy conservation which could result from recycling efforts.*

As discussed above, the proposed project would not require mitigation measures as it would incorporate design features that would reduce GHG emissions by more than 28.3% over BAU. Further, the design features considered in this analysis incorporate many of the design features included on the San Diego Unified School District, Collaborative for High Performance Schools (SDUSD CHPS) 2009 Master scorecard prepared for the proposed modernization project. The project is located in proximity to existing public transportation and would facilitate both bicycle and pedestrian access. It would also minimize energy consumption, including transportation energy, water conservation and solid-waste reduction through building siting, orientation, and design. Therefore, the whole site modernization project would promote land use alterations that limit air emissions and reduce wasteful, inefficient and unnecessary energy consumption. In addition, the project would be required through permit conditions to be designed to comply with requirements of Part 6, Title 24 of the California Building Standards Code – California Energy Code. San Diego's solid waste diversion rate was 55% in 2006 and 68% in 2012. It is anticipated that the school would implement a recycling service during construction and operation of the project and would be in compliance with AB 939, diverting at least 50% of its solid waste. Further, the project would be consistent with the Climate Change and Sustainable Policies in the City's General Plan as discussed in Table 17, as well as with OPR strategies referenced above. Therefore, the project would be consistent with applicable GHG reduction plans, policies and regulations including the objectives of AB 32, SB 97, SB 375 and the SDUSD CHPS program. Impacts related to climate change would be less than significant.

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Appendix A

CalEEMod Air Quality and Greenhouse Gas Emissions Model Results –
(Summer/Annual Proposed Project)
N_2O from Mobile Emissions Sources

Grant K-8 Whole Site Modernization

San Diego Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	92.80	1000sqft	2.13	92,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assumes all improvements will occur within construction phasing provided herein

Construction Phase - Construction duration is based on assumptions and general understanding of phasing.

Grading - Construction disturbance based on estimates and assumptions regarding phasing

Vehicle Trips -

Woodstoves -

Area Coating -

Sequestration - Assumes trees will be retained on site and 25 new trees will be planted.

Construction Off-road Equipment Mitigation -

Mobile Commute Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Trips and VMT - 4,900 CY3 of soil removed at 20 yards per truck.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	NumDays	220.00	365.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	6.00	30.00
tblConstructionPhase	NumDays	3.00	82.00
tblConstructionPhase	PhaseEndDate	1/20/2017	1/23/2017
tblConstructionPhase	PhaseStartDate	8/29/2015	9/1/2015
tblConstructionPhase	PhaseStartDate	7/18/2015	7/20/2015
tblGrading	AcresOfGrading	15.00	3.00
tblGrading	AcresOfGrading	123.00	4.50
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	245.00
tblTripsAndVMT	VendorTripNumber	0.00	245.00

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					
2015	0.5799	5.0860	4.2193	6.0100e-003	0.1868	0.2452	0.4319	0.0761	0.2295	0.3056	0.0000	547.5806	547.5806	0.0798	0.0000	549.2558
2016	0.5224	3.4288	2.6693	4.2100e-003	0.0536	0.2153	0.2688	0.0145	0.2061	0.2205	0.0000	358.7410	358.7410	0.0665	0.0000	360.1376
2017	1.1233	0.3438	0.2863	4.7000e-004	5.8100e-003	0.0222	0.0280	1.5600e-003	0.0213	0.0228	0.0000	39.7172	39.7172	7.2500e-003	0.0000	39.8694
Total	**2.2256**	**8.8586**	**7.1748**	**0.0107**	**0.2461**	**0.4827**	**0.7288**	**0.0921**	**0.4568**	**0.5489**	**0.0000**	**946.0387**	**946.0387**	**0.1535**	**0.0000**	**949.2627**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.5799	5.0860	4.2193	6.0100e-003	0.1868	0.2452	0.4319	0.0761	0.2295	0.3056	0.0000	547.5803	547.5803	0.0798	0.0000	549.2554
2016	0.5224	3.4288	2.6693	4.2100e-003	0.0536	0.2153	0.2688	0.0145	0.2061	0.2205	0.0000	358.7406	358.7406	0.0665	0.0000	360.1372
2017	1.1233	0.3438	0.2863	4.7000e-004	5.8100e-003	0.0222	0.0280	1.5600e-003	0.0213	0.0228	0.0000	39.7171	39.7171	7.2500e-003	0.0000	39.8693
Total	**2.2255**	**8.8586**	**7.1748**	**0.0107**	**0.2461**	**0.4827**	**0.7288**	**0.0921**	**0.4568**	**0.5489**	**0.0000**	**946.0380**	**946.0380**	**0.1535**	**0.0000**	**949.2620**

	ROG	NOx	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**	**0.01**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4701	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6600e-003	1.6600e-003	0.0000	0.0000	1.7600e-003
Energy	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	211.4574	211.4574	7.8600e-003	2.0700e-003	212.2637
Mobile	0.6559	1.3907	6.4284	0.0124	0.8480	0.0171	0.8651	0.2268	0.0157	0.2425	0.0000	982.9981	982.9981	0.0437	0.0000	983.9148
Waste						0.0000	0.0000		0.0000	0.0000	24.4888	0.0000	24.4888	1.4473	0.0000	54.8811
Water						0.0000	0.0000		0.0000	0.0000	0.8537	36.5745	37.4282	0.0892	2.3700e-003	40.0367
Total	**1.1290**	**1.4190**	**6.4530**	**0.0126**	**0.8480**	**0.0193**	**0.8672**	**0.2268**	**0.0179**	**0.2447**	**25.3425**	**1,231.0316**	**1,256.3741**	**1.5879**	**4.4400e-003**	**1,291.0980**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4701	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6600e-003	1.6600e-003	0.0000	0.0000	1.7600e-003
Energy	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	211.4574	211.4574	7.8600e-003	2.0700e-003	212.2637
Mobile	0.6467	1.3375	6.2316	0.0119	0.8081	0.0164	0.8244	0.2161	0.0151	0.2312	0.0000	938.4113	938.4113	0.0419	0.0000	939.2907
Waste						0.0000	0.0000		0.0000	0.0000	12.2444	0.0000	12.2444	0.7236	0.0000	27.4405
Water						0.0000	0.0000		0.0000	0.0000	0.6830	32.7518	33.4347	0.0715	1.9300e-003	35.5324
Total	**1.1198**	**1.3657**	**6.2562**	**0.0120**	**0.8081**	**0.0185**	**0.8266**	**0.2161**	**0.0172**	**0.2333**	**12.9274**	**1,182.6221**	**1,195.5495**	**0.8448**	**4.0000e-003**	**1,214.5291**

	ROG	**NOx**	**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	**0.81**	**3.76**	**3.05**	**4.45**	**4.71**	**3.84**	**4.69**	**4.71**	**3.80**	**4.63**	**48.99**	**3.93**	**4.84**	**46.80**	**9.91**	**5.93**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	0.0000
Total	**0.0000**

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	1/1/2015	3/25/2015	5	60	
2	Site Preparation	Site Preparation	3/26/2015	7/17/2015	5	82	
3	Grading	Grading	7/20/2015	8/28/2015	5	30	
4	Building Construction	Building Construction	9/1/2015	1/23/2017	5	365	
5	Paving	Paving	1/24/2017	2/6/2017	5	10	
6	Architectural Coating	Architectural Coating	2/7/2017	5/1/2017	5	60	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 139,200; Non-Residential Outdoor: 46,400 (Architectural Coating – sqft)

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	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
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
Demolition	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	245.00	245.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	39.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0920	0.8903	0.6617	7.3000e-004		0.0560	0.0560		0.0524	0.0524	0.0000	68.2854	68.2854	0.0173	0.0000	68.6488
Total	**0.0920**	**0.8903**	**0.6617**	**7.3000e-004**		**0.0560**	**0.0560**		**0.0524**	**0.0524**	**0.0000**	**68.2854**	**68.2854**	**0.0173**	**0.0000**	**68.6488**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	1.4700e-003	1.9500e-003	0.0187	4.0000e-005	3.1300e-003	3.0000e-005	3.1500e-003	8.3000e-004	2.0000e-005	8.5000e-004	0.0000	3.0203	3.0203	1.7000e-004	0.0000	3.0238
Total	**1.4700e-003**	**1.9500e-003**	**0.0187**	**4.0000e-005**	**3.1300e-003**	**3.0000e-005**	**3.1500e-003**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**0.0000**	**3.0203**	**3.0203**	**1.7000e-004**	**0.0000**	**3.0238**

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	0.0920	0.8903	0.6617	7.3000e-004		0.0560	0.0560		0.0524	0.0524	0.0000	68.2853	68.2853	0.0173	0.0000	68.6487
Total	**0.0920**	**0.8903**	**0.6617**	**7.3000e-004**		**0.0560**	**0.0560**		**0.0524**	**0.0524**	**0.0000**	**68.2853**	**68.2853**	**0.0173**	**0.0000**	**68.6487**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	1.4700e-003	1.9500e-003	0.0187	4.0000e-005	3.1300e-003	3.0000e-005	3.1500e-003	8.3000e-004	2.0000e-005	8.5000e-004	0.0000	3.0203	3.0203	1.7000e-004	0.0000	3.0238
Total	**1.4700e-003**	**1.9500e-003**	**0.0187**	**4.0000e-005**	**3.1300e-003**	**3.0000e-005**	**3.1500e-003**	**8.3000e-004**	**2.0000e-005**	**8.5000e-004**	**0.0000**	**3.0203**	**3.0203**	**1.7000e-004**	**0.0000**	**3.0238**

3.3 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1156	1.3313	0.7659	9.8000e-004		0.0655	0.0655		0.0603	0.0603	0.0000	93.2914	93.2914	0.0279	0.0000	93.8762
Total	**0.1156**	**1.3313**	**0.7659**	**9.8000e-004**	**2.3900e-003**	**0.0655**	**0.0679**	**2.6000e-004**	**0.0603**	**0.0605**	**0.0000**	**93.2914**	**93.2914**	**0.0279**	**0.0000**	**93.8762**

3.3 Site Preparation - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.9400e-003	0.0415	0.0318	9.0000e-005	2.0900e-003	6.2000e-004	2.7100e-003	5.7000e-004	5.7000e-004	1.1500e-003	0.0000	8.4680	8.4680	7.0000e-005	0.0000	8.4695
Vendor	0.1294	1.1300	1.4856	2.3900e-003	0.0653	0.0180	0.0834	0.0187	0.0166	0.0353	0.0000	219.3021	219.3021	1.9200e-003	0.0000	219.3425
Worker	1.2400e-003	1.6400e-003	0.0157	3.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.5401	2.5401	1.4000e-004	0.0000	2.5431
Total	**0.1336**	**1.1731**	**1.5330**	**2.5100e-003**	**0.0701**	**0.0187**	**0.0887**	**0.0200**	**0.0172**	**0.0372**	**0.0000**	**230.3102**	**230.3102**	**2.1300e-003**	**0.0000**	**230.3550**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1156	1.3313	0.7659	9.8000e-004		0.0655	0.0655		0.0603	0.0603	0.0000	93.2913	93.2913	0.0279	0.0000	93.8761
Total	**0.1156**	**1.3313**	**0.7659**	**9.8000e-004**	**2.3900e-003**	**0.0655**	**0.0679**	**2.6000e-004**	**0.0603**	**0.0605**	**0.0000**	**93.2913**	**93.2913**	**0.0279**	**0.0000**	**93.8761**

3.3 Site Preparation - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.9400e-003	0.0415	0.0318	9.0000e-005	2.0900e-003	6.2000e-004	2.7100e-003	5.7000e-004	5.7000e-004	1.1500e-003	0.0000	8.4680	8.4680	7.0000e-005	0.0000	8.4695
Vendor	0.1294	1.1300	1.4856	2.3900e-003	0.0653	0.0180	0.0834	0.0187	0.0166	0.0353	0.0000	219.3021	219.3021	1.9200e-003	0.0000	219.3425
Worker	1.2400e-003	1.6400e-003	0.0157	3.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.5401	2.5401	1.4000e-004	0.0000	2.5431
Total	**0.1336**	**1.1731**	**1.5330**	**2.5100e-003**	**0.0701**	**0.0187**	**0.0887**	**0.0200**	**0.0172**	**0.0372**	**0.0000**	**230.3102**	**230.3102**	**2.1300e-003**	**0.0000**	**230.3550**

3.4 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0919	0.0000	0.0919	0.0498	0.0000	0.0498	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0445	0.4689	0.3030	3.1000e-004		0.0263	0.0263		0.0242	0.0242	0.0000	29.4486	29.4486	8.7900e-003	0.0000	29.6332
Total	**0.0445**	**0.4689**	**0.3030**	**3.1000e-004**	**0.0919**	**0.0263**	**0.1182**	**0.0498**	**0.0242**	**0.0740**	**0.0000**	**29.4486**	**29.4486**	**8.7900e-003**	**0.0000**	**29.6332**

3.4 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	5.7000e-004	7.5000e-004	7.1800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1616	1.1616	6.0000e-005	0.0000	1.1630
Total	**5.7000e-004**	**7.5000e-004**	**7.1800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1616**	**1.1616**	**6.0000e-005**	**0.0000**	**1.1630**

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					0.0919	0.0000	0.0919	0.0498	0.0000	0.0498	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0445	0.4689	0.3030	3.1000e-004		0.0263	0.0263		0.0242	0.0242	0.0000	29.4486	29.4486	8.7900e-003	0.0000	29.6332
Total	**0.0445**	**0.4689**	**0.3030**	**3.1000e-004**	**0.0919**	**0.0263**	**0.1182**	**0.0498**	**0.0242**	**0.0740**	**0.0000**	**29.4486**	**29.4486**	**8.7900e-003**	**0.0000**	**29.6332**

3.4 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	5.7000e-004	7.5000e-004	7.1800e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.1616	1.1616	6.0000e-005	0.0000	1.1630
Total	**5.7000e-004**	**7.5000e-004**	**7.1800e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.1616**	**1.1616**	**6.0000e-005**	**0.0000**	**1.1630**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1772	1.1369	0.7501	1.1000e-003		0.0774	0.0774		0.0742	0.0742	0.0000	94.3649	94.3649	0.0226	0.0000	94.8395
Total	**0.1772**	**1.1369**	**0.7501**	**1.1000e-003**		**0.0774**	**0.0774**		**0.0742**	**0.0742**	**0.0000**	**94.3649**	**94.3649**	**0.0226**	**0.0000**	**94.8395**

3.5 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.5000e-003	0.0743	0.0976	1.6000e-004	4.2900e-003	1.1900e-003	5.4800e-003	1.2300e-003	1.0900e-003	2.3200e-003	0.0000	14.4091	14.4091	1.3000e-004	0.0000	14.4118
Worker	6.4700e-003	8.5700e-003	0.0822	1.7000e-004	0.0138	1.1000e-004	0.0139	3.6600e-003	1.0000e-004	3.7600e-003	0.0000	13.2891	13.2891	7.3000e-004	0.0000	13.3045
Total	**0.0150**	**0.0828**	**0.1798**	**3.3000e-004**	**0.0181**	**1.3000e-003**	**0.0194**	**4.8900e-003**	**1.1900e-003**	**6.0800e-003**	**0.0000**	**27.6982**	**27.6982**	**8.6000e-004**	**0.0000**	**27.7163**

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	0.1772	1.1369	0.7501	1.1000e-003		0.0774	0.0774		0.0742	0.0742	0.0000	94.3648	94.3648	0.0226	0.0000	94.8394
Total	**0.1772**	**1.1369**	**0.7501**	**1.1000e-003**		**0.0774**	**0.0774**		**0.0742**	**0.0742**	**0.0000**	**94.3648**	**94.3648**	**0.0226**	**0.0000**	**94.8394**

3.5 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.5000e-003	0.0743	0.0976	1.6000e-004	4.2900e-003	1.1900e-003	5.4800e-003	1.2300e-003	1.0900e-003	2.3200e-003	0.0000	14.4091	14.4091	1.3000e-004	0.0000	14.4118
Worker	6.4700e-003	8.5700e-003	0.0822	1.7000e-004	0.0138	1.1000e-004	0.0139	3.6600e-003	1.0000e-004	3.7600e-003	0.0000	13.2891	13.2891	7.3000e-004	0.0000	13.3045
Total	**0.0150**	**0.0828**	**0.1798**	**3.3000e-004**	**0.0181**	**1.3000e-003**	**0.0194**	**4.8900e-003**	**1.1900e-003**	**6.0800e-003**	**0.0000**	**27.6982**	**27.6982**	**8.6000e-004**	**0.0000**	**27.7163**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4827	3.2145	2.1815	3.2500e-003		0.2122	0.2122		0.2032	0.2032	0.0000	278.4742	278.4742	0.0642	0.0000	279.8216
Total	**0.4827**	**3.2145**	**2.1815**	**3.2500e-003**		**0.2122**	**0.2122**		**0.2032**	**0.2032**	**0.0000**	**278.4742**	**278.4742**	**0.0642**	**0.0000**	**279.8216**

3.5 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0223	0.1913	0.2679	4.7000e-004	0.0127	2.8200e-003	0.0156	3.6400e-003	2.5900e-003	6.2300e-003	0.0000	42.2324	42.2324	3.3000e-004	0.0000	42.2394
Worker	0.0175	0.0231	0.2198	5.0000e-004	0.0408	3.1000e-004	0.0411	0.0109	2.9000e-004	0.0111	0.0000	38.0344	38.0344	2.0100e-003	0.0000	38.0766
Total	**0.0397**	**0.2143**	**0.4878**	**9.7000e-004**	**0.0535**	**3.1300e-003**	**0.0567**	**0.0145**	**2.8800e-003**	**0.0174**	**0.0000**	**80.2668**	**80.2668**	**2.3400e-003**	**0.0000**	**80.3160**

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	0.4827	3.2145	2.1815	3.2500e-003		0.2122	0.2122		0.2032	0.2032	0.0000	278.4738	278.4738	0.0642	0.0000	279.8213
Total	**0.4827**	**3.2145**	**2.1815**	**3.2500e-003**		**0.2122**	**0.2122**		**0.2032**	**0.2032**	**0.0000**	**278.4738**	**278.4738**	**0.0642**	**0.0000**	**279.8213**

3.5 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	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	0.0223	0.1913	0.2679	4.7000e-004	0.0127	2.8200e-003	0.0156	3.6400e-003	2.5900e-003	6.2300e-003	0.0000	42.2324	42.2324	3.3000e-004	0.0000	42.2394
Worker	0.0175	0.0231	0.2198	5.0000e-004	0.0408	3.1000e-004	0.0411	0.0109	2.9000e-004	0.0111	0.0000	38.0344	38.0344	2.0100e-003	0.0000	38.0766
Total	**0.0397**	**0.2143**	**0.4878**	**9.7000e-004**	**0.0535**	**3.1300e-003**	**0.0567**	**0.0145**	**2.8800e-003**	**0.0174**	**0.0000**	**80.2668**	**80.2668**	**2.3400e-003**	**0.0000**	**80.3160**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0266	0.1829	0.1300	2.0000e-004		0.0117	0.0117		0.0112	0.0112	0.0000	16.9451	16.9451	3.7700e-003	0.0000	17.0242
Total	**0.0266**	**0.1829**	**0.1300**	**2.0000e-004**		**0.0117**	**0.0117**		**0.0112**	**0.0112**	**0.0000**	**16.9451**	**16.9451**	**3.7700e-003**	**0.0000**	**17.0242**

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2500e-003	0.0105	0.0155	3.0000e-005	7.8000e-004	1.5000e-004	9.3000e-004	2.2000e-004	1.4000e-004	3.6000e-004	0.0000	2.5452	2.5452	2.0000e-005	0.0000	2.5456
Worker	9.7000e-004	1.2800e-003	0.0122	3.0000e-005	2.5000e-003	2.0000e-005	2.5200e-003	6.6000e-004	2.0000e-005	6.8000e-004	0.0000	2.2415	2.2415	1.1000e-004	0.0000	2.2439
Total	**2.2200e-003**	**0.0118**	**0.0277**	**6.0000e-005**	**3.2800e-003**	**1.7000e-004**	**3.4500e-003**	**8.8000e-004**	**1.6000e-004**	**1.0400e-003**	**0.0000**	**4.7867**	**4.7867**	**1.3000e-004**	**0.0000**	**4.7895**

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	0.0266	0.1829	0.1300	2.0000e-004		0.0117	0.0117		0.0112	0.0112	0.0000	16.9451	16.9451	3.7700e-003	0.0000	17.0242
Total	**0.0266**	**0.1829**	**0.1300**	**2.0000e-004**		**0.0117**	**0.0117**		**0.0112**	**0.0112**	**0.0000**	**16.9451**	**16.9451**	**3.7700e-003**	**0.0000**	**17.0242**

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.2500e-003	0.0105	0.0155	3.0000e-005	7.8000e-004	1.5000e-004	9.3000e-004	2.2000e-004	1.4000e-004	3.6000e-004	0.0000	2.5452	2.5452	2.0000e-005	0.0000	2.5456
Worker	9.7000e-004	1.2800e-003	0.0122	3.0000e-005	2.5000e-003	2.0000e-005	2.5200e-003	6.6000e-004	2.0000e-005	6.8000e-004	0.0000	2.2415	2.2415	1.1000e-004	0.0000	2.2439
Total	**2.2200e-003**	**0.0118**	**0.0277**	**6.0000e-005**	**3.2800e-003**	**1.7000e-004**	**3.4500e-003**	**8.8000e-004**	**1.6000e-004**	**1.0400e-003**	**0.0000**	**4.7867**	**4.7867**	**1.3000e-004**	**0.0000**	**4.7895**

3.6 Paving - 2017

Unmitigated Construction On-Site

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

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	3.1000e-004	2.9200e-003	1.0000e-005	6.0000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5388	0.5388	3.0000e-005	0.0000	0.5394
Total	**2.3000e-004**	**3.1000e-004**	**2.9200e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5388**	**0.5388**	**3.0000e-005**	**0.0000**	**0.5394**

Mitigated Construction On-Site

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

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	3.1000e-004	2.9200e-003	1.0000e-005	6.0000e-004	0.0000	6.1000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.5388	0.5388	3.0000e-005	0.0000	0.5394
Total	**2.3000e-004**	**3.1000e-004**	**2.9200e-003**	**1.0000e-005**	**6.0000e-004**	**0.0000**	**6.1000e-004**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.5388**	**0.5388**	**3.0000e-005**	**0.0000**	**0.5394**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0753					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.9700e-003	0.0656	0.0560	9.0000e-005		5.2000e-003	5.2000e-003		5.2000e-003	5.2000e-003	0.0000	7.6598	7.6598	8.1000e-004	0.0000	7.6767
Total	**1.0853**	**0.0656**	**0.0560**	**9.0000e-005**		**5.2000e-003**	**5.2000e-003**		**5.2000e-003**	**5.2000e-003**	**0.0000**	**7.6598**	**7.6598**	**8.1000e-004**	**0.0000**	**7.6767**

3.7 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	9.9000e-004	9.3400e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.7243	1.7243	9.0000e-005	0.0000	1.7261
Total	**7.5000e-004**	**9.9000e-004**	**9.3400e-003**	**2.0000e-005**	**1.9200e-003**	**1.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.7243**	**1.7243**	**9.0000e-005**	**0.0000**	**1.7261**

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	1.0753					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.9700e-003	0.0656	0.0560	9.0000e-005		5.2000e-003	5.2000e-003		5.2000e-003	5.2000e-003	0.0000	7.6598	7.6598	8.1000e-004	0.0000	7.6767
Total	**1.0853**	**0.0656**	**0.0560**	**9.0000e-005**		**5.2000e-003**	**5.2000e-003**		**5.2000e-003**	**5.2000e-003**	**0.0000**	**7.6598**	**7.6598**	**8.1000e-004**	**0.0000**	**7.6767**

3.7 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	9.9000e-004	9.3400e-003	2.0000e-005	1.9200e-003	1.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.2000e-004	0.0000	1.7243	1.7243	9.0000e-005	0.0000	1.7261
Total	**7.5000e-004**	**9.9000e-004**	**9.3400e-003**	**2.0000e-005**	**1.9200e-003**	**1.0000e-005**	**1.9400e-003**	**5.1000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.7243**	**1.7243**	**9.0000e-005**	**0.0000**	**1.7261**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement School Bus Program

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Mitigated	0.6467	1.3375	6.2316	0.0119	0.8081	0.0164	0.8244	0.2161	0.0151	0.2312	0.0000	938.4113	938.4113	0.0419	0.0000	939.2907
Unmitigated	0.6559	1.3907	6.4284	0.0124	0.8480	0.0171	0.8651	0.2268	0.0157	0.2425	0.0000	982.9981	982.9981	0.0437	0.0000	983.9148

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,431.90	0.00	0.00	2,255,187	2,149,070
Total	1,431.90	0.00	0.00	2,255,187	2,149,070

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
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	180.7540	180.7540	7.2800e-003	1.5100e-003	181.3734
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	180.7540	180.7540	7.2800e-003	1.5100e-003	181.3734
NaturalGas Mitigated	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7034	30.7034	5.9000e-004	5.6000e-004	30.8903
NaturalGas Unmitigated	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7034	30.7034	5.9000e-004	5.6000e-004	30.8903

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					
Elementary School	575360	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7034	30.7034	5.9000e-004	5.6000e-004	30.8903
Total		**3.1000e-003**	**0.0282**	**0.0237**	**1.7000e-004**		**2.1400e-003**	**2.1400e-003**		**2.1400e-003**	**2.1400e-003**	**0.0000**	**30.7034**	**30.7034**	**5.9000e-004**	**5.6000e-004**	**30.8903**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	575360	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7034	30.7034	5.9000e-004	5.6000e-004	30.8903
Total		**3.1000e-003**	**0.0282**	**0.0237**	**1.7000e-004**		**2.1400e-003**	**2.1400e-003**		**2.1400e-003**	**2.1400e-003**	**0.0000**	**30.7034**	**30.7034**	**5.9000e-004**	**5.6000e-004**	**30.8903**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	553088	180.7540	7.2800e-003	1.5100e-003	181.3734
Total		**180.7540**	**7.2800e-003**	**1.5100e-003**	**181.3734**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	553088	180.7540	7.2800e-003	1.5100e-003	181.3734
Total		**180.7540**	**7.2800e-003**	**1.5100e-003**	**181.3734**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4701	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6600e-003	1.6600e-003	0.0000	0.0000	1.7600e-003
Unmitigated	0.4701	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6600e-003	1.6600e-003	0.0000	0.0000	1.7600e-003

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	0.1075					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3624					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6600e-003	1.6600e-003	0.0000	0.0000	1.7600e-003
Total	**0.4701**	**1.0000e-005**	**8.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.6600e-003**	**1.6600e-003**	**0.0000**	**0.0000**	**1.7600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1075					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3624					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	8.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.6600e-003	1.6600e-003	0.0000	0.0000	1.7600e-003
Total	**0.4701**	**1.0000e-005**	**8.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.6600e-003**	**1.6600e-003**	**0.0000**	**0.0000**	**1.7600e-003**

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

Turf Reduction

Use Water Efficient Irrigation System

Use Water Efficient Landscaping

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	33.4347	0.0715	1.9300e-003	35.5324
Unmitigated	37.4282	0.0892	2.3700e-003	40.0367

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	2.69091 / 6.91949	37.4282	0.0892	2.3700e-003	40.0367
Total		**37.4282**	**0.0892**	**2.3700e-003**	**40.0367**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	2.15273 / 6.4974	33.4347	0.0715	1.9300e-003	35.5324
Total		**33.4347**	**0.0715**	**1.9300e-003**	**35.5324**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	12.2444	0.7236	0.0000	27.4405
Unmitigated	24.4888	1.4473	0.0000	54.8811

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	120.64	24.4888	1.4473	0.0000	54.8811
Total		**24.4888**	**1.4473**	**0.0000**	**54.8811**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	60.32	12.2444	0.7236	0.0000	27.4405
Total		**12.2444**	**0.7236**	**0.0000**	**27.4405**

9.0 Operational Offroad

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

10.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	0.0000	0.0000	0.0000	0.0000

10.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
	25	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Grant K-8 Whole Site Modernization

San Diego Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	92.80	1000sqft	2.13	92,800.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2016
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Assumes all improvements will occur within construction phasing provided herein

Construction Phase - Construction duration is based on assumptions and general understanding of phasing.

Grading - Construction disturbance based on estimates and assumptions regarding phasing

Vehicle Trips -

Woodstoves -

Area Coating -

Sequestration - Assumes trees will be retained on site and 25 new trees will be planted.

Construction Off-road Equipment Mitigation -

Mobile Commute Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Trips and VMT - 4,900 CY3 of soil removed at 20 yards per truck.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	NumDays	220.00	365.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	6.00	30.00
tblConstructionPhase	NumDays	3.00	82.00
tblConstructionPhase	PhaseEndDate	1/20/2017	1/23/2017
tblConstructionPhase	PhaseStartDate	8/29/2015	9/1/2015
tblConstructionPhase	PhaseStartDate	7/18/2015	7/20/2015
tblGrading	AcresOfGrading	15.00	3.00
tblGrading	AcresOfGrading	123.00	4.50
tblProjectCharacteristics	OperationalYear	2014	2016
tblTripsAndVMT	HaulingTripNumber	0.00	245.00
tblTripsAndVMT	VendorTripNumber	0.00	245.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	5.8105	60.2051	49.4948	0.0854	6.2103	2.0508	7.9634	3.3435	1.8865	4.9563	0.0000	8,723.1141	8,723.1141	0.8056	0.0000	8,740.0325
2016	3.9912	26.2136	20.1300	0.0325	0.4199	1.6496	2.0696	0.1134	1.5788	1.6922	0.0000	3,048.8340	3,048.8340	0.5617	0.0000	3,060.6303
2017	36.2017	24.2751	19.3935	0.0325	0.4199	1.4831	1.9030	0.1134	1.4191	1.5325	0.0000	3,012.3439	3,012.3439	0.5404	0.0000	3,023.6928
Total	**46.0034**	**110.6938**	**89.0183**	**0.1504**	**7.0502**	**5.1835**	**11.9360**	**3.5702**	**4.8845**	**8.1810**	**0.0000**	**14,784.2920**	**14,784.2920**	**1.9078**	**0.0000**	**14,824.3555**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	5.8105	60.2051	49.4948	0.0854	6.2103	2.0508	7.9634	3.3435	1.8865	4.9563	0.0000	8,723.1141	8,723.1141	0.8056	0.0000	8,740.0325
2016	3.9912	26.2136	20.1300	0.0325	0.4199	1.6496	2.0696	0.1134	1.5788	1.6922	0.0000	3,048.8340	3,048.8340	0.5617	0.0000	3,060.6303
2017	36.2017	24.2751	19.3935	0.0325	0.4199	1.4831	1.9030	0.1134	1.4191	1.5325	0.0000	3,012.3439	3,012.3439	0.5404	0.0000	3,023.6928
Total	**46.0034**	**110.6938**	**89.0183**	**0.1504**	**7.0502**	**5.1835**	**11.9360**	**3.5702**	**4.8845**	**8.1810**	**0.0000**	**14,784.2920**	**14,784.2920**	**1.9078**	**0.0000**	**14,824.3555**

	ROG	NOx	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	lb/day										lb/day					
Area	2.5761	9.0000e-005	9.7200e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0203	0.0203	6.0000e-005		0.0215
Energy	0.0170	0.1545	0.1298	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4504	185.4504	3.5500e-003	3.4000e-003	186.5791
Mobile	5.0330	10.1179	47.7043	0.0998	6.6799	0.1315	6.8114	1.7831	0.1209	1.9041		8,697.3134	8,697.3134	0.3705		8,705.0940
Total	**7.6261**	**10.2725**	**47.8439**	**0.1008**	**6.6799**	**0.1433**	**6.8232**	**1.7831**	**0.1327**	**1.9159**		**8,882.7841**	**8,882.7841**	**0.3741**	**3.4000e-003**	**8,891.6946**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.5761	9.0000e-005	9.7200e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0203	0.0203	6.0000e-005		0.0215
Energy	0.0170	0.1545	0.1298	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4504	185.4504	3.5500e-003	3.4000e-003	186.5791
Mobile	4.9614	9.7320	46.0814	0.0953	6.3656	0.1259	6.4914	1.6992	0.1157	1.8150		8,302.4118	8,302.4118	0.3554		8,309.8749
Total	**7.5544**	**9.8867**	**46.2210**	**0.0962**	**6.3656**	**0.1377**	**6.5032**	**1.6992**	**0.1275**	**1.8267**		**8,487.8826**	**8,487.8826**	**0.3590**	**3.4000e-003**	**8,496.4755**

	ROG	NOx	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	0.94	3.76	3.39	4.50	4.71	3.95	4.69	4.71	3.93	4.65	0.00	4.45	4.45	4.04	0.00	4.44

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	1/1/2015	3/25/2015	5	60	
2	Site Preparation	Site Preparation	3/26/2015	7/17/2015	5	82	
3	Grading	Grading	7/20/2015	8/28/2015	5	30	
4	Building Construction	Building Construction	9/1/2015	1/23/2017	5	365	
5	Paving	Paving	1/24/2017	2/6/2017	5	10	
6	Architectural Coating	Architectural Coating	2/7/2017	5/1/2017	5	60	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 139,200; Non-Residential Outdoor: 46,400 (Architectural Coating – sqft)

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	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Site Preparation	Scrapers	1	8.00	361	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	226	0.29
Building Construction	Forklifts	2	7.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
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
Demolition	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	245.00	245.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	39.00	15.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Soil Stabilizer

3.2 Demolition - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0666	29.6778	22.0566	0.0245		1.8651	1.8651		1.7469	1.7469		2,509.0599	2,509.0599	0.6357		2,522.4104
Total	**3.0666**	**29.6778**	**22.0566**	**0.0245**		**1.8651**	**1.8651**		**1.7469**	**1.7469**		**2,509.0599**	**2,509.0599**	**0.6357**		**2,522.4104**

3.2 Demolition - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0588	0.6427	1.3500e-003	0.1068	8.4000e-004	0.1076	0.0283	7.7000e-004	0.0291		117.0011	117.0011	6.1300e-003		117.1299
Total	**0.0498**	**0.0588**	**0.6427**	**1.3500e-003**	**0.1068**	**8.4000e-004**	**0.1076**	**0.0283**	**7.7000e-004**	**0.0291**		**117.0011**	**117.0011**	**6.1300e-003**		**117.1299**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0666	29.6778	22.0566	0.0245		1.8651	1.8651		1.7469	1.7469	0.0000	2,509.0599	2,509.0599	0.6357		2,522.4104
Total	**3.0666**	**29.6778**	**22.0566**	**0.0245**		**1.8651**	**1.8651**		**1.7469**	**1.7469**	**0.0000**	**2,509.0599**	**2,509.0599**	**0.6357**		**2,522.4104**

3.2 Demolition - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0498	0.0588	0.6427	1.3500e-003	0.1068	8.4000e-004	0.1076	0.0283	7.7000e-004	0.0291		117.0011	117.0011	6.1300e-003		117.1299
Total	**0.0498**	**0.0588**	**0.6427**	**1.3500e-003**	**0.1068**	**8.4000e-004**	**0.1076**	**0.0283**	**7.7000e-004**	**0.0291**		**117.0011**	**117.0011**	**6.1300e-003**		**117.1299**

3.3 Site Preparation - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0582	0.0000	0.0582	6.2800e-003	0.0000	6.2800e-003			0.0000			0.0000
Off-Road	2.8203	32.4699	18.6797	0.0239		1.5973	1.5973		1.4695	1.4695		2,508.1983	2,508.1983	0.7488		2,523.9231
Total	**2.8203**	**32.4699**	**18.6797**	**0.0239**	**0.0582**	**1.5973**	**1.6555**	**6.2800e-003**	**1.4695**	**1.4758**		**2,508.1983**	**2,508.1983**	**0.7488**		**2,523.9231**

3.3 Site Preparation - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0672	0.9759	0.6549	2.2400e-003	0.0521	0.0152	0.0672	0.0143	0.0139	0.0282		227.8918	227.8918	1.8500e-003		227.9306
Vendor	2.8923	26.7232	29.7646	0.0584	1.6261	0.4379	2.0639	0.4639	0.4026	0.8665		5,915.0234	5,915.0234	0.0512		5,916.0988
Worker	0.0307	0.0362	0.3955	8.3000e-004	0.0657	5.2000e-004	0.0662	0.0174	4.7000e-004	0.0179		72.0007	72.0007	3.7700e-003		72.0799
Total	**2.9902**	**27.7352**	**30.8151**	**0.0615**	**1.7439**	**0.4535**	**2.1974**	**0.4956**	**0.4170**	**0.9126**		**6,214.9159**	**6,214.9159**	**0.0568**		**6,216.1094**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0582	0.0000	0.0582	6.2800e-003	0.0000	6.2800e-003			0.0000			0.0000
Off-Road	2.8203	32.4699	18.6797	0.0239		1.5973	1.5973		1.4695	1.4695	0.0000	2,508.1983	2,508.1983	0.7488		2,523.9231
Total	**2.8203**	**32.4699**	**18.6797**	**0.0239**	**0.0582**	**1.5973**	**1.6555**	**6.2800e-003**	**1.4695**	**1.4758**	**0.0000**	**2,508.1983**	**2,508.1983**	**0.7488**		**2,523.9231**

3.3 Site Preparation - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0672	0.9759	0.6549	2.2400e-003	0.0521	0.0152	0.0672	0.0143	0.0139	0.0282		227.8918	227.8918	1.8500e-003		227.9306
Vendor	2.8923	26.7232	29.7646	0.0584	1.6261	0.4379	2.0639	0.4639	0.4026	0.8665		5,915.0234	5,915.0234	0.0512		5,916.0988
Worker	0.0307	0.0362	0.3955	8.3000e-004	0.0657	5.2000e-004	0.0662	0.0174	4.7000e-004	0.0179		72.0007	72.0007	3.7700e-003		72.0799
Total	**2.9902**	**27.7352**	**30.8151**	**0.0615**	**1.7439**	**0.4535**	**2.1974**	**0.4956**	**0.4170**	**0.9126**		**6,214.9159**	**6,214.9159**	**0.0568**		**6,216.1094**

3.4 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1281	0.0000	6.1281	3.3217	0.0000	3.3217			0.0000			0.0000
Off-Road	2.9656	31.2611	20.2019	0.0206		1.7524	1.7524		1.6122	1.6122		2,164.1012	2,164.1012	0.6461		2,177.6687
Total	**2.9656**	**31.2611**	**20.2019**	**0.0206**	**6.1281**	**1.7524**	**7.8806**	**3.3217**	**1.6122**	**4.9339**		**2,164.1012**	**2,164.1012**	**0.6461**		**2,177.6687**

3.4 Grading - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0383	0.0452	0.4944	1.0400e-003	0.0822	6.4000e-004	0.0828	0.0218	5.9000e-004	0.0224		90.0008	90.0008	4.7200e-003		90.0999
Total	**0.0383**	**0.0452**	**0.4944**	**1.0400e-003**	**0.0822**	**6.4000e-004**	**0.0828**	**0.0218**	**5.9000e-004**	**0.0224**		**90.0008**	**90.0008**	**4.7200e-003**		**90.0999**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1281	0.0000	6.1281	3.3217	0.0000	3.3217			0.0000			0.0000
Off-Road	2.9656	31.2611	20.2019	0.0206		1.7524	1.7524		1.6122	1.6122	0.0000	2,164.1012	2,164.1012	0.6461		2,177.6687
Total	**2.9656**	**31.2611**	**20.2019**	**0.0206**	**6.1281**	**1.7524**	**7.8806**	**3.3217**	**1.6122**	**4.9339**	**0.0000**	**2,164.1012**	**2,164.1012**	**0.6461**		**2,177.6687**

3.4 Grading - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0383	0.0452	0.4944	1.0400e-003	0.0822	6.4000e-004	0.0828	0.0218	5.9000e-004	0.0224		90.0008	90.0008	4.7200e-003		90.0999
Total	**0.0383**	**0.0452**	**0.4944**	**1.0400e-003**	**0.0822**	**6.4000e-004**	**0.0828**	**0.0218**	**5.9000e-004**	**0.0224**		**90.0008**	**90.0008**	**4.7200e-003**		**90.0999**

3.5 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.0268	25.8389	17.0465	0.0249		1.7597	1.7597		1.6870	1.6870		2,364.0797	2,364.0797	0.5662		2,375.9701
Total	**4.0268**	**25.8389**	**17.0465**	**0.0249**		**1.7597**	**1.7597**		**1.6870**	**1.6870**		**2,364.0797**	**2,364.0797**	**0.5662**		**2,375.9701**

3.5 Building Construction - 2015

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1771	1.6361	1.8223	3.5800e-003	0.0996	0.0268	0.1264	0.0284	0.0247	0.0531		362.1443	362.1443	3.1400e-003		362.2101
Worker	0.1495	0.1763	1.9282	4.0600e-003	0.3204	2.5200e-003	0.3229	0.0850	2.3000e-003	0.0873		351.0033	351.0033	0.0184		351.3896
Total	**0.3266**	**1.8124**	**3.7506**	**7.6400e-003**	**0.4199**	**0.0293**	**0.4493**	**0.1134**	**0.0270**	**0.1403**		**713.1476**	**713.1476**	**0.0215**		**713.5998**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.0268	25.8389	17.0465	0.0249		1.7597	1.7597		1.6870	1.6870	0.0000	2,364.0797	2,364.0797	0.5662		2,375.9701
Total	**4.0268**	**25.8389**	**17.0465**	**0.0249**		**1.7597**	**1.7597**		**1.6870**	**1.6870**	**0.0000**	**2,364.0797**	**2,364.0797**	**0.5662**		**2,375.9701**

3.5 Building Construction - 2015

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1771	1.6361	1.8223	3.5800e-003	0.0996	0.0268	0.1264	0.0284	0.0247	0.0531		362.1443	362.1443	3.1400e-003		362.2101
Worker	0.1495	0.1763	1.9282	4.0600e-003	0.3204	2.5200e-003	0.3229	0.0850	2.3000e-003	0.0873		351.0033	351.0033	0.0184		351.3896
Total	**0.3266**	**1.8124**	**3.7506**	**7.6400e-003**	**0.4199**	**0.0293**	**0.4493**	**0.1134**	**0.0270**	**0.1403**		**713.1476**	**713.1476**	**0.0215**		**713.5998**

3.5 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6984	24.6320	16.7166	0.0249		1.6257	1.6257		1.5569	1.5569		2,352.2239	2,352.2239	0.5420		2,363.6057
Total	**3.6984**	**24.6320**	**16.7166**	**0.0249**		**1.6257**	**1.6257**		**1.5569**	**1.5569**		**2,352.2239**	**2,352.2239**	**0.5420**		**2,363.6057**

3.5 Building Construction - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1565	1.4216	1.6686	3.5700e-003	0.0996	0.0215	0.1211	0.0284	0.0198	0.0482		357.8827	357.8827	2.7700e-003		357.9408
Worker	0.1363	0.1600	1.7448	4.0600e-003	0.3204	2.4000e-003	0.3228	0.0850	2.2100e-003	0.0872		338.7275	338.7275	0.0170		339.0839
Total	**0.2928**	**1.5816**	**3.4134**	**7.6300e-003**	**0.4199**	**0.0239**	**0.4438**	**0.1134**	**0.0220**	**0.1354**		**696.6101**	**696.6101**	**0.0197**		**697.0246**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.6984	24.6320	16.7166	0.0249		1.6257	1.6257		1.5569	1.5569	0.0000	2,352.2239	2,352.2239	0.5420		2,363.6057
Total	**3.6984**	**24.6320**	**16.7166**	**0.0249**		**1.6257**	**1.6257**		**1.5569**	**1.5569**	**0.0000**	**2,352.2239**	**2,352.2239**	**0.5420**		**2,363.6057**

3.5 Building Construction - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1565	1.4216	1.6686	3.5700e-003	0.0996	0.0215	0.1211	0.0284	0.0198	0.0482		357.8827	357.8827	2.7700e-003		357.9408
Worker	0.1363	0.1600	1.7448	4.0600e-003	0.3204	2.4000e-003	0.3228	0.0850	2.2100e-003	0.0872		338.7275	338.7275	0.0170		339.0839
Total	**0.2928**	**1.5816**	**3.4134**	**7.6300e-003**	**0.4199**	**0.0239**	**0.4438**	**0.1134**	**0.0220**	**0.1354**		**696.6101**	**696.6101**	**0.0197**		**697.0246**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

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

3.5 Building Construction - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1434	1.2713	1.5662	3.5600e-003	0.0996	0.0187	0.1182	0.0284	0.0172	0.0456		351.8368	351.8368	2.6100e-003		351.8917
Worker	0.1239	0.1454	1.5781	4.0600e-003	0.3204	2.3300e-003	0.3227	0.0850	2.1500e-003	0.0871		325.6568	325.6568	0.0157		325.9866
Total	**0.2673**	**1.4166**	**3.1443**	**7.6200e-003**	**0.4200**	**0.0210**	**0.4409**	**0.1134**	**0.0193**	**0.1327**		**677.4936**	**677.4936**	**0.0183**		**677.8783**

Mitigated Construction On-Site

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

3.5 Building Construction - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1434	1.2713	1.5662	3.5600e-003	0.0996	0.0187	0.1182	0.0284	0.0172	0.0456		351.8368	351.8368	2.6100e-003		351.8917
Worker	0.1239	0.1454	1.5781	4.0600e-003	0.3204	2.3300e-003	0.3227	0.0850	2.1500e-003	0.0871		325.6568	325.6568	0.0157		325.9866
Total	**0.2673**	**1.4166**	**3.1443**	**7.6200e-003**	**0.4200**	**0.0210**	**0.4409**	**0.1134**	**0.0193**	**0.1327**		**677.4936**	**677.4936**	**0.0183**		**677.8783**

3.6 Paving - 2017

Unmitigated Construction On-Site

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

3.6 Paving - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0559	0.6070	1.5600e-003	0.1232	9.0000e-004	0.1241	0.0327	8.3000e-004	0.0335		125.2526	125.2526	6.0400e-003		125.3794
Total	**0.0477**	**0.0559**	**0.6070**	**1.5600e-003**	**0.1232**	**9.0000e-004**	**0.1241**	**0.0327**	**8.3000e-004**	**0.0335**		**125.2526**	**125.2526**	**6.0400e-003**		**125.3794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6402	16.4619	12.0566	0.0176		1.0230	1.0230		0.9423	0.9423	0.0000	1,777.474 5	1,777.474 5	0.5344		1,788.696 6
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6402**	**16.4619**	**12.0566**	**0.0176**		**1.0230**	**1.0230**		**0.9423**	**0.9423**	**0.0000**	**1,777.474 5**	**1,777.474 5**	**0.5344**		**1,788.696 6**

3.6 Paving - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0559	0.6070	1.5600e-003	0.1232	9.0000e-004	0.1241	0.0327	8.3000e-004	0.0335		125.2526	125.2526	6.0400e-003		125.3794
Total	**0.0477**	**0.0559**	**0.6070**	**1.5600e-003**	**0.1232**	**9.0000e-004**	**0.1241**	**0.0327**	**8.3000e-004**	**0.0335**		**125.2526**	**125.2526**	**6.0400e-003**		**125.3794**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.8440					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**36.1763**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.7 Architectural Coating - 2017

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0254	0.0298	0.3237	8.3000e-004	0.0657	4.8000e-004	0.0662	0.0174	4.4000e-004	0.0179		66.8014	66.8014	3.2200e-003		66.8690
Total	**0.0254**	**0.0298**	**0.3237**	**8.3000e-004**	**0.0657**	**4.8000e-004**	**0.0662**	**0.0174**	**4.4000e-004**	**0.0179**		**66.8014**	**66.8014**	**3.2200e-003**		**66.8690**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	35.8440					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**36.1763**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.7 Architectural Coating - 2017

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0254	0.0298	0.3237	8.3000e-004	0.0657	4.8000e-004	0.0662	0.0174	4.4000e-004	0.0179		66.8014	66.8014	3.2200e-003		66.8690
Total	**0.0254**	**0.0298**	**0.3237**	**8.3000e-004**	**0.0657**	**4.8000e-004**	**0.0662**	**0.0174**	**4.4000e-004**	**0.0179**		**66.8014**	**66.8014**	**3.2200e-003**		**66.8690**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement School Bus Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.9614	9.7320	46.0814	0.0953	6.3656	0.1259	6.4914	1.6992	0.1157	1.8150		8,302.4118	8,302.4118	0.3554		8,309.8749
Unmitigated	5.0330	10.1179	47.7043	0.0998	6.6799	0.1315	6.8114	1.7831	0.1209	1.9041		8,697.3134	8,697.3134	0.3705		8,705.0940

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,431.90	0.00	0.00	2,255,187	2,149,070
Total	1,431.90	0.00	0.00	2,255,187	2,149,070

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
Elementary School	9.50	7.30	7.30	65.00	30.00	5.00	63	25	12

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.510118	0.073510	0.192396	0.133166	0.036737	0.005265	0.012605	0.021642	0.001847	0.002083	0.006548	0.000610	0.003471

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0170	0.1545	0.1298	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4504	185.4504	3.5500e-003	3.4000e-003	186.5791
NaturalGas Unmitigated	0.0170	0.1545	0.1298	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4504	185.4504	3.5500e-003	3.4000e-003	186.5791

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1576.33	0.0170	0.1545	0.1298	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4504	185.4504	3.5500e-003	3.4000e-003	186.5791
Total		**0.0170**	**0.1545**	**0.1298**	**9.3000e-004**		**0.0118**	**0.0118**		**0.0118**	**0.0118**		**185.4504**	**185.4504**	**3.5500e-003**	**3.4000e-003**	**186.5791**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Elementary School	1.57633	0.0170	0.1545	0.1298	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4504	185.4504	3.5500e-003	3.4000e-003	186.5791
Total		**0.0170**	**0.1545**	**0.1298**	**9.3000e-004**		**0.0118**	**0.0118**		**0.0118**	**0.0118**		**185.4504**	**185.4504**	**3.5500e-003**	**3.4000e-003**	**186.5791**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.5761	9.0000e-005	9.7200e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0203	0.0203	6.0000e-005		0.0215
Unmitigated	2.5761	9.0000e-005	9.7200e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0203	0.0203	6.0000e-005		0.0215

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.5892					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9859					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	9.7200e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0203	0.0203	6.0000e-005		0.0215
Total	**2.5761**	**9.0000e-005**	**9.7200e-003**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0203**	**0.0203**	**6.0000e-005**		**0.0215**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	1.9859					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	9.7200e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0203	0.0203	6.0000e-005		0.0215
Architectural Coating	0.5892					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5761**	**9.0000e-005**	**9.7200e-003**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0203**	**0.0203**	**6.0000e-005**		**0.0215**

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

Turf Reduction

Use Water Efficient Irrigation System

Use Water Efficient Landscaping

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Vegetation

Greenhouse Gas Emission Worksheet

N20 Mobile Emissions Grant K-8

From URBEMIS 2007 Vehicle Fleet Mix Output:

Annual VMT: 2,255,187

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

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

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

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

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.1588	metric tons N2O	**49.24**	metric tons CO2e
		Project Total:	***49.24***	***metric tons CO2e***

References

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

** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

*** From URBEMIS 2007 results for mobile sources

Greenhouse Gas Emission Worksheet
N20 Mobile Emissions Grant K-8

From URBEMIS 2007 Vehicle Fleet Mix Output:

Annual VMT: 2,149,070

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

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

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

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

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.1514	metric tons N2O	**46.92**	metric tons CO2e
		Project Total:	***46.92***	***metric tons CO2e***

References

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

** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

*** From URBEMIS 2007 results for mobile sources