Appendix F

Air Quality Technical Report

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Draft Air Quality Impact Technical Report for McClellan-Palomar Airport Master Plan Update

Lead Agency:
County of San Diego, Department of Public Works
5510 Overland Avenue, Suite 410
San Diego, CA 92123

Prepared for the County of San Diego by:
C&S Engineers, Inc.
2020 Camino del Rio N. Suite 1000
San Diego, CA 92108

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Glossary of Terms and Acronyms

AEDT: Aviation Environmental Design Tool

AMAP: Airport Multimodal Accessibility Plan

APU: Auxiliary Power Units

AQIA: Air Quality Impact Analysis

Attainment Area: a geographic area identified by the USEPA that is in compliance with the NAAQS for a given pollutant

CAA: Clean Air Act

CAAQS: California Ambient Air Quality Standards

CARB: California Air Resource Board

CalEEMod: The California Emissions Estimator Model

CCAA: California Clean Air Act

CEQA: California Environmental Quality Act

CO: Carbon Monoxide

County: County of San Diego

Criteria Pollutants: An air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set.

CY: cubic yards

DPM: Diesel Particulate Matter

EDMS: Emissions Dispersion Modeling System

EIR: Environmental Impact Report

EMAS: Engineered Material Arrest System

EMFAC2014: Model that assesses emissions from on-road vehicles including cars, trucks, and buses in California.

FAA: Federal Aviation Administration

FBO: Fixed-based Operators

GSE: Ground Support Equipment

HAPs: Hazardous Air Pollutants

Hydrocarbon: Compounds containing various combinations of hydrogen and carbon atoms.

LOS: Level of Service

mg/m^3: Milligrams per cubic meter

$\mu g/m^3$: Micrograms per cubic meter

Maintenance Area: Describes the air quality designation of an area previously designated nonattainment by the USEPA and subsequently redesignated attainment after emissions are reduced.

Mobile Sources: Sources of air pollution that are not stationary, e.g. automobiles.

Monitoring: The periodic or continuous sampling and analysis of air pollutants in ambient air or from individual pollutant sources.

NAAQS: National Ambient Air Quality Standards

NO_X: Oxides of Nitrogen

NO_2: Nitrogen Dioxide

Non-Attainment Area: A geographic area identified by the USEPA that is not in compliance the NAAQS for a given pollutant

LTO: Landing and Takeoff Cycle

Ozone precursors: Chemicals, such as hydrocarbons, occurring naturally or anthropogenic, which contribute to the formation of ozone.

PAL: Passenger Activity Level

Photochemical reaction: A term referring to chemical reactions brought about by the light energy of the sun.

Pb: Lead

PM: particulate matter

$PM_{2.5}$: Fine Particulate Matter

PM_{10}: Respirable Particulate Matter

ppm: parts per million

RAQS: San Diego County's Regional Air Quality Strategy

RASP: Regional Aviation Strategic Plan

RTP: Regional Transportation Plan

Rule 55 (San Diego Air Pollution Control District): Fugitive Dust Control

Rule 61.3.1 (Regional Aviation Strategic Plan): Enhanced Vapor Recovery Program

Rule 67.0.1 (Regional Aviation Strategic Plan): Control of Architectural Coatings

SANDAG: San Diego Association of Governments

SCS: Sustainable Communities Strategy

SDAB: San Diego Air Basin

SDAPCD: San Diego County Air Pollution Control District, a county-run agency that regulates stationary, indirect and area sources of air pollution and is governed by a district air pollution control board

SDCRAA: San Diego County Regional Airport Authority

Short ton: unit of weight equal to 2,000 pounds

SIP: State Implementation Plan

SLTs: Screening Level Thresholds

Smog: A combination of smoke, ozone, hydrocarbons, nitrogen oxides, and other chemically reactive compounds, which can result in a murky brown haze, which has adverse health effects.

SO_2: Sulfur dioxide

TACs: Toxic Air Contaminant

Toxics (aka Air Toxics)**:** A generic term referring to a harmful chemical or group of chemicals in the air that are especially harmful to health.

Toxic Hot Spot: An area where the concentration of air toxics is at a level where individuals may be exposed to an elevated risk of adverse health effects.

tpy: Ton per year

USEPA: United States Environmental Protection Agency

VOCs: Volatile Organic Compounds

Executive Summary

This report presents an assessment of current air quality conditions and whether potential impacts would occur involving criteria pollutant emissions related to implementation of the Airport Master Plan (Proposed Project) at McClellan-Palomar Airport (Airport).

The Proposed Project is located within the municipal limits of the City of Carlsbad on Airport property. The Airport is owned and operated by the County of San Diego (County). In determining how the Proposed Project may affect the air quality environment, County of San Diego Guidelines for Determining Significance - Air Quality (March 19, 2007) are used for analyzing construction impacts, and the Federal de minimis thresholds were used for analyzing operational impacts. The Proposed Project is split into three phases: near term (0–7 years), intermediate term (8–12 years), and long term (13–20 years). The improvements are focused on enhancing safety areas for current and future aircraft, which would include the demolition of existing airport infrastructure and the construction of new aircraft movement facilities to meet Federal Aviation Administration (FAA) design standards. The Proposed Project also includes a phased extension of Runway 06-24 from 4,897 ft. to a length of 5,697 ft. and shifting the runway 123 ft. to the north.

The San Diego Air Basin (SDAB), in which the Airport is located, is under the jurisdiction of the San Diego County Air Pollution Control District (SDAPCD). The SDAPCD is responsible for administering federal and state air quality regulations, permitting stationary sources of air emissions, and monitoring air quality conditions in the air basin. The SDAB is currently designated as a non-attainment area for the federal eight-hour ozone standard. Under state designations, the SDAB is currently designated as non-attainment for the one-hour and eight-hour ozone standards, non-attainment for the annual and 24-hour average standards for particulate matter (less than 10 microns), and the annual average standard for particulate matter (less than 2.5 microns).

An emissions inventory compared the annual increase in emissions as a result of the Proposed Project. This concluded that while the Proposed Project has potential to increase criteria pollutant emissions, they would not exceed County published screening level thresholds (SLTs) or exceed Federal de minimis thresholds for pollutants in which the SDAB has been designated as non-attainment. Therefore, the Proposed Project would not result in a significant impact to air quality.

The County's Air Quality Guidelines state that even if direct air quality impacts from a proposed project are determined to be less than significant, the project may still have a cumulatively considerable impact on air quality when combined with other reasonably foreseeable future projects within close proximity. Pursuant to California Environmental Quality Act (CEQA) Guidelines §15064(h)(3), it was determined that the operational impacts of the Proposed Project would not result in a cumulatively considerable impact as those

pollutants have been accounted for and are in compliance with the SDAPCD Regional Air Quality Strategy (RAQS). Neither construction nor operation of the Proposed Project would result in significant impacts to sensitive receptors or result in a significant odor impact.

Section 1—Introduction

1.1 Purpose of the Report

The County of San Diego (County) Department of Public Works recently prepared an Airport Master Plan update for the Airport. The objective of the Airport Master Plan is to develop an outline of airside and landside facility improvements for the next 20-year planning period in order to maximize safety and operational efficiency, while accounting for the necessary improvements to accommodate long-term growth in relation to aviation forecasts and market trends. Throughout the planning process, facility improvements were analyzed based on a multitude of criteria including land use opportunities and constraints, phasing, financial feasibility, stakeholder and public input, and environmental constraints. The purpose of this document is to determine whether air quality impacts would occur as a result of the Proposed Project, and to assess whether mitigation of those impacts is needed.

The purpose of this document is to quantify criteria pollutant emissions associated with construction and operation of the Proposed Project and to assess and propose mitigation for potential impacts relating to air quality. This document further contains the results and describes the technical approach, methodology, and data sources developed in support of the criteria pollutant emissions inventory for the Airport.

1.2 Project Location and Description

The County owns 454 acres in and around the Airport, including land used for aviation and non-aviation purposes. The County properties are located within the municipal limits of the City of Carlsbad. Approximately 231 acres of the County-owned property make up the Airport Master Plan project study area. This includes the active airfield, tenant leaseholds, aircraft and auto parking, passenger terminal building, and administrative facilities located north of Palomar Airport Road at Yarrow Drive.

The County is located within the San Diego Air Basin (SDAB), which lies in the southwest corner of California and comprises the entire San Diego region, covering 4,260 square miles. The SDAB is under the jurisdiction of the San Diego County Air Pollution Control District (SDAPCD). The SDAPCD is responsible for administrating federal and state air quality regulations, permitting stationary sources of air emissions, and monitoring air quality conditions in the air basin.

The Proposed Project improvements are split into three phases: near-term (0–7 years), intermediate-term (8–12 years), and long-term (13–20 years). The phased improvements are shown on **Figure 1**.

The following describes the proposed projects in the near-term phase:

1. Relocation of the Glideslope Building and Antenna
2. Relocation of the Segmented Circle and Windsock Equipment
3. Relocation of the Aircraft Rescue and Fire Fighting Facility
4. Construction of Engineered Material Arrest System (EMAS) for Runway 24
5. Relocation of the Vehicle Service Road
6. Relocation of the Lighting Vault
7. 200-foot Extension of Existing Runway and Taxiway A

The following describes the proposed projects in the intermediate-term phase:

8. Removal of Fuel Farm on North Apron
9. Removal of North Apron and Taxiway N
10. Area Reserved for Future General Aviation Parking
11. Passenger / Admin / Parking Facility Improvements

The following describes the proposed projects in the long-term phase:

12. Relocation and Extension of Runway 06-24 (includes relocation of navigational aids)
13. Remove/Reconstruct Existing Connector Taxiways
14. Removal/Reconstruction of Existing Taxiway A (includes lighting)
15. Construction of EMAS System for Runway 06
16. Relocation / Reconstruction of EMAS System for Runway 24

Construction Activities

The north apron (to be demolished) and other paved surfaces would be used as the primary construction staging area during development of the Proposed Project. The north apron area can be accessed through the security gate located on the northeast corner of airport property, along El Camino Real. Once on airport property a service road can be utilized to gain access to the apron. Although the north apron is proposed to be demolished under the intermediate-term phase, the area would still be used for construction staging and material stockpiling. If necessary, eastern portions of the south apron, currently utilized for aircraft parking, could be utilized as a secondary staging area for construction equipment and materials.

McClellan-Palomar Airport Master Plan

Proposed Project

Figure 1

CONCEPTUAL DEVELOPMENT PHASES/FEATURES:

NEAR-TERM (0-7 YEARS)

1. Relocation of the Glideslope Building and Antenna
2. Relocation of the Segmented Circle and Windsock Equipment
3. Relocation of ARFF Facility
4. Construction of EMAS System for RWY 24
5. Relocation of the Vehicle Service Road
6. Relocation of Lighting Vault
7. 200' Extension of Existing RWY 06-24 and TWY A

INTERMEDIATE-TERM (8-12 YEARS)

8. Removal of Fuel Farm on North Apron
9. Removal of the North Apron and TWY N
10. Area Reserved for Future GA Parking
11. Passenger/Admin/Parking Facility Improvements

PHASE 3: LONG-TERM (13-20 YEARS)

12. Relocation 123' North/Extension of RWY 06-24 (Includes REILs, PAPIs, Localizer Antennae and MALSRs)
13. Removal/Reconstruction of Existing Connector Taxiways
14. Removal/Reconstruction of Existing TWY A (Includes Lighting)
15. Construction of EMAS System for RWY 06
16. Relocation of EMAS System for RWY 24

Source: McClellan-Palomar Airport Master Plan: Kimley Horn

Section 2—Existing Conditions

2.1 Existing Setting

The topography of San Diego County is highly varied, being comprised of coastal plains and lagoons, flatlands and mesas, broad valleys, canyons, foothills, mountains, and deserts. Generally, building structures are located on the flatlands, mesas, and valleys, while the canyons and foothills tend to be sparsely developed. The Airport was built on top of a mesa with steep vertical drops on the southern, western, and eastern sides and an inactive landfill beneath portions of the ground surface. The area surrounding the Airport is a mixture of undeveloped canyons and hillsides with residential and urban development that make up the City of Carlsbad, with the cities of Vista and San Marcos located further east.

According to the SDAPCD, the SDAB is not classified as a contributor of pollutants; instead, other air basins are considered to contribute pollutants to the SDAB. These pollutants are ozone, nitrogen oxides (NO_X), and volatile organic compounds (VOCs), which are transported from the South Coast Air Basin (Los Angeles, Orange, Riverside and San Bernardino counties) to the north and, when the wind shifts direction, Tijuana, Mexico, to the south.

The Airport is located in an area of industrial and mixed land uses that include commercial and utilities as identified in the *City of Carlsbad General Plan*. The County property on which the Airport resides is zoned Industrial (M) pursuant to the Carlsbad Municipal Code Title 21 "Zoning Ordinance" (Section 21.34) and consists of government (airport) facility land uses. The closest residential land uses to the Airport are located to the southeast on the other side of Palomar Airport Road and El Camino Real. This area, known as Bressi Ranch, is made up of high-density, single-family homes.

An on-site landfill was operated by the County as a municipal solid waste disposal facility from 1962 to 1975. After the landfill ceased operations, methane (CH_4) extraction wells and monitoring facilities were installed on what now makes up certain portions of the Airport property. The inactive landfill is unlined and located in three separate units (or cells) on airport property. Portions of the Airport constructed over the landfill are currently used for aircraft storage and parking, with another unit located immediately east of the runway.

2.2 Climate & Meteorology

The climate in San Diego County is dominated by the Pacific high-pressure system that results in mild, dry summers and mild, wet winters. The climate of the City of Carlsbad, located on the southern coast of California, is considered to be a semi-arid Mediterranean climate, with an average of 263 sunny days per year. Average monthly lows reach 45 degrees Fahrenheit (°F) in the winter months and 71 degrees (°F) in the summer months. Similarly,

San Diego County is classified as an arid climate, with average temperatures ranging from 57 degrees (°F) in the winter and 72 degrees (°F) in the summer months. Average precipitation for the City of Carlsbad is 11.84 inches, ranging from 0.30 inches in the summer and 6.66 inches during the winter. See **Table 1** for average monthly high temperature and precipitation patterns for the Airport and surrounding area.

The Pacific high-pressure system drives the prevailing winds in the SDAB. Wind patterns surrounding the Airport are predominantly westerly (see **Figure 2**). Seasonal weather patterns include the Santa Ana winds, which occur 10 days out of the year between September and February. The Santa Ana winds flow from east to west from the desert and bring sometimes hot, but always dry conditions to the area. Another noteworthy seasonal weather pattern is the prominence of cloudy, foggy conditions during May and June caused by a warm air mass that descends over the cool, moist marine air.

Table 1 – Average High Temperature and Precipitation for the Airport

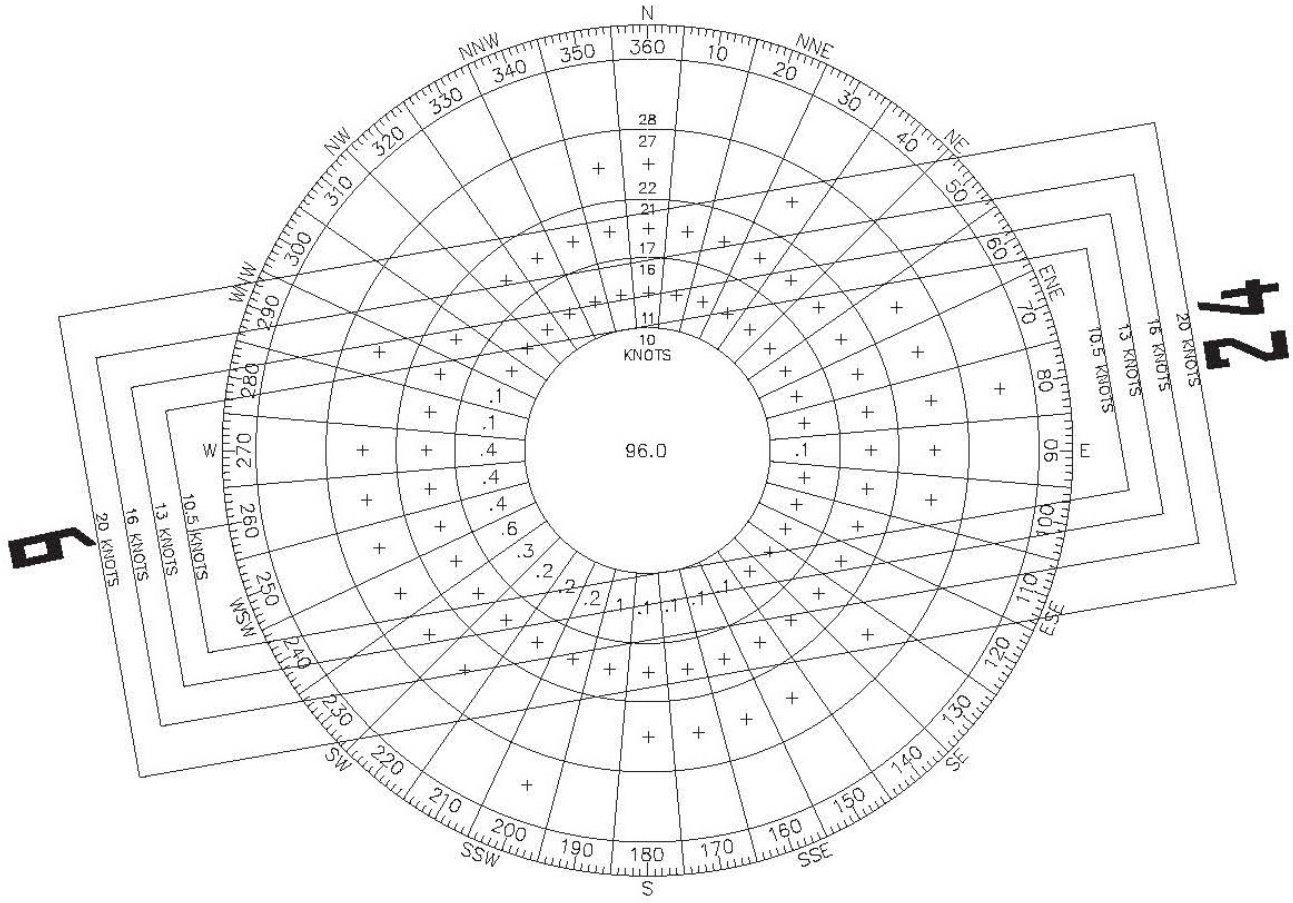
Month	Average High Temperature (°F)	Avg. Precipitation (inches)
January	67.4	2.76
February	67.8	2.55
March	68.2	2.24
April	70.8	1.05
May	72.9	0.22
June	76.3	0.11
July	81.3	0.06
August	83.0	0.07
September	82.2	0.25
October	77.9	0.54
November	72.3	1.40
December	67.4	1.83

Source: Weather data from 1957 to 2015 was obtained from the Western Regional Climate Center website: https://wrcc.dri.edu/.

Due to its close proximity to the Pacific Ocean, the SDAB experiences frequent temperature inversions. Subsidence inversions[1] occur during the warmer months as descending air associated with the Pacific high pressure system meets cool marine air. The boundary between the two layers of air creates a temperature inversion that traps pollutants. Another type of inversion, a radiation inversion, develops on winter nights when air near the ground cools by heat radiation and air aloft remains warm. The shallow inversion layer formed between these two air masses also can trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce ozone.

[1] Subsidence inversions develop when a widespread layer of air descends. If the air mass sinks low enough, the air at higher altitudes becomes warmer than at lower altitudes, producing a temperature inversion.

Figure 2 – Airport Wind Rose



Source: National Climate Data Center, Federal Aviation Administration (FAA) AGIS Web Portal: https://airports-gis.faa.gov/public/index.html

2.3 Regulatory Setting

2.3.1 Federal Regulations and Standards

The following federal regulations and standards were considered as part of this air quality analysis.

Federal Clean Air Act

Under Section 176(c)(1) (Conformity regulations) of the federal Clean Air Act (CAA), actions subject to federal funding or approval require a demonstration of conformity to the State Implementation Plan (SIP) for a proposed action when the project is located in areas designated as nonattainment or maintenance by the United States Environmental Protection Agency (USEPA). The USEPA promulgated the initial conformity regulations in 1993 to assist federal agencies in complying with the SIP by specifying rules for two categories of federal actions; transportation actions and general actions. The two rules have separate and distinct applicability and evaluation requirements. Transportation conformity applies to highway and transit projects, and General Conformity regulations apply to all other federal actions that are not transportation projects. Airport development projects typically fall under the General Conformity Rule unless the action includes proposed improvements to adjacent public roadways. The General Conformity Rule, published under 40 Code of Federal Regulations Part 93, applies only to an action that is federally funded or federally approved.

Both Transportation and General Conformity apply in areas that either do not meet or previously have not met National Ambient Air Quality Standards (NAAQS). The NAAQS have been promulgated for six criteria air pollutants by the USEPA for public health and environmental welfare against poor air quality. The six criteria air pollutants include: carbon monoxide (CO), lead (Pb), nitrogen oxides (NO_x), ozone, particulate matter (PM) for both particulate matter less than 10 microns (PM_{10}) and particulate matter less than 2.5 microns ($PM_{2.5}$), and sulfur dioxide (SO_2) (see **Table 2**).

Pursuant to the 1990 federal CAA Amendments, the USEPA classifies air basins (or portions thereof) as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether the national standards had been achieved. For ozone and PM, the nonattainment designations are further classified by the severity, or degree, of the violation of the NAAQS. For example, in the case of ozone, classifications range from "moderate" to "extreme."

Attainment Status

The USEPA has designated the SDAB as moderate nonattainment with respect to the federal 2008 eight-hour ozone standard.

State Implementation Plan

According to provisions of the CAA, each state must provide the USEPA with a SIP that includes actions intended to improve the air quality in areas that do not meet the NAAQS. The CAA directs that the SIP include a comprehensive inventory of existing sources of air pollution within the state, along with projected emissions inventories that show planned progress toward reducing emissions. Whenever the compliance status of an area is modified by the USEPA, revisions to the SIP may be required.

Ozone - On March 12, 2009, the California Air Resources Board (CARB) proposed nonattainment boundaries pursuant to the establishment of the 2008 eight-hour ozone standard. These boundaries identified San Diego County as a marginal nonattainment area. The designation of "marginal nonattainment" meant that the SDAPCD was not required to develop a new SIP, instead the SDAPCD was only required to adhere to the requirements of the December 5, 2012, maintenance plan for the 1997 eight-hour standard covering the County[2]. However, the County has since been redesignated by the USEPA as moderate (USEPA, 2013) nonattainment for the 2008 ozone standard. As such, the SDAPCD prepared revisions to the local ozone SIP to satisfy the CAA, §172(c)(3) and §182(a)(1), which includes emissions inventory reporting requirements for the San Diego nonattainment area under the 2008 eight-hour ozone standard. The *Final 2008 Eight-Hour Ozone Attainment Plan for San Diego County* was completed by the SDAPCD and published in December, 2016.

Carbon Monoxide - In 1991, the USEPA designated the SDAB as nonattainment of the federal eight-hour CO standard. In 1996, CARB adopted and submitted a CO Maintenance Plan requesting that non-attainment areas in the state be redesignated to attainment for the federal eight-hour CO standard. The USEPA approved the 1996 CO Maintenance Plan as part of the California SIP and redesignated the nonattainment areas effective June 1, 1998. In addition, the CAA required the initial maintenance plan to cover at least a 10-year period, with a second SIP revision due within eight years of redesignation to demonstrate that the area will maintain the standard for another 10 years. In 2004, revisions to the California SIP for CO were submitted and approved. As of January 2018, the SDAB achieved full attainment status for the federal eight-hour CO standard.

Actions would conform to the SIP and be exempt from a conformity determination if an applicability analysis showed that the total direct and indirect emissions from the project operational activities would be less than the USEPA specified de minimis levels. For the SDAB, the federal de minimis thresholds levels are set at 100 tons per year for both CO and ozone (NOx and VOC).

[2] The 8-hour Ozone (1997) standard was revoked on April 6, 2015 and the 1-hour Ozone (1979) standard was revoked on June 15, 2005.

Table 2 - State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a]	NAAQS[b]
Ozone (O_3)	1 hour	0.09 ppm	-
	8 hour	0.07 ppm	0.07 ppm
Carbon Monoxide (CO)	1 hour	20.0 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	100 ppb
	Annual	0.03 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	75 ppb
	24 hour	0.04 ppm	0.14 ppm
	Annual	-	0.03 ppm
Particulate Matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3
	Annual	20 µg/m^3	-
Particulate Matter ($PM_{2.5}$)	24 hour	-	35 µg/m^3
	Annual	12 µg/m^3	12 µg/m^3
Lead[c,e]	30 day	15 µg/m^3	-
	Quarter	-	1.5 µg/m^3
	Rolling 3 month average	-	0.15 µg/m^3
Visibility-Reducing Particles	8 hour	See note e	No National Standards
Sulfates	24 hour	25 µg/m^3	
Hydrogen Sulfide	1 hour	0.03 ppm	
Vinyl Chloride[e]	24 hour	0.01 ppm	

NS = no standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

Notes:

(a) CAAQS for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 hour and 24 hour), nitrogen dioxide, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

(b) National standards (other than ozone, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

(c) The national standard for lead was revised on October 15, 2008, to a rolling three-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(d) In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

(e) The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Source: CARB, 2017, and USEPA, 2017 https://www.epa.gov/criteria-air-pollutants/naaqs-table.

2.3.2 State Regulations and Standards

The following state regulations and standards were considered as part of this air quality analysis.

California Clean Air Act

CARB is the state agency responsible for coordinating state and local air programs in order to comply with the NAAQS set by the USEPA. CARB manages air quality by regulating mobile emissions sources, and overseeing the activities of air pollution control districts and regional air quality management districts. It also regulates local air quality indirectly by establishing state ambient air quality standards and vehicle emissions standards, and by conducting research, planning, and coordinating activities.

California has adopted air quality standards that are more stringent than the federal standards for criteria air pollutants. CARB established such standards, or criteria, for the same six pollutants as the NAAQS. These standards, commonly referred to as California Ambient Air Quality Standards (CAAQS), are shown in **Table 2.**

Attainment Status

Under the California Clean Air Act (CCAA), signed into law in 1988, areas have been designated as attainment or nonattainment with respect to the state standards. The SDAB is currently designated as non-attainment for the following state standards:

- eight-hour and one-hour ozone
- PM_{10} annual average and 24-hour average
- $PM_{2.5}$ annual average

2.3.3 Local Regulations and Standards

The following local and regional regulations, standards and plans were considered as part of this air quality analysis.

Regional Air Quality Plans

The CCAA requires areas that are designated nonattainment under the CAAQS for ozone, CO, SO_2, or NO_2 to prepare and implement plans to attain the standards by the earliest practicable date. Each of these standards has been attained in the SDAB except the state ozone standard. The San Diego County Regional Air Quality Strategy (RAQS) was adopted in 1991 with the intent to outline plans and control measures to attain the state air quality standards for ozone. Specifically, the two pollutants addressed in the RAQS are VOCs and NO_X, which are precursors to the formation of ozone. The RAQS are periodically updated, with the most recent final revision issued in December 2016.

The RAQS control measures focus on emission sources under the SDAPCD's authority, specifically stationary emission sources and some area-wide sources. However, the emission inventories and emission projections in the RAQS reflect the impact of all emission sources and all control measures, including those under the jurisdiction of the CARB (e.g., on-road motor vehicles, off-road vehicles and equipment, and consumer products) and the USEPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment). Thus, while legal authority to control various pollution sources is divided among agencies, the SDAPCD is responsible for reflecting federal, state, and local measures in a single plan to achieve state ozone standards in San Diego County.

SDAPCD Rules and Regulations

As noted, the SDAPCD is the air pollution control agency for all of San Diego County including the Airport. The SDAPCD has two roles under CEQA. First, if acting as a CEQA lead agency, the district can be responsible for preparing environmental analysis. Secondly, and most commonly, SDAPCD will review and comment on air quality analysis prepared by other public agencies. Because the SDAPCD is not the CEQA lead agency for the Proposed Project, they will be consulted for their review of this analysis.

Table 3 includes the current thresholds used for all projects in SDAPCD's jurisdiction. For CEQA purposes, these screening level thresholds (SLTs) are used to demonstrate that a project's total emissions would not result in a significant impact to air quality. The daily SLTs are most appropriately used for the standard construction and operational emissions. When project emissions have the potential to approach or exceed the SLTs listed below in **Table 3**, additional air quality modeling may need to be prepared to demonstrate that ground level concentrations resulting from project emissions (with background levels) will be below the NAAQS and CAAQS provided in **Table 2**.

If project emissions exceed the SLTs, specific modeling will be required for NO_2, SO_2, CO, and lead to demonstrate that the project's ground-level concentrations do not exceed the NAAQS and CAAQS. For ozone precursors, PM_{10} and $PM_{2.5}$, exceedances of the SLTs would result in a significant impact. The reason for this is that the SDAB is currently not in attainment for these specific criteria pollutants. Design considerations or mitigation measures would need to be evaluated and recommended (if the SLTs were exceeded) to reduce the daily emissions to below the applicable screening levels.

Table 3 - SDAPCD Screening Level Thresholds

Pollutant	Pounds Per Hour	Pounds per Day	Tons per Year
Respirable Particulate Matter (PM_{10})	-	100	15
Fine Particulate Matter ($PM_{2.5}$)	-	55[a]	10
Oxides of Nitrogen (NO_X)	25	250	40
Oxides of Sulfur (SO_X)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead (Pb)	-	3.2	0.6
Volatile Organic Compounds (VOCs)	-	75[b]	13.7[c]

Notes:
(a) USEPA "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" published.
September 8, 2005. Also used by the SCAQMD.
(b) Threshold for VOCs based on the threshold of significance for VOCs from the South Coast Air Quality Management District for the Coachella Valley.
(c) 13.7 Tons Per Year threshold based on 75 lbs. /day multiplied by 365 days/year and divided by 2,000 lbs.
Source: County of San Diego, Guidelines for Determining Significance and Report Format and Content Requirements, Air Quality. 2007.

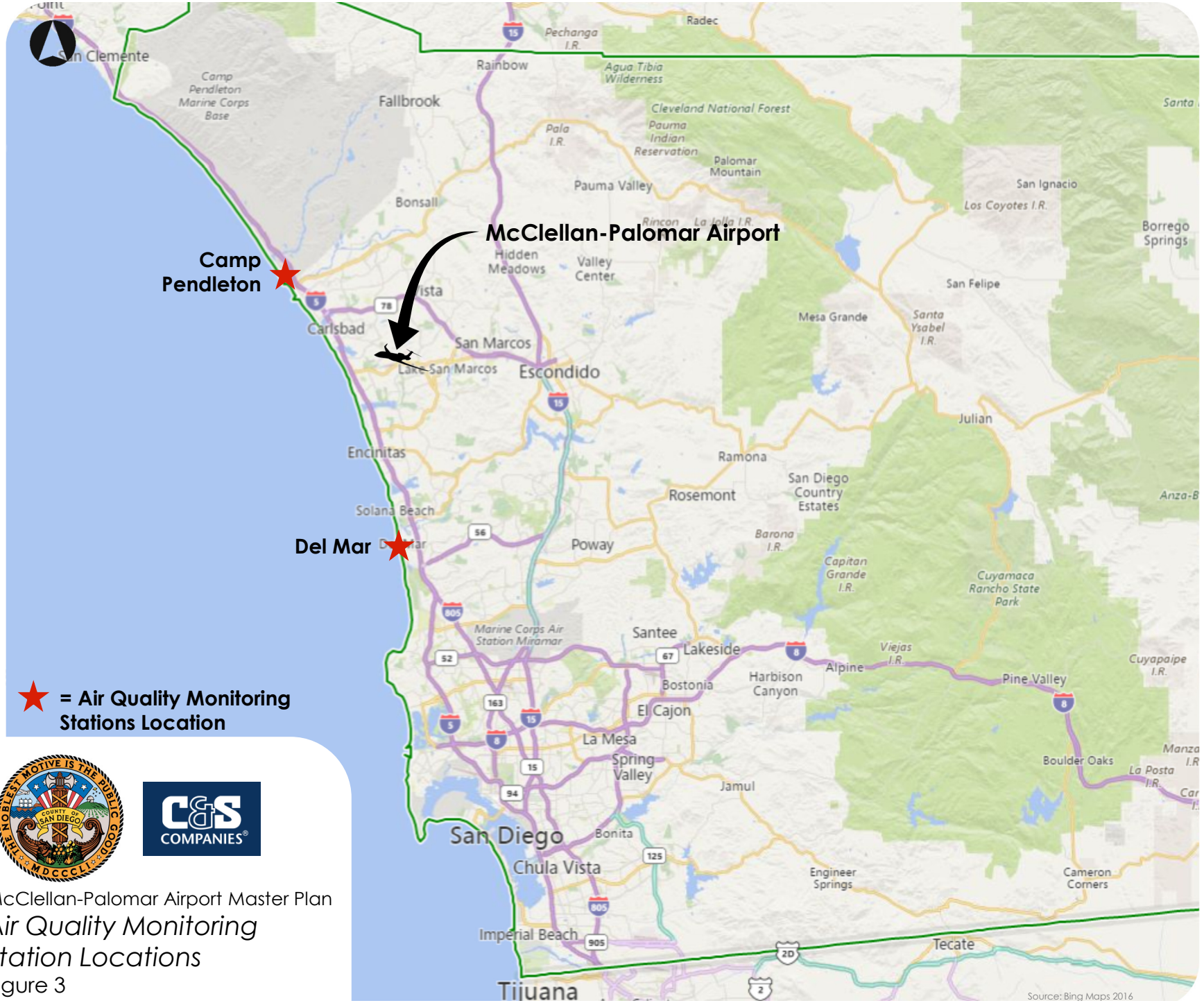
2.4 Background Air Quality

The SDAPCD operates a network of ambient air monitoring stations throughout the County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether ambient air quality meets the CAAQS and NAAQS. The nearest ambient monitoring stations are located at the following locations (see **Figure 3**):

1. Camp Pendleton - Station is located approximately 13 miles north of the Airport. This location is the SDAPCD's northernmost station and is located within the Camp Pendleton Marine Corps Base. The monitor sits atop a bluff overlooking the Pacific Ocean and Interstate 5 and measures wind, ozone, NO_X, NO_2 and $PM_{2.5}$.

2. Del Mar - Station is located approximately 12 miles south of the Airport. This station sits in a residential area and monitors ozone and wind. The station's primary purpose is to measure offshore transport of ozone impacting the coastal areas of San Diego County.

3. McClellan-Palomar Airport – Station is located at the Airport and is operated by the SDAPCD, but it was initially installed by the USEPA as part of a focused monitoring study to measure lead concentrations. The monitoring station does not measure any additional pollutants or weather factors. Additional discussion of lead monitoring at the Airport is located in the following pages.



McClellan-Palomar Airport Master Plan

Air Quality Monitoring Station Locations

Figure 3

Ozone is a secondary pollutant produced through a series of photochemical reactions involving VOCs and NO_X. Ozone creation requires VOCs and NO_X to be available for approximately three hours in a stable atmosphere with strong sunlight. Ozone is a regional air pollutant because it is not emitted directly by a source, but is formed downwind of sources generating VOC and NO_X emissions. The effects of ozone include eye and respiratory irritation, lower resistance to lung infection and possible aggravation of pulmonary conditions in persons with lung disease. Ozone is also damaging to vegetation and untreated rubber.

In 2005, the federal one-hour ozone standard was revoked. The federal eight-hour ozone standard of 0.085 ppm was replaced with a more stringent standard of 0.075 ppm in 2008 and again lowered to 0.07 ppm in 2015.

As noted the SDAB is currently in moderate nonattainment for the federal eight-hour ozone standard and nonattainment for the state eight-hour and one-hour standards. According to the *2008 Eight-Hour Ozone Attainment Plan*, the SDAB has achieved a 21 percent reduction in the ozone design value between 2000 and 2015. Overall, the number of exceedances of the federal ozone standard in the SDAB has declined over the past 10 years in spite of growth in population and vehicles on the road (see **Table 4**). Further reductions are anticipated through 2035 given the local, state and federal control measures already in place.

Carbon Monoxide is a non-reactive pollutant that is a product of incomplete fuel combustion. At high concentrations, CO reduces the oxygen-carrying capacity of the blood and can cause headaches, dizziness, unconsciousness and even death. Ambient CO concentrations usually follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. Under inversion and/or stagnant wind conditions, high mobile CO concentrations may exist at sensitive receptors located near roadways.

As shown on **Table 4**, CO levels in the SDAB are well below the state and federal standards. As of January 2018, the SDAB is in attainment with federal standards.

Particulate Matter occurs in the atmosphere from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of PM, such as demolition and construction activities, are more local in nature, while others such as vehicular traffic have a more regional effect. Inhalable particles that are 2.5 microns or smaller are called $PM_{2.5}$. These particles can stay suspended in the air for long periods of time and the size of the particles is directly linked to their potential to cause health problems, with some particles so small they can penetrate into the deepest recesses of the lung.

In 2005, the SDAPCD prepared the *Measure to Reduce Particulate Matter in San Diego County*. For the SDAB, PM concentrations have declined over the past decade, with occasional spikes due to emissions from wild fires.

Lead emissions in the U.S. have greatly decreased since its removal from automobile gas. It is generally found near stationary sources that include waste incinerators, utilities, and lead-acid battery manufacturers. However, aviation gasolines have long contained lead in the form of tetraethyl lead, which is added to boost octane rating, and most piston-engine aircraft have and will continue to use it until a reliable replacement is found. However, aviation trends have begun to show a decline in aviation gasoline consumption over time[3].

In 2010, the USEPA revised the monitoring requirements for measuring ambient levels of airborne lead and mandated a 1.0 ton per year (tpy) lead emission threshold for permanent testing at airports. Following the revision, the USEPA required a one-year monitoring study of 15 airports that had lead emissions greater than 0.5 tpy, but less than 1.0 tpy. The study goal was to help the USEPA determine whether airports that emit less than 1.0 tpy have the potential to cause the surrounding areas to exceed the NAAQS for lead of 0.15 μg/m3 for a rolling three-month average.

Based on 2008 lead emission estimates from the National Emission Inventory database[4], the Airport was chosen for a one-year study, which was conducted in 2012. The monitoring station was installed adjacent to the primary aircraft run-up area where aircraft engines operate at high-power settings to check engine components and equipment prior to take-off. The lead measurements collected during the USEPA study appeared to exceed the NAAQS threshold that requires continuous airborne lead monitoring at the Airport.

However, due to concerns over the USEPA's methodology and testing protocol, the SDAPCD conducted their own independent follow-up lead study in 2013 that found USEPA's monitoring station was not suitable to adequately document lead levels at the Airport. Specifically, the run-up area was not representative of Airport lead levels since it is not accessible to the public, and it would not contribute to protecting public health. Instead, SDAPCD conducted monitoring at numerous locations where pilots, passengers, airport personnel, and the public have access.

[3] ACRP Research Report 162, "Guidebook for Assessing Airport Lead Impacts", 2016.

[4] https://www.epa.gov/air-emissions-inventories/national-emissions-inventory

Table 4 - SDAB Summary of Air Quality Sampling Results (2004-2014)

Pollutant	Standard	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ozone	Days exceeding federal 8-hour standard (>0.075 ppm)[a]	23	24	38	27	35	24	14	10	10	7	12
	Max 8 hr. concentration (ppm)	0.10	0.09	0.10	0.09	0.11	0.10	0.09	0.09	0.08	0.08	0.08
	Days exceeding state 1-hour standard (>0.09 ppm)	12	16	23	21	18	8	7	5	2	2	3
	Max 1 hr. concentration (ppm)	0.129	0.113	0.121	0.134	0.139	0.119	0.107	0.114	0.101	0.095	0.100
$PM_{2.5}$	Number of days exceeding federal 24-hour $PM_{2.5}$ standard (>35 µg/m^3)	1	0	1	17	3	3	0	0	2	2	1
	Max 24 hr. concentration (µg/m^3)	67.3	44.1	63.3	126.2	42.0	64.95	33.3	34.7	70.7	56.3	36.7
PM_{10}	Number of days exceeding state 24-hour PM_{10} standard (>50 µg/m^3)	175	53	159	159	163	146	136	139	6	6	0
	Max 24 hr. concentration (µg/m^3)	138	154	134	392	158	123	108	126	126	92	58
CO	Days exceeding federal/state 8-hour standard (>9.0 ppm)	0	0	0	0	0	0	0	0	0	0	0
	Max 8 hr. concentration (ppm)	4.1	4.7	3.6	5.2	3.5	3.4	2.5	2.4	3.8	2.6	3.0

Notes:
(a) On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
Source: CARB 2016 and SDAPCD 5-Year Air Quality Monitoring Network Assessment

The results of SDAPCD's 2013 study were published in the *Lead Gradient Study at McClellan-Palomar Airport*[5]. The report concluded that the location with the highest lead concentrations (other than the run-up area) occurs along the Airport's northern property boundary and would not exceed NAAQS thresholds. This site resulted in a maximum lead level of 0.049 $\mu g/m^3$ (and an average of 0.015 $\mu g/m^3$), both of which are well below the NAAQS threshold of 0.15 $\mu g/m^3$. In conclusion, SDAPCD's study demonstrated that additional or continued measurements in the primary run-up area will not be representative of areas that are accessible to the public, and would not contribute to protecting public health. Per SDAPCD's recommendation, USEPA's monitoring station was relocated to the northeast corner of the property, as documented in their report.

Toxic Air Contaminant - According to the SDAPCD, toxic air contaminants (TACs) are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A wide range of sources, from industrial plants to motor vehicles, emit TACs. TACs can be emitted directly and can also be formed in the atmosphere through reactions among different pollutants. TACs are the California state term for hazardous air pollutants (HAPs). The USEPA identifies 188 compounds as HAPS or TACs under the Clean Air Act.

The CARB has identified 21 TACs in addition to the USEPA's list of TACs. TACs are emitted by a wide range of sources from industrial plants to households. Since it is not practical to eliminate all TACs, these compounds are regulated through risk management programs. These programs are designed to ensure that the risk of adverse health effects from exposures to TACs is not significant.

The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic damage; or short-term acute affects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches. For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure. Non-carcinogenic substances differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis. Acute and chronic exposure to non-carcinogens is expressed as a hazard index, which is the ratio of expected exposure levels to an acceptable reference exposure levels.

[5]http://www.sandiegocounty.gov/content/dam/sdc/apcd/PDF/Misc/APCD_McClellan_Palomar_Airport_Lead_Gradient.pdf

Sensitive Receptors - Air quality regulators typically define sensitive receptors as schools (Preschool–12th Grade), hospitals, resident care facilities, day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. Under existing conditions, the closest sensitive receptors (see **Figure 4**) located nearest to the Airport are single and multi-family residential dwellings. Bressi Ranch is located 0.6 miles from Runway end 24, to the southeast across El Camino Real. The Morning Ridge community is located approximately 0.8 miles southwest of the Airport. Areas located west of the Airport are predominantly open space/golf course (The Crossings at Carlsbad), and north of the Airport is commercial/industrial land uses.

Objectionable Odors – As noted by the SDAPCD, odor issues are very subjective by the nature of odors themselves and their measurements are difficult to quantify. Typically, such odors are identified by industrial and some commercial land uses. The Airport is surrounded by industrial, commercial and open space land uses. The County is unaware of any odor complaints relative to operations at the Airport or any of the surrounding facilities which are primarily used for office space and warehousing.

McClellan-Palomar Airport Master Plan

Nearest Sensitive Receptors

Figure 4

Section 3—Significance Criteria & Analysis Methodologies

3.1 Significance Criteria

The following guideline for determining significance is based on the *County of San Diego Guidelines for Determining Significance - Air Quality* (March 19, 2007). An affirmative response or confirmation of any one of the following Guidelines will generally be considered a significant impact to air quality as a result of project implementation.

1. The project will conflict with or obstruct the implementation of the San Diego RAQS and/or applicable portions of the SIP.
2. The project will result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.
    a. The project will result in emissions that exceed 250 pounds per day of NO_X, or 75 pounds per day of VOCs.
    b. The project will result in emissions of CO that when totaled with the ambient concentrations will exceed a one-hour concentration of 20 ppm or an eight-hour average of 9 ppm [or 550 pounds per day[6]].
    c. The project will result in emissions of $PM_{2.5}$ that exceed 55 pounds per day.
    d. The project will result in emissions of PM_{10} that exceed 100 pounds per day and increase the ambient PM_{10} concentration by 5 micrograms per cubic meter (5.0 $\mu g/m^3$) or greater at the maximum exposed individual.
3. The project will result in a cumulatively considerable net increase of any criteria pollutant for which the SDAB is nonattainment under an applicable federal or state Ambient Air Quality Standard.
    a. Construction Phase: A project that has a significant direct impact on air quality with regard to emissions of PM_{10}, $PM_{2.5}$, NO_x and/or VOCs, would also have a significant cumulatively considerable net increase.
    b. Construction Phase: In the event direct impacts from the proposed project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions of concern from the proposed project, in combination with the emissions of concern from other proposed projects or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern, are in excess of the guidelines identified in Section 4.2 of The *County of San Diego Guidelines for Determining Significance* and Report Format and Content Requirements.

[6] Cited in Table 5 in the County Guidelines for Air Quality.

c. Operational Phase: A project that does not conform to the RAQS and/or has a significant direct impact on air quality with regard to operational emissions of PM_{10}, $PM_{2.5}$, NO_x and/or VOCs, would also have a significant cumulatively considerable net increase.
d. Operational Phase: Projects that cause road intersections to operate at or below a Level of Service (LOS) of E (analysis only required when the addition of peak-hour trips from the proposed project and the surrounding projects exceeds 3,000) and create a CO "hotspot" create a cumulatively considerable net increase of CO.

4. The project will expose sensitive receptors to substantial pollutant concentrations.
   a. The project places sensitive receptors near CO "hotspots" or creates CO "hotspots" near sensitive receptors.
   b. Project implementation will result in exposure to TACs resulting in a maximum incremental cancer risk greater than one in one million without application of Toxics-Best Available Control Technology or a health hazard index greater than one would be deemed as having a potentially significant impact.
5. The project which is not an agricultural, commercial or an industrial activity subject to SDAPCD standards, as a result of implementation will either generate objectionable odors or place sensitive receptors next to existing objectionable odors, which will affect a considerable number of persons or the public.

3.2 Methodology

Air quality impacts due to the Proposed Project were assessed using methodologies identified in *County of San Diego Guidelines for Determining Significance - Air Quality*. The following describes the methodology used to calculate emissions of the criteria pollutants.

An emissions inventory was prepared to compare the annual net increase in emissions as a result of the Proposed Project. The construction and operational sources of emissions included in the emission inventory are described below in **Table 5**.

Table 5 - Sources of Emissions

Source	Primary Emissions	Characteristics	Potential Change
Aircraft	CO, NO_X, PM, SO_X, VOC, Pb	Emissions vary depending on aircraft engine type, number of engines, power setting, and period of operation. Emissions are also emitted from the aircraft's auxiliary power unit (APUs).	Change in the taxi times necessary to reach runway end and stage lengths of aircraft departing airport
Ground Support Equipment (GSE)	CO, NO_X, PM, SO_X, VOC	Exhaust products of fuel combustion from service trucks, tow tugs, belt loaders, and other portable equipment.	Change in the number and operations of ground support equipment (GSE) used to service aircraft
Motor Vehicles	CO, NO_X, PM, VOC	Exhaust products of fuel combustion from motor vehicles approaching, departing and operating at the Airport. Emissions vary depending on vehicle type, distance traveled and operating speed.	Change in the number of vehicles traveling to and from the Airport
Fuel Storage and Transfer	VOC	Formed from the evaporation of vapor displacement from storage tanks and fuel transfer facilities. Emissions vary from fuel usage, type and refueling methods.	Construction or removal of existing fuel storage tanks
Stationary Sources	CO, NO_X, PM, SO_X, VOC	Exhaust products of fuel combustion from boilers, emergency generators and surface coating operations. Emissions vary depending on source and control methods	Construction of new facilities
Construction Equipment	CO, NO_X, PM, SO_X, VOC	Dust generated during excavation and land clearing, exhaust emissions from construction equipment and motor vehicles and evaporative emissions from asphalt paving and painting.	Construction equipment on site required to complete the proposed development and vehicles needed to haul materials to and from the site

Source: C&S Engineers, Inc. 2017

3.2.1 Operational Emissions

For calculating operational emissions related to aircraft (including APUs) and GSE, the most recent version of the Federal Aviation Administration's Aviation Environmental Design Tool (AEDT version 2d) software system was used. Lead emissions from aviation gasoline were calculated using annual operations and emission factors presented in the FAA *Aviation Emissions and Air Quality Handbook* (Version 3, Update 1).

Aircraft activity levels, fleet mix, and other Airport-specific operational characteristics were primarily obtained from the Airport Master Plan. Aircraft operations for existing conditions (2016) were obtained from the FAA Air Traffic Activity System as those reflected the actual number or aircraft operations that took place at the Airport in 2016 versus those reported in the Airport Master Plan that reflect the FAA Terminal Area Forecast. For future conditions (2036), aircraft operations were obtained from the aviation demand forecasts prepared as part of the Airport Master Plan. The Airport Master Plan developed a number of forecast scenarios, based on the anticipated demand of commercial operations at the Airport. Two scenarios, reflective of forecasted passenger activity levels (PAL), were selected for further evaluation. The first scenario (PAL 1) includes 195,050 annual aircraft operations. The second scenario (PAL 2), which includes 208,004 annual aircraft operations was also evaluated under this air quality analysis. Due to the discretionary nature of allowing commercial service at the Airport, a third scenario was evaluated in the air quality analysis which included the forecasted growth of aircraft operations at the Airport without the commercial service operations reflected in PAL 1 and PAL 2. This scenario (Forecasted Growth) included 180,450 annual aircraft operations in 2036. GSE and APU utilization information was derived from on-site surveys conducted at the Airport and supplemented with AEDT default data, where necessary. Here is a brief summary of each forecast scenarios described above:

Existing Conditions (2016)	149,029 annual aircraft operations	Existing conditions without Proposed Project.
Forecasted Growth (2036)	180,450 annual aircraft operations	Natural aviation growth through 2036 with capital improvements but no commercial airline activity.
PAL 1 (2036)	195,050 annual aircraft operations	Moderate aviation growth through 2036 with capital improvements and commercial airline activity (up to 304,673 enplanements).
PAL 2 (2036)	208,004 annual aircraft operations	High aviation growth through 2036 with capital improvements and commercial airline activity (up to 575,000 enplanements).

Operational emissions from on-road vehicles were estimated using a combination of California Emissions Estimator Model (CalEEMod) and the latest EMFAC2014 on-road vehicle emissions model. EMFAC2014 has not yet been incorporated into CalEEMod; therefore, EMFAC2014 was used to generate emission factors which were used in conjunction with calculated vehicle miles traveled. EMFAC2014 was then used to generate SDAB-specific vehicle fleet emission factors in units of grams per mile, which is the same methodology used by CalEEMod to generate emission factors. See **Table 6** for more information on modeling inputs for on-road vehicles.

Table 6 - Air Quality, Operational Emission Sources, Methods and Models

Source	Model or Method	Supporting Data
Aircraft/APU	AEDT (version 2d)	Total operations – Airport Master Plan Update (forecast) and FAA Air Traffic Activity System (confirmed historical data) Fleet mix – Airport Noise and Operations Monitoring System (2016 calendar year) Times-in-mode – AEDT default data and FAA Aviation System Performance Metrics
GSE	AEDT (version 2d)	Fleet mix – based on tenant surveys and AEDT default data Operating times – AEDT default data Operational characteristics - based on tenant surveys and AEDT default data
Motor Vehicles	CalEEMod and EMFAC2014	Traffic volumes – existing data from City of Carlsbad (2016 annual monitoring report) and County projections (LLG 2017) Fleet mix – CalEEMod data Operational characteristics - existing data from City of Carlsbad (2016 annual monitoring report) and County projections (LLG 2017)
Fuel Storage	AEDT (version 2d)	Throughput & fuel type – tenant surveys and County provided data
Stationary Sources	USEPA AP-42 and AEDT (version 2d)	Source & fuel type – tenant surveys and County provided data Operating times – tenant surveys Emissions factors – AP-42 Locations – tenant surveys and County provided data

Source: C&S Engineers, Inc. 2017

3.2.2 Construction Emissions

Annual emissions from the use of construction equipment were calculated for each project component and stage of development (near-, intermediate-, and long-term phases). For the Proposed Project, the estimated emissions were based on construction of the project components as well as the vehicle emissions from transporting pavement subbase, asphalt, and aggregate materials to the development site. For the No-Project Alternative, the increase in construction emissions were assumed to be zero, since the Proposed Project would not be constructed.

Emissions from construction vehicles were calculated using CalEEMod, Version 2013.2. The County provided the list of construction projects and an approximate construction schedule. From this, inputs relating to durations, quantities, vehicle miles traveled and equipment fleet mix were either entered if known or left as the default value provided by CalEEMod. Operational years for near-, intermediate-, and long-term projects were 2023, 2030, and 2035[7], respectively. The County provided assumptions for durations of the work and demolition volumes. Construction durations were based on an assumption of 420 square yards of pavement removal per shift and 2,000 cubic yards (CY) of asphalt/concrete pavement production per shift. Demolition volumes were based on a pavement density of 2.1 tons per CY of pavement. CalEEMod provides default equipment populations and hours used per shift for each project type selected. If additional equipment were required, they were manually entered in. All CalEEMod results and assumptions are detailed in **Appendix A** to this document.

3.3 Modeling Results

Based on the methodology described Section 2.1, annual emissions for criteria pollutants (in tons per year) were calculated for the construction and operation of the different phases of improvements (near-, intermediate-, and long-term improvements). The following summarizes the results of the various scenarios. Detailed summaries of the operational and construction emissions are provided in **Appendix A**, **B** and **C**.

3.3.1 Existing Conditions (2016)

An emission inventory was prepared for the Existing Conditions (2016) using the methods and models provided in **Table 6**. The model estimates the rate of emissions of the criteria pollutants in short tons per year. The following table summarizes the emissions associated with operations under the existing conditions. As shown in **Table 7**, the greatest overall emission contribution comes from aircraft operations.

[7] CalEEMod only allows the user to select years of the following values: 1990, 2000, 2005, 2010-2025, 2030, 2035, and 2040. Project years for the intermediate term and long-term projects were matched to the closest selection available in CalEEMod.

Table 7 - Existing Conditions (2016) Emissions Inventory

Emission Source	Annual Emissions (tpy)						
	CO	**VOC**	**NO_X**	**SO_X**	**$PM_{2.5}$**	**PM_{10}**	**Pb**
Aircraft[a]	1,108.84	48.69	22.61	4.43	1.07	1.07	0.86
GSE	2.62	0.16	0.40	0.29	0.02	0.02	N/A
Motor Vehicles[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stationary Sources	0.08	0.16	0.14	0.00	0.01	0.01	N/A
Total[c]	**1,111.54**	**49.01**	**23.15**	**4.72**	**1.10**	**1.10**	**0.86**

Notes:

(a) Includes APU usage. Assumes taxi in time of 7 minutes, taxi out time of 19 minutes.

(b) Motor vehicle emissions were not calculated for existing conditions (2016). Increases in emissions under the future scenarios that included increases in commercial aircraft operations were calculated based on the net increase when compared to a baseline of no emissions.

(c) Values were rounded to the nearest hundredth for legibility within the table. Therefore, a sum of the values shown in the table may not precisely equate the values in this row

Source: AEDT version 2d, C&S Engineers, Inc. analysis 2017

3.3.2 Future Conditions (2036) No-Project Alternative

The runway length and location for the Future (2036) No-Project Alternative are assumed to be unchanged and therefore aircraft taxi times would remain consistent with the Existing Conditions (2016). However, based on aviation forecasts, air traffic is projected to increase each year with and without the Proposed Project and the number of associated annual aircraft operations will be higher as compared to Existing Conditions (2016).

Using forecast information provided by the Airport Master Plan, a scenario was modeled that included the Future Conditions (2036) No-Project Alternative. This includes 180,450 total annual aircraft operations. The results of that analysis are presented on **Table 8**.

Table 8 - Future Conditions (2036) No-Project Alternative

Emission Source	Annual Emissions (tpy)						
	CO	**VOC**	**NO_X**	**SO_X**	**$PM_{2.5}$**	**PM_{10}**	**Pb**
Aircraft[a]	1,202.84	34.41	49.10	10.58	1.27	1.27	0.62
GSE	2.62	0.16	0.41	0.29	0.02	0.02	N/A
Motor Vehicles[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stationary Sources[c]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**1,205.46**	**34.57**	**49.51**	**10.87**	**1.29**	**1.29**	**0.62**

Notes:

(a) Includes APU usage. Assumes taxi in time of 7 minutes, taxi out time of 19 minutes.

(b) Motor vehicle emissions were not calculated for this scenario. Increases in emissions under the future scenarios that included increases in commercial aircraft operations were calculated based on the net increase when compared to a baseline of no emissions.

(c) No improvements to facilities are anticipated under the future no-action alternative.

Sources: AEDT version 2d, C&S Engineers, Inc. analysis 2017 and Helix Environmental Planning, Inc. analysis 2017

3.3.3 Future Conditions (2036) Proposed Project Alternatives

As discussed in Section 3.2.1, this study includes analysis of three different forecast scenarios for the future Proposed Project Alternative: Forecasted Growth – 180,450 annual aircraft operations, PAL 1 – 195,050 annual aircraft operations and PAL 2 – 208,004 annual aircraft operations. The emissions associated with each Future Condition (2036) scenario was modeled to determine the anticipated increase.

Under the Forecasted Growth scenario, the number of aircraft operations are forecasted to remain the same as the Future Conditions (2036) No-Project Alternative with the exception of the potential increase in commercial service operations forecasted under the PAL 1 and PAL 2 scenarios. As such, the Forecasted Growth scenario only includes the forecasted natural growth of aircraft operations at the Airport. The annual number of ground access vehicles in parking lots and on roadways would also be the same when compared to the Future Conditions (2036) No-Project Alternative. The only difference between the Forecasted Growth scenario and the No Project Alternative is that the Forecasted Growth scenario would include the extension and shift of the runway, which will cause a change in aircraft taxi times. The results of the Forecasted Growth analysis are presented on **Table 9**.

Table 9 - Future Conditions (2036) Proposed Project Alternative (Forecasted Growth)

Emission Source	Annual Emissions (tpy)						
	CO	VOC	NO_x	SO_x	$PM_{2.5}$	PM_{10}	Pb
Aircraft[a]	1,226.61	36.12	50.58	11.04	1.31	1.31	0.63
GSE	2.62	0.16	0.41	0.29	0.02	0.02	N/A
Motor Vehicles[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stationary Sources[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**1,229.23**	**36.28**	**50.99**	**11.33**	**1.33**	**1.33**	**0.63**

Notes:

(a) Includes APU usage. Assumes taxi in time of 7 minutes and 46 seconds, taxi out time of 20 minutes.

Sources: AEDT version 2d, C&S Engineers, Inc. analysis 2017 and Helix Environmental Planning, Inc. analysis 2017

(b) Motor vehicle and Stationary Sources emissions were not calculated for this scenario. Increases in emissions under the future scenarios that included increases in commercial aircraft operations were calculated based on the net increase when compared to a baseline of no emissions.

Under the PAL 1 scenario, the annual number of aircraft operations are forecasted to increase to 195,050. This increase will be driven solely by the forecasted increase in commercial service operations at the Airport. As noted under the Forecasted Growth scenario, the Proposed Project will also result in an increase in average aircraft taxi times as the runway is lengthened and shifted. Although, the increased runway length will allow some aircraft to travel further distances, as they will no longer require a weight penalty[8], its impact to aircraft emissions is negligible as emissions are not calculated above the mixing height[9]. **Table 10** presents the emissions calculated for PAL 1.

[8] Dependent upon weather conditions and runway length some aircraft are required to reduce their fuel or payload in order to operate.

[9] The atmospheric mixing height used in the AEDT modeling was set at the default value of 3,000 ft. above ground level.

Table 10 - Future Conditions (2036) Proposed Project Alternative (PAL 1)

Emission Source	Annual Emissions (tpy)						
	CO	VOC	NO_X	SO_X	$PM_{2.5}$	PM_{10}	Pb
Aircraft[a]	1,266.97	36.63	74.06	14.83	1.72	1.72	0.63
GSE	3.34	0.20	0.51	0.37	0.03	0.03	N/A
Motor Vehicles[b]	10.72	1.41	1.32	0.03	0.98	3.62	N/A
Stationary Sources	0.11	0.18	0.19	0.00	0.01	0.01	N/A
Total	**1,281.14**	**38.42**	**76.08**	**15.23**	**2.74**	**5.38**	**0.63**

Notes:

(a) Includes APU usage. Assumes taxi in time of 7 minutes and 46 seconds, taxi out time of 20 minutes.

(b) Emissions from on-road mobile sources (motor vehicles) associated with the increase in commercial operations at the Airport were calculated using estimated vehicle miles traveled (see Appendix C) from the LLG Transportation Impact Analysis, 2017.

Sources: AEDT version 2d, C&S Engineers, Inc. analysis 2017 and Helix Environmental Planning, Inc. analysis 2017

Under the PAL 2 scenario, the annual number of aircraft operations are forecasted to increase to 208,004. This increase will be driven solely by the forecasted increase in commercial service operations at the Airport. As noted under the Forecasted Growth scenario, the Proposed Project will also result in an increase in average aircraft taxi times as the runway is lengthened and shifted. **Table 11** presents the emissions calculated for PAL 2.

Table 11 - Future Conditions (2036) Proposed Project Alternative (PAL 2)

Emission Source	Annual Emissions (tpy)						
	CO	VOC	NO_X	SO_X	$PM_{2.5}$	PM_{10}	Pb
Aircraft[a]	1,302.76	37.09	94.89	18.18	2.09	2.09	0.63
GSE	3.56	0.22	0.55	0.39	0.03	0.03	N/A
Motor Vehicles[b]	20.22	2.66	2.49	0.05	1.85	6.83	N/A
Stationary Sources	0.11	0.18	0.19	0.00	0.01	0.01	N/A
Total	**1,326.65**	**40.15**	**98.12**	**18.62**	**3.98**	**8.96**	**0.63**

Notes:

(a) Includes APU usage. Assumes taxi in time of 7 minutes and 46 seconds, taxi out time of 20 minutes.

(b) Emissions from on-road mobile sources (motor vehicles) associated with the increase in commercial operations at the Airport were calculated using estimated vehicle miles traveled (see Appendix C) from the LLG Transportation Impact Analysis, 2017.

Sources: AEDT version 2d, C&S Engineers, Inc. analysis 2017 and Helix Environmental Planning, Inc. analysis 2017

3.3.4 Construction Emissions Inventory

Construction of the Proposed Project would cause short-term and temporary emissions due to the use of construction equipment. An inventory of emissions from the use of construction equipment associated with the Proposed Project was prepared using the latest version of the computer model CalEEMod (Version 2013.2.).

Based on scheduling provided in the Airport Master Plan, the Proposed Project improvements would be phased over a 20-year period. Their exact date of construction would be dependent upon the availability of funding and the demand for airport facilities. This construction analysis was prepared at a programmatic level using all available resources to define the Proposed Project improvements. Defined construction schedules would only be developed once final engineering is completed and funding for construction has been secured.

Since the construction of the improvements are expected to occur over a 20-year period, the estimated annual emissions were calculated for each individual project. **Table 12** illustrates the expected annual emissions by year, starting in 2017 (start of construction of near-term) through 2036 (full implementation of the Master Plan).

Table 12 - Maximum Daily Construction Emissions (lbs. per day)

Phase	Master Plan Project #[a]	CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Near-Term	1	8.72	1.97	10.96	0.01	1.45	1.02
	2	12.31	1.38	12.84	0.02	4.28	1.22
	3	10.42	4.62	9.93	0.02	1.19	0.69
	4	98.13	8.48	84.74	0.29	14.23	6.66
	5	27.43	2.60	24.20	0.06	10.99	3.69
	6	8.18	0.74	6.98	0.01	1.17	0.76
	7	14.01	1.28	10.87	0.04	1.09	0.68
Intermediate	8	7.92	0.61	5.06	0.01	1.04	0.63
	9	207.21	17.50	141.14	0.47	77.34	16.97
	10	N/A	N/A	N/A	N/A	N/A	N/A
	11	7.89	3.70	5.05	0.01	1.04	0.63
Long-Term	12	35.79	1.40	24.20	0.08	14.96	3.18
	13	18.46	3.57	10.77	0.05	13.62	2.49
	14	35.76	1.14	24.18	0.08	19.24	10.92
	15	11.36	1.74	10.15	0.02	6.35	3.42
	16	18.09	51.32	8.78	0.04	6.03	3.14
Total		**521.67**	**102.05**	**389.83**	**1.23**	**174.02**	**56.09**

Notes:

(a) Master Plan Project numbers (#) correspond to those shown on Figure 1 – Proposed Project.

Source: CalEEMod, C&S Engineers, Inc. analysis 2017

Section 4—Project Impact Analysis

4.1 Conformance with Regional Air Quality Strategy

4.1.1 Guidelines for the Determination of Significance

In accordance with CEQA Guidelines, an EIR must discuss the consistency between the Proposed Project and applicable Air Quality Management Plan for the jurisdiction in which it is located. The SDAPCD RAQS were developed in 1991 to meet CCAA requirements and identifies emission control measures to provide expeditious progress (five percent average annual ozone precursor reduction; SDAPCD, 2009) toward attaining the state ozone standard. The RAQS contains a list of pollution control measures directed at achieving the NAAQS and CAAQS for ozone. The RAQS control measures focus on emission sources under the SDAPCD's authority, specifically stationary sources and some area-wide sources. However, the emission inventories and emission projections in the RAQS reflect the impact of all emission sources and all control measures, including those under the jurisdiction of CARB (e.g., on-road motor vehicles, off-road vehicles and equipment, and consumer products) and the USEPA (e.g., aircraft, ships, trains, and pre-empted off-road equipment).

The RAQS relies on information from CARB and the San Diego Association of Governments (SANDAG) on source emissions that include projected growth in the county, mobile growth, growth within the surrounding area, and growth in all other sources in order to project future emissions and to determine the strategies necessary for the reduction of emissions. This included data used in the development of the Regional Aviation Strategic Plan (RASP), Airport Multimodal Accessibility Plan (AMAP), Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS). The RASP was actually prepared by the San Diego County Regional Airport Authority (SDCRAA) and included the preparation of forecasts for all airports located within San Diego County. That information was later utilized by SANDAG in the development of the RTP and SCS.

The CARB 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. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS.

The following 2009 RAQS measures have been identified as applicable to the Proposed Project and airport operations. There are no air quality control measures outlined in the RAQS that specifically addresses control of aircraft emissions.

1. Enhanced Vapor Recovery Program (Rule 61.3.1) – controls emissions during gasoline dispensing into vehicle fuel tanks by requiring all vapor recovery systems to comply with specified performance standards and to be certified by CARB.

2. Control of Architectural Coatings (Rule 67.0.1) – adopted CARB suggested control measure to limit VOC emissions from architectural coatings.

At present, no particulate matter attainment plan is required under the CCAA. However, in addition to the RAQS, the SDAPCD reviewed potential measures to reduce particulate matter in the County to address Senate Bill 656. In 2009, the SDAPCD published the Fugitive Dust Control (Rule 55). The rule states that no person shall engage in construction or demolition activities in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than three minutes in any 60-minute period.

The SDAB is currently in attainment for the federal carbon monoxide standards. No air quality control measures are outlined in the RAQS that specifically address CO.

4.1.2 Significance of Impacts Prior to Mitigation

The Proposed Project would result in the construction and operation of navigational, airside, and landside improvements that are consistent with current and future land uses at the Airport and surrounding community. The improvements would not result in a permanent increase in operational emissions beyond what had already been forecasted under the RASP to occur at the Airport and used in the development of region-wide emissions inventories[10]. The emissions inventories are further utilized by the SDAPCD in the preparation of the RAQS to track emissions reduction progress and determine additional ways to reduce the regions emissions. Increases in emissions from the use of construction equipment would be short-term and temporary in-nature. Impacts would be less than significant with appropriate project design features to reduce construction emissions that are commonly employed as part of airport development projects.

4.1.3 Mitigation Measures and Design Considerations

Table 13 addresses the consistency of the Proposed Project with the relevant air quality goals and policies and recommends mitigation measures that could be implemented to ensure that they are achieved.

[10] Emission inventories, projections, and trends are jointly developed by stakeholder agencies located within Southern California, including SANDAG and the SDAPCD.

Table 13 - Consistency of Proposed Project with RAQS

RAQS Measure	Issue	Consistency Analysis/Mitigation
Rule 61.3.1	Fueling	The Proposed Project would have no impact to aircraft refueling operations at the Airport. Although the Proposed Project would remove the north apron fuel storage tank, there are no plans to replace it.
Rule 67.0.1	VOCs	Require use of super compliant VOC coatings for all proposed architectural applications. Many manufacturers have already reformulated coatings to levels well below CARB defined limits. These are referred to as "Super-Compliant" and contain less than 10 grams of VOC per liter.
Rule 55[a]	Fugitive Dust	Fugitive dust control measures are required of construction projects.

Notes:
(a) APCD Rules & Regulations (not RAQS)
Source: C&S Engineers, Inc. 2017

4.1.4 Conclusions

Airport improvements constructed as part of the Proposed Project would be consistent with the current land use designation. Thus, emissions of ozone precursors VOC and NO_X would not exceed those already accounted for under the RAQS and SIP budgets.

Construction activities will be required to comply with all strategies and measures adopted by the County and/or SDAPCD to reduce emissions of particulate matter. Implementation of the Proposed Project would result in a less than significant impact to the RAQS.

4.2 Conformance with Federal and State Ambient Air Quality Standards

4.2.1 Construction Impacts

Construction of the Proposed Project would generate air emissions through the use of heavy-duty construction equipment, from vehicle trips hauling materials, and from construction workers traveling to and from the project site. In addition, fugitive dust emissions would result from demolition and fine grading activities. Mobile source emissions, primarily NO_X, would be generated from the use of construction equipment, including but not limited to excavators, bulldozers, wheeled loaders, and cranes. Paving operations and the application of asphalt, architectural coatings (i.e., paints) and other building materials are anticipated to release VOCs. The assessment of construction air quality impacts considers each of these sources. Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing

weather conditions. It is mandatory for all construction projects in SDAB to comply with SDAPCD Rule 55 for controlling fugitive dust.

Construction emissions from the Proposed Project were estimated using the CalEEMod emissions inventory model, which calculates construction emissions for seven stages: demolition, mass grading, fine grading, trenching, asphalt work, structural building, and architectural coating. The breakdown of the estimated construction durations and equipment mix for each Airport Master Plan component is detailed in the CalEEMod printout sheets, which are included in **Appendix A**.

4.2.1.1 Guidelines for Determining Significance

As identified the County Guidelines for Air Quality, the SDAPCD does not provide quantitative thresholds for determining the significance of construction-related impacts. However, it does specify Air Quality Impact Analysis (AQIA) trigger levels for new or modified stationary sources (SDAPCD Rules 20.2 and 20.3). Although these trigger levels do not generally apply to general land development projects, for comparative purposes these levels may be used to evaluate the increased emissions which would be discharged to the SDAB from proposed land development projects.

SDAPCD Rule 20.2, which outlines these SLTs, states that any project "which results in an emissions increase equal to or greater than any of these levels, must:

> demonstrate through an AQIA . . . that the project will not (A) cause a violation of a state or national ambient air quality standard anywhere that does not already exceed such standard, nor (B) cause additional violations of a national ambient air quality standard anywhere the standard is already being exceeded, nor (C) cause additional violations of a State ambient air quality standard anywhere the standard is already being exceeded, nor (D) prevent or interfere with the attainment or maintenance of any State or national ambient air quality standard.

For CEQA purposes, the SLTs can be used to demonstrate that a project's total emissions would not result in a significant impact to air quality. The daily SLTs are most appropriately used for the standard construction emissions. When project emissions have the potential to approach or exceed the SLTs listed below in **Table 14**, additional air quality modeling may need to be prepared to demonstrate that ground level concentrations resulting from project will not exceed the NAAQS or CAAQS.

4.2.1.2 Significance of Impacts Prior to Mitigation

As noted in Section 3.3.4, construction emissions from the Proposed Project were estimated using the computer model CalEEMod emissions inventory model, which calculates construction emissions for specific stages: demolition, mass grading, fine grading, trenching, asphalt work, structural building, and architectural coating. The equipment mix and

construction duration for each improvement associated with the Proposed Project is detailed in the CalEEMod printout sheets, which are included in **Appendix A.**

If each project component (#1 through #16; **Table 12**) is constructed separately, with no overlap in construction phasing, no exceedance of the SLTs would occur as a result of the Proposed Project. However, for comparative purposes, emissions generated from projects identified under the near-term, intermediate-term and long-term scenarios were combined to determine if they exceeded the SLTs as some of these projects may overlap in sequencing. **Table 14** shows the total estimated pollutant concentrations that would be generated for each of these scenarios of the Proposed Project compared to the SLTs (pounds per day) as identified in the County Guidelines for Air Quality. As shown, no exceedances of the SLTs would occur under any of the individual scenarios.

Table 14 - Project Construction Maximum Daily Emissions (lbs. per day)

	PM_{10}	**$PM_{2.5}$**	**NO_X**	**SO_X**	**CO**	**VOCs**
SDAPCD SLT Threshold (lbs. per day)	*100*	*55*	*250*	*250*	*550*	*75*
Total Near-term Project Emissions	33.31	14.04	149.65	0.41	165.19	19.79
Total Intermediate-term Project Emissions	79.47	18.28	157.07	0.52	229.14	19.39
Total Long-term Project Emissions	61.24	23.78	83.13	0.28	127.35	62.87

Source: CalEEMod, C&S Engineers, Inc. analysis 2017

Table 15 shows the total estimated pollutant concentrations that would be generated for each of these scenarios of the Proposed Project compared to the SLTs and federal de minimis threshold levels[11] (tons per year). As shown no exceedances of the SLTs or federal de minimis threshold levels would occur under any of the scenarios.

[11] 40 CFR 93.153(b) (1) & (2).

Table 15 - Project Construction Maximum Annual Emissions (tons/year)

	PM_{10}	$PM_{2.5}$	NO_X	SO_X	CO	VOCs
Federal De Minimis Threshold Levels[a]	*N/A*	*N/A*	*100*	*N/A*	*N/A*	*100*
SDAPCD SLT Threshold	*15*	*10*	*40*	*40*	*100*	*13.7*
Total Near-Term Project Emissions	1.28	0.64	8.04	0.23	8.33	0.88
Total Intermediate-Term Project Emissions	0.78	0.18	1.55	0.01	2.22	0.19
Total Long-Term Project Emissions	2.44	0.60	4.11	0.01	5.99	0.54

Notes:
(a) For construction emissions, federal de minimis threshold levels are only applicable to the criteria pollutants in which San Diego County is designated as non-attainment or maintenance.
Source: CalEEMod, C&S Engineers, Inc. 2017

4.2.1.3 Mitigation Measures and Design Considerations

Air pollution resulting from construction equipment and fugitive dust from exposed soil will temporarily impact air quality. The creation of equipment emissions and fugitive dust can be minimized, but is inevitable during construction projects. To minimize potential adverse impacts to air quality, proper and standard construction practices will be used as outlined under FAA Advisory Circular 150/5370-10G, *Standards for Specifying Construction of Airports*. These include periodic watering of dusty on-site travel routes during dry conditions, utilization of a designated entrance that will minimize soil being carried onto adjacent roads by construction vehicles leaving the site, and cessation of earthwork activities during particularly dry and high wind conditions if the generation of such dust could potentially impact adjacent properties.

It is mandatory for all construction projects in San Diego County to comply with SDAPCD Rule 55 which addresses fugitive dust control. The rule states that no person shall engage in construction or demolition activities in a manner that discharges visible dust emissions into the atmosphere beyond the property line for a period or periods aggregating more than three minutes in any 60-minute period. As such, the Proposed Project will comply with Rule 55, which would reduce regional PM emissions from construction activities. As a result, there will be no significant construction impacts.

4.2.1.4 Conclusions

Maximum annual and daily construction emissions for the Proposed Project would be less than the County significance criteria, which incorporate the SDAPCD screening level

thresholds and federal de minimis level; therefore, the emissions would be less than significant.

4.2.2 Operational Impacts

The Proposed Project would generate air pollutant emissions from aircraft, stationary/area sources, and mobile sources.

Aircraft and GSE Emissions

Emissions from the forecasted increase in aircraft operations over the 20-year planning period were estimated using AEDT. Lead emissions from aviation gasoline were calculated using annual aircraft operations listed in **Table 16** and the methodology and emission factors provided in the FAA's *Aviation Emissions and Air Quality Handbook*, Version 3, Update 1.

Criteria pollutant emissions inventories are designated as including aircraft emissions related to ground-based taxiing and the entire landing and takeoff (LTO) cycle which is comprised of approach, takeoff, and climb out. Emissions above the mixing height (3,000 ft. above ground level) would not be expected to impact regional air quality and thus, emissions for the flight operations above the mixing height are not calculated within AEDT.

In order to calculate aircraft emissions, the average numbers of LTO cycles by specific aircraft types were prepared for input into AEDT (see **Table 16**). Engines were assigned based on either their default status in AEDT or their popularity within the U.S. aircraft fleet mix. Aircraft operations were modeled in AEDT as total operations per year for each aircraft assuming whole LTO cycles (i.e., number of landings equal number of takeoffs). See **Appendix B** for additional details regarding aircraft fleet mix.

Rather than using default aircraft taxi times, estimates were derived using the actual Airport taxiway distances obtained from maps and nominal speeds for small and large aircraft types. Therefore, average taxiway travel times for both taxi-in arrivals and taxi-out departure operations were derived for small and large aircraft categories.

Auxiliary power units were assigned to aircraft based on AEDT default assignments. For example, AEDT does not assign an APU for the Cessna 172 as those aircraft are not equipped with APUs, while the Gulfstream GV is assigned a 200 horsepower APU. Since AEDT does not provide default usage times for APUs the default operating times were taken from the previous FAA air quality model, the Emissions Dispersion Modeling System (EDMS). APU operating times of 26 minutes were the default values used. GSE emissions were modeled through a combination of default usage times and County provided data. Actual GSE populations were documented during a field visit and through correspondence with airport tenants and fixed-based operators (FBO). For pieces of equipment in which usage data was not provided, the default EDMS operating times for GSE were again used

and varied depending on aircraft type and size. In general, most of the APUs and GSE usage is generated from larger business jet aircraft using the FBO facilities.

Table 16 - Operations by Aircraft Type

Aircraft Make/Model	Annual Operations			
	Existing Conditions (2016)	Future Conditions (2036)	Future Conditions (2036) – PAL 1	Future Conditions (2036) – PAL 2
Airline [b]				
Bombardier 700	0	0	6,205	11,711
Embraer E-170	0	0	6,205	11,710
Bombardier Dash 8 Q200	0	0	2,190	4,133
Sub-Total	**0**	**0**	**14,600**	**27,554**
Jets				
Bombardier Challenger 600	1,754	2,365	2,365	2,365
Cessna Citation Bravo	506	682	682	682
Cessna Citation II	3,739	0	0	0
Cessna Citation CJ4	0	7,116	7,116	7,116
Cessna Citation Sovereign	867	1,169	1,169	1,169
Cessna Citation Ultra	1,539	0	0	0
Cessna Citation X	1,193	1,609	1,609	1,609
Dassault Falcon 2000	371	500	500	500
Dornier 328 Jet	6	8	8	8
Eclipse 500	1,638	2,209	2,209	2,209
Embraer 145	207	279	279	279
Gulfstream GII	389	0	0	0
Gulfstream GIV	958	0	0	0
Gulfstream G450	0	1,816	1,816	1,816
Gulfstream GV/650[a]	1,045	1,409	1,409	1,409
Learjet 36	2,043	0	0	0
Learjet 70	0	2,755	2,755	2,755
Sub-Total	**16,255**	**21,917**	**21,917**	**21,917**
Turboprop				
Cessna 208 Caravan	4,031	8,332	8,332	8,332
Cessna Conquest II	947	0	0	0
Dash 6	2,666	7,354	7,354	7,354
Embraer 120	69	161	161	161
Piaggio P.180 Avanti	148	346	346	346
Piper Meridian	730	1,707	1,707	1,707
Sub-Total	**8,591**	**17,900**	**17,900**	**17,900**

Table 16 (cont.) - Operations by Aircraft Type

Aircraft Make/Model	Annual Operations			
	Existing Conditions (2016)	Future Conditions (2036)	Future Conditions (2036) – PAL 1	Future Conditions (2036) – PAL 2
Piston-Propeller				
Beechcraft Baron	18,323	14,611	14,611	14,611
Beechcraft Bonanza	5,245	5,227	5,227	5,227
Cessna 172	50,373	50,196	50,196	50,196
Cessna 182	3,321	3,310	3,310	3,310
Cessna 206	2,266	2,258	2,258	2,258
Cirrus SR22	2,889	2,879	2,879	2,879
GASEVP	15,736	15,680	15,680	15,680
Piper Warrior	9,979	9,944	9,944	9,944
Sub-Total	**108,132**	**104,105**	**104,105**	**104,105**
Helicopter				
Eurocopter 135	15,367	28,507	28,507	28,507
Robinson R22	762	1,413	1,413	1,413
Robinson R44	3,047	5,653	5,653	5,653
Sikorsky SH-60 Seahawk	862	955	955	955
Sub-Total	**20,038**	**36,528**	**36,528**	**36,528**
Grand-Total	**153,016**	**180,450**	**195,050**	**208,004**

Notes:
(a) Due to the similar performance characteristics of the Gulfstream GV and G650, the aircraft types are combined in the AEDT model and represented under the AEDT Aircraft ID as GV. There is no specific G650 aircraft model type available in AEDT
(b) In the absence of commercial activity in the Forecasted Growth scenario, there would be no operations by a commercial airline or associated aircraft.
Source: 2015 ANOMS, FAA TFMSC, Draft Airport Master Plan and C&S Engineers, Inc. 2017

Stationary Sources

Stationary source emissions associated with the Proposed Project would result from the potential increase in square footage and associated boiler usage necessary to meet the heating demand of the potential improvements to the terminal facility. Annual natural gas usage for the terminal could include an increase by 54 percent to adjust for the proposed improvements. In addition, the emergency generator currently located at the Airport is considered a stationary source. Generator usage in the future scenario was calculated based on the forecasted percent increase in aircraft operations at the Airport between the existing (2016) and future (2036) conditions.

Emissions associated with on-airport fuel storage were also quantified as part of the evaluation of stationary sources. Under the Future Conditions (2036) With-Project Alternative, the removal of a 10,000-gallon aboveground aircraft fuel storage tank will be done in concert with the north apron demolition. The north apron storage tank was primarily constructed for safety purposes to eliminate aircraft from taxiing from the north apron across the airfield to refuel. According to the County, there is existing fuel storage capacity at the Airport to continue to meet the anticipated demand for the 20-year planning period.

Mobile Sources

Emissions associated with the increase in on-road vehicles trips to and from the Airport were calculated for the Future Conditions (2036) scenarios (see **Appendix C**). The net increase resulting from the forecasted increase is presented on **Tables 10** and **11**.

4.2.2.1 Guidelines for Determining Significance

The SDAPCD does not provide quantitative thresholds specifically for determining the significance of airport operations-related impacts. In the absence of locally-adopted thresholds, the federal de minimis threshold levels were used to demonstrate if the Proposed Project's total operational emissions would result in a significant impact to air quality. This approach is consistent with the FAA's methodology for analyzing airport projects and associated air quality emissions. When project emissions have the potential to approach or exceed the de minimis threshold levels, additional air quality modeling may need to be prepared to demonstrate that ground level concentrations resulting from the project will not exceed the NAAQS or CAAQS.

4.2.2.2 Significance of Impacts Prior to Mitigation

As noted on **Table 6**, operational emissions from the Proposed Project were estimated using a number of FAA and CARB developed computer models, including AEDT. The modeling inputs for each operational emissions source are provided in **Appendix B** and **C**. Total

emissions generated under the Existing Conditions (2016), Future Conditions (2036) No-Project Alternative, and Future Conditions (2036) Proposed Project Alternative scenarios were presented on **Tables 7, 8, 9, 10** and **11.**

The results of the emission inventory prepared for the Future Conditions (2036) Proposed Project Alternative scenarios were compared to the results of the Future Conditions (2036) No-Project Alternative to disclose the potential increase in emissions. The net increase in emissions is provided in **Table 17**.

Table 17 - Total Emissions Increase from Operational Activities

Scenario	Total Emissions (tpy)						
	CO	**VOC**	**NO_X**	**SO_X**	**$PM_{2.5}$**	**PM_{10}**	**Pb**
Future Conditions (2036) No Project vs. With-Project (Forecasted Growth)[c]	23.77	1.71	1.48	0.46	0.04	0.04	0.01
Future Conditions (2036) No Project vs. With-Project (PAL 1)[a]	75.68	3.85	26.57	4.36	1.45	4.09	0.01
Future Conditions (2036) No Project vs. With-Project (PAL 2)[a]	121.19	5.58	48.61	7.75	2.69	7.67	0.01
De minimis threshold level[b]	NA	100	100	NA	NA	NA	NA
Exceedances[d]	Yes	No	No	No	No	No	No

Notes:

(a) Includes on-road vehicle sources.

(b) As discussed in Section 4.2.2.1, the federal de minimis thresholds are used in the absence of locally-adopted thresholds for airport operations. Furthermore, for pollutants in which the SDAB is located in an attainment area, no de minimis threshold level would apply.

(c) As discussed in Section 3.3.3, this 2036 scenario compares the difference of natural growth without airport improvements (i.e., runway shift and extension) versus natural growth with airport improvements.

(d) The pollutants CO, SO_x, $PM_{2.5}$, PM_{10}, and Pb are in attainment for the SDAB causing their emissions to be negligible and therefore cumulatively insignificant.

Source: AEDT version 2d, C&S Engineers, Inc. analysis 2017

CalEEMod and EMFAC2014, HELIX Environmental Planning, Inc. analysis 2017

The aviation demand forecast prepared as part of the Airport Master Plan concluded that an increase in aircraft operations would take place regardless of the Proposed Project, including the proposed runway extension and shift. Therefore, emissions from the Proposed Project would only increase as compared to the Future Conditions (2036) No-Project Alternative

due to the increased travel distances aircraft would have to make to taxi to the relocated runway ends and the increase in natural gas usage associated with facility improvements. In addition, the County does have discretionary approval as to whether a commercial service operator can begin service at the Airport. Therefore, the emissions associated with the forecasted increase in commercial service operations forecasted under scenarios PAL 1 and PAL were also compared to the Future Conditions (2036) No-Project Alternative.

4.2.2.3 Mitigation Measures and Design Considerations

No mitigation measures or design considerations are required.

4.2.2.4 Conclusions

Under PAL 2, although CO would exceed federal de minimis threshold level, the SDAB is currently in attainment for CO. The federal de minimis threshold level for CO is not applicable to projects located in the SDAB. Although the SDAB is not designated as a non-attainment or maintenance area for PM_{10} and $PM_{2.5}$ by the USEPA, it is designated as non-attainment by the State of California. Additional comparisons indicate that PM_{10} and $PM_{2.5}$ levels would be well below the federal de minimis of 100 tons per year if applied.

4.3 Cumulatively Considerable Net Increase of Criteria Pollutants

4.3.1 Construction Impacts

Projects that have been identified in the area of the Airport that may be constructed concurrently with construction of the Proposed Project improvements are shown below in **Table 18**. Since the emissions associated with the construction activities are localized and temporary in nature, the review of cumulative projects included only those within two miles of the Airport.

Table 18 - Cumulative Proposed Projects

Project Title	Description	Proximity to Airport (miles)
Robertson Ranch	Proposed residential development including 672 dwelling units.	<2
La Costa Village Center Townhomes	Proposed development of 53 condominium units.	<2
El Camino Real Widening	Proposed improvements to portions of the existing southbound side of El Camino Real between Kelly Drive and Crestview Drive.	<1
Rancho Milagro	Proposed subdivision and grading of a 43.58-acre site into 25 lots (19 single-family residential and six (6) open space).	<2
Daybreak Community Church	Proposed expansion of Daybreak Community Church with the addition of a 17,391-square-foot, 30-foot-tall assembly building.	<1
Westin Hotel	Development of a previously graded 3.66-acre industrial pad with a 71-room hotel and a 36-unit timeshare.	<2
Uptown Bressi	Proposed mixed-use development with residential and retail/general commercial uses.	<2
Poinsettia 61	Proposed 123-unit single-family detached condominium project located within the southwest quadrant of the City of Carlsbad.	<2
Ocean View Point	Proposed subdivision of a 21.9-acre lot into one 16.6-acre open space lot and the remaining 5.4 acres into 13 residential lots.	<2

Source: City of Carlsbad, 2017.

A review of the City of Carlsbad's General Plan specified that there are no changes to the land uses surrounding the Airport, indicating that there are no anticipated major developments within close proximity (<1 mile) to the Airport which will be kept as open space and planned industrial.

4.3.2 Guidelines for Determining Significance

The County's Air Quality Guidelines state that even if direct air quality impacts from a proposed project are less than significant, the project may still have a cumulatively considerable impact on air quality if the emissions are in combination with other reasonably foreseeable future projects within close proximity to the proposed projects. In analyzing cumulative impacts from a proposed project, the analysis must specifically look at the project's contribution to the cumulative increase in pollutants for which the SDAB is listed as "non-attainment" for state and federal AAQS. As noted in Section 2.3, of the seven federal "criteria" pollutants, only ozone occurs in concentrations high enough to violate federal standards in the County. Under the CCAA, the SDAB is currently designated as a non-attainment for the eight-hour and one-hour ozone standards, and for the PM_{10} and $PM_{2.5}$ standards. Therefore, projects that would individually cause a significant direct air quality impact with respect to construction PM_{10}, $PM_{2.5}$, NO_X, or VOC emissions would also be considered to have a cumulatively considerable net increase in emissions.

4.3.2.1 Significance of Impacts Prior to Mitigation

As shown in Section 4.2.1, construction emissions of the Proposed Project Alternative would not exceed the applicable significance criteria. Seven of the cumulative projects that have been identified in the area of the Airport that may be constructed concurrently with the Proposed Project improvements are located more than one mile from the Airport and are separated by major roadways (Palomar Airport Road and El Camino Real) and the surrounding topography. Two projects in close proximity (<1 mile) are minor expansion projects that are not anticipated to significantly increase emissions. The proposed El Camino Real widening project is anticipated to provide an emissions benefit by eliminating vehicle idling due to road congestion. Therefore, the potential for cumulative impacts for the pollutants of concern is negligible.

4.3.2.2 Mitigation Measures and Design Considerations

No mitigation measures are required; however, to further minimize potential adverse impacts to air quality, proper and standard construction practices will be used as outlined under FAA Advisory Circular 150/5370-10G, *Standards for Specifying Construction of Airports* and SDAPCD Rule 55.

4.3.2.3 Conclusions

With the project design consideration noted above, the construction of the Proposed Project Alternative would not result in a cumulatively considerable net increase of PM_{10}, $PM_{2.5}$, NO_X, or VOC emissions, which are pollutants that classify the SDAB as nonattainment under the NAAQS or CAAQS. In addition, because emissions generated during each phase of the Proposed Project do not exceed and are well below the project-

specific significance thresholds, they are not considered to be cumulatively considerable pursuant to CEQA Guidelines §15064(h)(1).

4.3.3 Operational Impacts

As shown in Section 4.2.1, operational emissions were quantified for the Future Conditions (2036) No-Project and Future Conditions (2036) With-Project alternatives. The emissions inventory concluded that operational emissions associated with the Proposed Project Alternative would not exceed the applicable significance criteria.

4.3.3.1 Guidelines for Determining Significance

The guidelines for the consideration of operational cumulatively considerable net increases in emissions are treated differently due to the mobile nature of the emissions. The SDAB's RAQS, based on growth projections derived from the allowed General Plan densities, are updated every three years by SDAPCD and lay out the programs for attaining the CAAQS and NAAQS for ozone precursors (VOC and NOx). It is assumed that a proposed project conforms to the County General Plan, and does not have emissions exceeding the SLTs, will not create a cumulatively considerable net increase to ozone since the emissions were accounted for in the RAQS.

In addition, in order to address the cumulative impacts associated with the potential increase in vehicle traffic emissions, projects that would cause road intersections to operate at or below a LOS E[12] and create a CO "hotspot" would be cumulatively considerable to the net increase of CO.

4.3.3.2 Significance of Impacts Prior to Mitigation

The development of the RAQs included emissions associated with the forecasted growth in aircraft operations for the region, including the Airport. As noted, the SDAPCD uses information provided by a number of stakeholder agencies in the development of the RAQS emissions inventories. This includes sector specific information provided by SANDAG. The forecasted growth in aircraft operations at the Airport was taken from the aviation demand forecast prepared as part of the 2011 RASP[13]. A review of the RASP forecast shows aircraft activity levels at the Airport reaching 219,200 annual operations by 2015 and 289,600 annual operations by 2035. The forecast that was developed as part of the Airport Master Plan includes 195,050 (PAL 1) and 208,004 (PAL 2) annual operations in 2036. This is 94,550 and 81,596 less, respectively, than those forecasted in the RASP and

[12] Analysis only required when the addition of peak-hour trips from the proposed project and the surrounding projects exceeds 3,000.

[13] Regional Aviation Strategic Plan, San Diego County Regional Airport Authority, 2011.

accounted for in the development of the RAQS emissions budget. Therefore, the proposed project would not contribute to a cumulatively significant RAQS impact.

Emissions associated with the projected increase in on-road vehicle traffic to and from the Airport were accounted for under the RTP, which outlined a strategy to meet required emission reduction targets. As part of the RTP, an inventory of future emissions were calculated and used as the basis to help determine emission reduction strategies. Emissions calculations related to vehicular traffic patterns at airports located in the County were derived from the Airport Multimodal Accessibility Plan and the RASP, prepared by the SDCRAA. Specific to the Airport, the Airport Master Plan selected Scenario 1C of the RASP to determine the future increase in vehicular traffic coming to and from the Airport. Scenario 1C included 641,355 forecasted passenger enplanements at the Airport by the year 2030. When compared to the passenger enplanements forecasted in the Master Plan (575,000) for 2036 under the high range forecast, the RASP's projection is more than 10% above the County's forecast, and was the basis of emissions calculations in the region. Therefore, emissions associated with the increase in aircraft operations forecasted in the Airport Master Plan are less than those forecasted in the RTP/RASP and accounted for in the development of the RAQS.

4.3.3.3 Mitigation Measures and Design Considerations

No mitigation measures or design considerations are required.

4.3.3.4 Conclusions

Pursuant to CEQA Guidelines §15064(h)(3), the operational impacts of the Proposed Project Alternative would not result in a cumulatively considerable impact as those pollutants have already been accounted for and are in compliance with the RAQS.

4.4 Impacts to Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to certain types of population groups or activities. Air quality regulators typically define sensitive receptors as schools (Preschool–12th Grade), hospitals, resident care facilities, day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases. Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present.

Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions,

which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time.

The closest sensitive receptors (see **Figure 4**) located nearest to the Airport are single and multi-family residential dwellings. Bressi Ranch is located 0.6 miles from Runway end 24, to the southeast across El Camino Real. The Morning Ridge community is located approximately 0.8 miles southwest of the Airport. Areas located west of the Airport are predominantly open space/golf course (The Crossings at Carlsbad), and north of the Airport is commercial/industrial land uses.

4.4.1 Guidelines for Determining Significance

The following County Guidelines for Determining Significance must be used for determining whether the Proposed Project will expose sensitive receptors to substantial pollutant concentrations:

- The project places sensitive receptors near CO "hotspots" or creates CO "hotspots" near sensitive receptors.
- Project implementation will result in exposure to toxic air contaminants resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics-Best Available Control Technology or a health hazard index greater than one would be deemed as having a potentially significant impact.

4.4.2 Significance of Impacts Prior to Mitigation

Exhaust emissions from motor vehicles can potentially cause a direct, localized CO "hotspot" impact at or near proposed development or sensitive receptors. According to County guidance, CO "hotspots" or pockets where CO concentrations exceed the NAAQS and/or CAAQS, have been found to occur only at signalized intersections that operate at or below level of service (LOS) E with peak-hour trips for that intersection exceeding 3,000 trips. Therefore, if the Proposed Project would place receptors within 500 ft. of a signalized intersection operating at or below LOS E (peak-hour trips exceeding 3,000 trips) a "hotspot" analysis would be required. Likewise, if the Proposed Project were to cause road intersections to operate at or below a LOS E (with intersection peak-hour trips exceeding 3,000) a CO "hotspot" analysis would be required.

The closest signalized intersections to the Proposed Project are located at Palomar Airport Road/Yarrow Drive, Palomar Airport Road/Camino Vida Roble and Palomar Airport Road/El Camino Real. According to the traffic analyses that was prepared in support of the Airport Master Plan, intersections located at Palomar Airport Road/Camino Vida Roble and

Palomar Airport Road/El Camino Real would continue to have an LOS F and experience an increase in delay from the Proposed Project under scenario PAL 2.

Therefore, consistent with the County Guidelines, these findings indicate that further screening is required. Although the SDAPCD does not require additional screening, various air quality agencies in California have developed additional conservative screening methods. The screening methods of the Sacramento Metropolitan Air Quality Management District (SMAQMD) are used for this Proposed Project because ambient CO concentrations within the SMAQMD jurisdiction are higher than for the project area, as measured by CARB, resulting in a more conservative analysis. The SMAQMD states that a project would not result in a significant impact to local CO concentrations if it meets all of the below criteria:

- The affected intersection carries less than 31,600 vehicles per hour;
- The project does not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, below-grade roadway, or other location where horizontal or vertical mixing of air would be substantially limited; and
- The affected intersection, which includes a mix of vehicle types, is not anticipated to be substantially different from the County average, as identified by EMFAC or CalEEMod models (SMAQMD 2009).

The highest traffic volume at the aforementioned intersections is estimated to be 3,201 vehicles at the intersection of Palomar Airport Road/El Camino Real during the AM peak hour (LLG 2017). The intersection is not located in a tunnel, urban canyon, or similar area that would limit the mixing of air, nor is the vehicle mix anticipated to be substantially different than the County average. There would be no potential for a CO hot spot or exceedance of state or federal CO ambient air quality standard because the maximum traffic volume (3,201) would be substantially less than the 31,600 vehicles per hour screening level; because the congested intersection is located where mixing of air would not be limited; and because the vehicle mix would not be uncommon. The impact would be less than significant and no mitigation measures are required.

Proposed Project improvements are scheduled to be carried out over the 20-year planning period. As noted, these improvements are intended to the help the County meet forecasted aviation demand and improve aircraft safety. The Proposed Project do not include the major expansion or construction of new stationary sources that could potentially emit TACs and increase long-term public health risks nor does it involve placing sensitive receptors closer to the Airport. Therefore, a Health Risk Assessment 3 was not prepared as part of this Technical Report.

Diesel PM (DPM), a TAC, would be emitted during construction activities due to the operation of heavy equipment at the site. Because diesel PM is considered carcinogenic, long-term exposure to diesel exhaust emissions have the potential to result in adverse health

impacts. As noted, timing of the construction of the Proposed Project will be dependent upon demand and the availability of funding. Preliminary estimates on the duration of the construction period for each improvement have indicated that none are anticipated to exceed 10 months but may be undertaken in combination or in subsequent timeframes. If the construction period for an individual or combination of improvements extends beyond one year a project-level analysis is recommended.

All improvements will be completed entirely within the environs of the airport property where public access is controlled. The closest sensitive receptors will be located over a quarter-mile from where the nearest proposed improvement will take place (see **Figure 1**). As noted on **Table 12**, estimated PM_{10} levels, which includes DPM, would be well below the SLTs (see **Table 3**). The proposed improvement (removal of north apron) with the anticipated largest contribution of PM_{10} emissions is located approximately 0.8 miles from the nearest sensitive receptor. Given the results of the emission inventory and the location of the nearest sensitive receptors an evaluation of impacts of DPM related to the Proposed Project was not prepared as part of this Technical Report.

4.4.3 Mitigation Measures and Design Considerations

No mitigation measures or design considerations are required.

4.4.4 Conclusions

Neither construction nor operation of the Proposed Project would result in significant impacts to sensitive receptors.

4.5 Odor Impacts

4.5.1 Guidelines for Determining Significance

Odor issues are very subjective by the nature of odors themselves and their measurements are difficult to quantify. As a result, the County guidelines require that a qualitative analysis be performed for each project that will be reviewed on an individual basis. The analysis should determine if the Proposed Project would either generate objectionable odors or place new sensitive receptors next to existing objectionable odors.

4.5.2 Significance of Impacts Prior to Mitigation

The Proposed Project does not involve a change to the current land use and the Airport will continue to perform in manner similar to existing conditions. The Proposed Project does not include the introduction of new elements that would generate objectionable odors, nor would it attract persons to areas where there would be a potential for exposure to objectionable odors. The impact would be less than significant.

4.5.3 Mitigation Measures and Design Considerations

No mitigation measures would be required.

4.5.4 Conclusions

Neither construction nor operation of the Proposed Project would result in a significant odor impact.

Section 5—Summary of Recommended Project Design Features, Impacts & Mitigation

Table 19 presents a summary of the impacts of the Proposed Project Alternative and the design measures recommended for inclusion.

Table 19 - Summary of Impacts and Design Considerations

Issue	Impact	Design Considerations
Conformance to the RAQS and SIP	Less than significant	None
Conformance to NAAQS and CAAQS – Construction	Less than significant with the incorporation of the design measure	To minimize potential adverse impacts to air quality, proper and standard construction practices will be used as outlined under FAA Advisory Circular 150/5370-10G, Standards for Specifying Construction of Airports and SDAPCD Rule 55.
Conformance to NAAQS and CAAQS – Operational	Less than significant	None
Cumulatively Considerable Net Increase of Criteria Pollutants	Less than significant	None
Impacts to Sensitive Receptors	Less than significant	None
Odor Impacts	Less than significant	None

Source: C&S Engineers, Inc. 2017

While no mitigation measures or design features are required for the project, the aviation, vehicle manufacturing, and construction industries are shifting toward low-emissions technologies and equipment that may benefit both local air quality and greenhouse gas emissions. Some of these techniques in the aviation industry may include electrification of the GSE fleet; inclusion of electric vehicle charging infrastructure (for passengers and airport serving businesses) to encourage lower emission motor vehicle trips; use clean (Tier 4 or zero emission) construction equipment for construction; and availability of ground power for aircraft to reduce APU use.

Section 6—References

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Section 7—List of Preparers and Persons and Organizations Contacted

C&S Engineers, Inc.

Ralph Redman, Managing Planner
Carly Shannon, Project Planner
Kara Young, Planner
Jake Shurer, Planner

RS&H, Inc.

David Full, Vice President, Aviation Environmental Service Group
Nick Kozlik, Aviation Environmental Specialist

HELIX Environmental Planning, Inc.

Victor Ortiz, Air Quality Specialist

Appendix A – CalEEMod Results and Assumptions

Prepared by C&S Engineers, Inc. 2017

Appendix A: CRQ MP EIR Construction Emissions Inventory Remarks

Project Characteristics Remarks:

This study involves the projects proposed as part of the preferred alternative in the Master Plan. Each of the sixteen projects was assigned a phase number and the projects were grouped into three time frames; the time frames were labeled as near-term, intermediate-term, and long-term. The near-term projects have an operational year of 2023 and are as follows:

- Phase 1: Relocation of the glideslope building
- Phase 2: Relocation of the segmented circle and windsock equipment
- Phase 3: Relocation of ARFF facility
- Phase 4: Construction of EMAS system on Runway End 06
- Phase 5: Relocation of the vehicle service road
- Phase 6: Relocation of lighting vault
- Phase 7: 200' extension of existing Runway 06-24 and Taxiway A

The intermediate-term projects have an operational year of 2030 and are as follows:

- Phase 8: Removal of fuel tank on north apron
- Phase 9: Removal of the north apron and Taxiway N
- Phase 10: Area reserved for future GA parking – NO ACTION REQUIRED
- Phase 11: Near-term auto parking improvements

The long-term projects have an operational year of 2035 and are as follows:

- Phase 12: Relocation/extension of Runway 06-24
- Phase 13: Removal/reconstruction of existing connector taxiways
- Phase 14: Removal/reconstruction of existing Taxiway A
- Phase 15: Construction of EMAS system on Runway 24
- Phase 16: relocation of EMAS System on Runway 06

Land Use Remarks:

- Phase 1: Industrial park building, 360 SF steel glideslope building relocation
- Phase 2: Parking (other asphalt surfaces): 6,900 SF pavement demolition for the relocation of segmented circle and windsock
- Phase 3: Industrial park building, 4,700 SF ARFF building relocation
- Phase 4: Parking (other non-asphalt), 52,500 SF for the construction of a 350'x150' EMAS.
- Phase 5: Parking (other asphalt surfaces), 6,000 SY (which equals 54,000 SF) for vehicle service road relocation
- Phase 6: Industrial park building, 100 SF concrete lighting vault relocation.
- Phase 7: Parking (other asphalt surfaces), 3000 CY (assumed 1 yard depth, which equals 3000 SY or 27,000 sf) for 200' runway extension
- Phase 8: Industrial park. Measured tank dimensions off of google earth – 10' x 40' = 400 SF.
- Phase 9: Parking (other asphalt surfaces): 43,000 SY = 8.8 acres
- Phase 11: Parking (Parking lot): 800 SY = 7.2 1000sf
- Phase 12: Parking (other asphalt surfaces): 82,000 SY = 738 1000SF
- Phase 13: Parking (other asphalt surfaces): used larger area (1800 SY = 16.2 1000 sf)
- Phase 14: Parking (other asphalt surfaces): used larger area (39,000 SY = 351 1000 sf)
- Phase 15: Parking (other non-asphalt): 5,900 SY = 53 1000SF

- Phase 16: Parking (other non-asphalt): 5,900 SY = 53 1000SF

Construction Phase Remarks:

- In general, construction durations, start dates, and project quantities taken from *CRQ Master Plan Duration of Construction Projects*.
- Phase 2: 16 days for demolition based on 420 SY of pavement removal per shift.
- Phase 3: Schedule based on 8 months estimate of construction. Subtracted the time needed for mobilization (10 days), concrete pour/curing (28 days), and architectural coatings (assumed one month). The remaining time was allotted towards building construction.
- Phase 4: Timing based on 10 months of construction duration. I assumed the majority of the work would take place with the site prep/grading due to the large amount of earthwork. I assumed 6 months for earth work, 1 month for grading, 1 month for building construction. Building construction includes the retaining wall and EMAS block construction.
- Phase 5: 2 weeks for mobilization; 3 weeks for demolition based on 420 SY pavement removal per shift, 5 days pavement installation based on 2000 CY asphalt/concrete pavement production
- Phase 6: Assumed 1 month for concrete curing at the end. 1 month to construct the facility, 4 weeks to install electrical, 10 days to prepare the new site.
- Phase 7: 2 days pavement installation based on 2000 CY asphalt/concrete pavement production per shift. Duration indicates 4 months construction – allocated 2 months to site prep for column work, 1 month for grading/RSA adjustments, and 2 weeks for mobilization/staking.
- Phase 8: Assumed 2 weeks for demolition/removal, 2 weeks for contact with EPA.
- Phase 9: 15 weeks of pavement removal, 2 weeks for mobilization/staking.
- Phase 11: 2 months total; assumed 1 week for site preparation and grading since the area is previously paved. The rest was assumed to be paving.
- Phase 12: Schedule based on 420 SY of pavement removal per shift, with two crews.
    - 39 weeks of demolition
    - 16 shifts of pavement construction
- Phase 13: Total duration of construction: 8 weeks. Subtract 2 weeks for mobilization. Assume 10 days demo, one week site prep, two weeks days grading, 2 days paving.
    - Pavement demo: 4000 SY / 420 SY per day = 9.5 days
    - Pavement installation: 1800 CY / 2000 CY production per shift = 1 day for paving
- Phase 14: Total duration of construction: 5 months.
    - CalEEMod default durations for site prep and grading were used and assumed to overlap with the other phases.
    - Pavement demo: 39,000 SY / 420 SY per day = 93 days
    - Pavement installation: 15000 CY / 2000 CY production per shift = 7.5 days for paving
- Phase 15: Total duration of construction: 6 weeks
    - 2 weeks for mobilization/staking
    - 2 days site prep (CalEEMod default)
    - 4 days grading (CalEEMod default)
    - 3 days for paving based on 2000 CY of pavement per day
    - Remainder of time (12 days) for placement of EMAS block
- Phase 16: Total duration of construction: 2 months
    - 2 weeks for mobilization/staking
    - 2 days site prep (CalEEMod default)
    - 4 days grading (CalEEMod default)
    - 3 days for paving based on 2000 CY of pavement per day
    - Remainder of time (27 days) for placement of EMAS block

Off-Road Equipment:

- Phase 4: Added one forklift under building construction for EMAS block placement
- Phase 7: Extend Runway and Taxiway: Added bore/drill rig for displacement columns. Assumed 2 rigs working 8 hours a day
- Phase 9: Demolition of Taxiway: 6 crews needed. Changed equipment breakdowns to the following:
    - Concrete/Industrial Saws – unit amount: 6
    - Excavators – unit amount: 18
    - Rubber tired dozers – unit amount: 12
- Phase 15: EMAS
    - Pavement underneath blocks - used default equipment.
    - Placement of EMAS block - assumed 2 crews with one forklift each. Each forklift assumed to run 8 hours.
- Phase 15: EMAS
    - Pavement underneath blocks - used default equipment.
    - Placement of EMAS block - assumed 1 crew with one forklift. Each forklift assumed to run 8 hours.

Dust from Material Movement:

- Import/Export quantities taken from CRQ Master Plan Duration of Construction Projects
- Phase 4 – 190,000 CY earthwork
- Phase 7 – 66,000 SF x 1 ft diameter columns = 66,000 CF = 2,444 CY + 3,000 CY pavement

Demolition:

- Phase 2: Assumed asphalt density of 2.1 CY/ton. Demolition weight:
    - 6900 SF x 1.5 ft = 1150 CY x 2.1 tons/CY = 2415 tons
- Phase 5: Assumed asphalt density of 2.1 CY/ton. Demolition weight:
    - 6000 SY * 0.5 yard x 2.1 tons/CY = 6300 tons
- Phase 8: 22,300 lb = 11.15 tons. Based weight on 120" diameter tank x 42'-6" length in table here: http://www.engineeringtoolbox.com/fuel-oil-storage-tanks-dimensions-d_1585.html
- Phase 9: Assumed asphalt density of 2.1 CY/ton. Demolition weight:
    - 43000 SY * 0.67 yard x 2.1 tons/CY = 60,501 tons
- Phase 12: Assumed asphalt density of 2.1 CY/ton. Demolition weight:
    - 82000 SY * 0.67 yard x 2.1 tons/CY = 115,374 tons
- Phase 13: Assumed asphalt density of 2.1 CY/ton. Demolition weight:
    - 4000 SY * 0.67 yard x 2.1 tons/CY = 5,628 tons
- Phase 14: Assumed asphalt density of 2.1 CY/ton. Demolition weight:
    - 39000 SY * 0.67 yard x 2.1 tons/CY = 54,873 tons

Appendix B – Operational Emissions Results

Prepared by C&S Engineers, Inc. 2017 and Helix Environmental Planning, Inc. 2017

BASELINE (2016) AIRCRAFT CRITERIA POLLUTANT EMISSIONS

Aircraft Make/Model	AEDT Aircraft ID	LTO Cycles	Sum of CO (g)	Sum of VOC (g)	Sum of NOx (g)	Sum of SOx (g)	Sum of PM 2·5 (g)	Sum of PM 10 (g)	Annual CO (ton)	Annual VOC (ton)	Annual NOx (ton)	Annual SOx (ton)	Annual PM 2·5 (ton)	Annual PM 10 (ton)
Beechcraft Bonanza	Raytheon Beech Bonanza 36	2,623	46167.93	618.86	11.11	35.89	29.29	29.29	133.49	1.79	0.03	0.10	0.08	0.08
Beechcraft Baron	Raytheon Beech Baron 58	9,162	33759.56	759.62	8.95	28.97	19.35	19.35	340.95	7.67	0.09	0.29	0.20	0.20
Bombardier Challenger 600	Bombardier Challenger 600	877	7894.44	1291.44	983.2	262.59	23.21	23.21	7.63	1.25	0.95	0.25	0.02	0.02
Cessna 172	Cessna 172 Skyhawk	25,187	8130.95	113.91	25.74	8.63	4.66	4.66	225.75	3.16	0.71	0.24	0.13	0.13
Cessna 182	Cessna 182	1,661	12452.88	143.93	22.34	13	7.01	7.01	22.80	0.26	0.04	0.02	0.01	0.01
Cessna 206	Cessna 206	1,133	21867.19	420.37	4.81	18.09	13.74	13.74	27.31	0.53	0.01	0.02	0.02	0.02
Cessna 208 Caravan	Cessna 208 Caravan	2,016	776.36	65.02	204.62	46.62	8.65	8.65	1.73	0.14	0.45	0.10	0.02	0.02
Cessna Conquest II	Cessna 441 Conquest II	474	1005.21	82.92	597.24	103.7	18.31	18.31	0.53	0.04	0.31	0.05	0.01	0.01
Cessna Citation II	Cessna 500 Citation I	1,870	11497.34	4554.27	501.18	165.84	41.44	41.44	23.70	9.39	1.03	0.34	0.09	0.09
Cessna Citation Bravo	Cessna 550 Citation II	253	9676.41	4162.06	730.13	184.57	38.53	38.53	2.70	1.16	0.20	0.05	0.01	0.01
Cessna Citation Ultra	Cessna 560 Citation V	770	13949.69	14976.88	534.62	177.31	100.78	100.78	11.84	12.71	0.45	0.15	0.09	0.09
Cessna Citation Sovereign	Cessna 680 Citation Sovereign	434	6716.8	1024.22	1781.91	310.34	30.81	30.81	3.21	0.49	0.85	0.15	0.01	0.01
Cessna Citation X	Cessna 750 Citation X	597	3435.53	750.02	2245.89	319.1	21.33	21.33	2.26	0.49	1.48	0.21	0.01	0.01
Dornier 328 Jet	Dornier 328-100 Series	3	2470.35	0.02	1160.41	199.8	41.93	41.93	0.01	0.00	0.00	0.00	0.00	0.00
Eurocopter 135	Eurocopter EC-130	7,684	97.72	9.96	727.16	75.57	0	0	0.83	0.08	6.16	0.64	-	-
Eclipse 500	Eclipse 500 / PW610F	819	0	0	0	32.86	1.21	1.21	-	-	-	0.03	0.00	0.00
Embraer 120	Embraer EMB120 Brasilia	35	3619.74	0.02	754.67	160.16	32.39	32.39	0.14	0.00	0.03	0.01	0.00	0.00
Embraer 145	Embraer ERJ145	104	3749.13	730.56	3551.1	414.67	25.87	25.87	0.43	0.08	0.41	0.05	0.00	0.00
Dassault Falcon 2000	Dassault Falcon 20-C	186	4802.04	914.68	3031.23	304.97	21.24	21.24	0.98	0.19	0.62	0.06	0.00	0.00
Gulfstream GV/650	Bombardier Global Express	523	6541.79	86.45	5231.46	715.11	47.66	47.66	3.77	0.05	3.02	0.41	0.03	0.03
Gulfstream GII	Gulfstream II	195	13903.64	1852.81	5300.36	804.07	41.54	41.54	2.99	0.40	1.14	0.17	0.01	0.01
Gulfstream GIV	Gulfstream G350	479	9459.83	1605.86	2564.37	583.52	137.48	137.48	4.99	0.85	1.35	0.31	0.07	0.07
Dash 6	BAE Jetstream 31	1,333	2172.99	233.37	469.74	87.33	17.8	17.8	3.19	0.34	0.69	0.13	0.03	0.03
Piaggio P.180 Avanti	Piaggio P.180 Avanti	74	7824.26	1344.66	291.37	108.79	27.97	27.97	0.64	0.11	0.02	0.01	0.00	0.00
GASEVP	Piper PA-24 Comanche	7,868	13794.52	406.07	3.71	12.02	7.38	7.38	119.64	3.52	0.03	0.10	0.06	0.06
Piper Warrior	Piper PA-28 Cherokee Series	4,989	8824.64	114.24	38.46	10.15	6.25	6.25	48.53	0.63	0.21	0.06	0.03	0.03
Piper Meridian	Piper PA46-TP Meridian	365	7553.45	3209.85	143.28	59.2	27.8	27.8	3.04	1.29	0.06	0.02	0.01	0.01
Robinson R22	Robinson R22B	381	12781	107.66	55.11	13.72	0	0	5.37	0.05	0.02	0.01	-	-
Robinson R44	Robinson R44 Raven / Lycoming O-540-F1B5	1,524	53041.6	440.56	8.22	40.66	0	0	89.11	0.74	0.01	0.07	-	-
Sikorsky SH-60 Seahawk	Sikorsky SH-60 Sea Hawk	431	582.92	37.06	288.38	64.28	0	0	0.28	0.02	0.14	0.03	-	-
Learjet 36	Rockwell Sabreliner 65	1,022	4708.78	897.98	1241.87	195.01	16.66	16.66	5.30	1.01	1.40	0.22	0.02	0.02
Cirrus SR22	EADS Socata TB-9 Tampico	1,444	8824.64	114.24	38.46	10.15	6.25	6.25	14.05	0.18	0.06	0.02	0.01	0.01
								TOTAL	**1,107.18**	**48.63**	**22.00**	**4.34**	**0.99**	**0.99**

BASELINE APU CRITERIA POLLUTANT EMISSIONS

AEDT ID #	Equipment Type	Annual Operations	CO (g)	VOC (g)	NOx (g)	SOx (g)	PM 2·5 (g)	PM 10 (g)	CO (Ton)	VOC (Ton)	NOx (Ton)	SOx (Ton)	PM 2·5 (Ton)	PM 10 (Ton)
2	APU GTCP 36-100	877	446.25	9.41	76.48	14.35	13.43	13.43	0.4314	0.0091	0.0739	0.0139	0.0130	0.0130
3	APU GTCP 36-150[]	61	94.45	10.27	67.16	14.64	13.43	13.43	0.0064	0.0007	0.0045	0.0010	0.0009	0.0009
4	APU GTCP 36-100	195	446.25	9.41	76.48	14.35	13.43	13.43	0.0957	0.0020	0.0164	0.0031	0.0029	0.0029
5	APU GTCP 36-100	422	446.25	9.41	76.48	14.35	13.43	13.43	0.2076	0.0044	0.0356	0.0067	0.0062	0.0062
6	APU GTCP 36 (80HP)	523	44.53	3.75	219.37	21.72	13.43	13.43	0.0256	0.0022	0.1263	0.0125	0.0077	0.0077
7	APU GTCP 36-150[]	3	94.45	10.27	67.16	14.64	13.43	13.43	0.0003	0.0000	0.0002	0.0000	0.0000	0.0000
8	APU GTCP 36-150[]	622	94.45	10.27	67.16	14.64	13.43	13.43	0.0648	0.0070	0.0460	0.0100	0.0092	0.0092
9	APU GTCP 36-100	877	446.25	9.41	76.48	14.35	13.43	13.43	0.4314	0.0091	0.0739	0.0139	0.0130	0.0130
10	APU GTCP 36-150[]	61	94.45	10.27	67.16	14.64	13.43	13.43	0.0064	0.0007	0.0045	0.0010	0.0009	0.0009
11	APU GTCP 36-100	195	446.25	9.41	76.48	14.35	13.43	13.43	0.0957	0.0020	0.0164	0.0031	0.0029	0.0029
12	APU GTCP 36-100	422	446.25	9.41	76.48	14.35	13.43	13.43	0.2076	0.0044	0.0356	0.0067	0.0062	0.0062
13	APU GTCP 36 (80HP)	523	44.53	3.75	219.37	21.72	13.43	13.43	0.0256	0.0022	0.1263	0.0125	0.0077	0.0077
14	APU GTCP 36-150[]	3	94.45	10.27	67.16	14.64	13.43	13.43	0.0003	0.0000	0.0002	0.0000	0.0000	0.0000
15	APU GTCP 36-150[]	622	94.45	10.27	67.16	14.64	13.43	13.43	0.0648	0.0070	0.0460	0.0100	0.0092	0.0092
								TOTAL	**1.663**	**0.051**	**0.606**	**0.094**	**0.080**	**0.080**

BASELINE NONAIRCRAFT CRITERIA POLLUTANT EMISSIONS

AEDT ID	Equipment Type	Annual CO (g)	Annual VOC (g)	Annual NOx (g)	Annual SOx (g)	Annual PM 2·5 (g)	Annual PM 10 (g)	Annual CO (tons)	Annual VOC (tons)	Annual NOx (tons)	Annual SOx (tons)	Annual PM 2·5 (tons)	Annual PM 10 (tons)
1	Diesel - Hi-Way F650 - Cabin Service Truck	6,509.72	8,002.09	16,336.76	149.29	544.87	561.72	0.007	0.009	0.018	0.000	0.001	0.001
2	Gasoline - Taylor Dunn - Cart	76,543.93	1,646.41	4,358.71	9,012.42	351.41	381.96	0.084	0.002	0.005	0.010	0.000	0.000
3	"LPG - Toyota 5000 lb - Fork Lift"	63,696.27	1,651.16	13,594.59	169.37	806.37	806.37	0.070	0.002	0.015	0.000	0.001	0.001
5	Diesel - F350 - Fuel Truck	56,862.82	70,143.13	143,279.08	1,309.62	4,718.10	4,864.02	0.063	0.077	0.158	0.001	0.005	0.005
6	Diesel - (None specified. EPA default data used.) - Generator	55,736.63	57,973.73	118,356.98	1,081.57	3,947.47	4,069.56	0.061	0.064	0.130	0.001	0.004	0.004
7	"Diesel - TLD 28 VDC - Ground Power Unit"	4,203.24	1,578.76	34,533.60	32.75	2,364.98	2,438.12	0.005	0.002	0.038	0.000	0.003	0.003
8	Diesel - F250 / F350 - Service Truck	3,811.04	4,684.73	9,564.17	87.40	318.99	328.85	0.004	0.005	0.011	0.000	0.000	0.000
9	Gasoline - F250 / F350 - Service Truck	2,158,093.74	46,762.02	122,185.97	251,575.16	9,880.81	10,740.01	2.379	0.052	0.135	0.277	0.011	0.012
10	Diesel - Tennant - Sweeper	118.53	44.52	973.86	0.93	66.69	68.76	0.000	0.000	0.001	0.000	0.000	0.000
11	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	362.06	446.62	912.29	8.34	30.04	30.97	0.000	0.000	0.001	0.000	0.000	0.000
14	Fuel Tank - Type 2	-	1,450.38	-	-	-	-	-	0.002	-	-	-	-
15	Fuel Tank - Type 2	-	1,450.38	-	-	-	-	-	0.002	-	-	-	-
16	Fuel Tank - Type 3	-	14,714.13	-	-	-	-	-	0.016	-	-	-	-
17	Fuel Tank - Type 2	-	1,088.71	-	-	-	-	-	0.001	-	-	-	-
18	Fuel Tank - Type 2	-	871.36	-	-	-	-	-	0.001	-	-	-	-
19	Fuel Tank - Type 2	-	1,450.38	-	-	-	-	-	0.002	-	-	-	-
20	Fuel Tank - Type 3	-	18,402.39	-	-	-	-	-	0.020	-	-	-	-
21	Fuel Tank - Type 2	-	1,811.12	-	-	-	-	-	0.002	-	-	-	-
22	Fuel Tank - Type 2	-	1,811.12	-	-	-	-	-	0.002	-	-	-	-
23	Fuel Tank - Type 3	-	24,583.12	-	-	-	-	-	0.027	-	-	-	-
24	Fuel Tank - Type 3	-	14,714.13	-	-	-	-	-	0.016	-	-	-	-
25	Fuel Tank - Type 2	-	799.03	-	-	-	-	-	0.001	-	-	-	-
26	Diesel - (None specified. EPA default data used.) - Generator	307.75	320.10	653.50	5.97	21.80	22.47	0.000	0.000	0.001	0.000	0.000	0.000
37	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	8,230.58	10,152.83	20,738.84	189.56	682.92	704.04	0.009	0.011	0.023	0.000	0.001	0.001
52	Fuel Tank - Type 2	-	1.35	-	-	-	-	-	0.000	-	-	-	-
53	Fuel Tank - Type 2	-	7.56	-	-	-	-	-	0.000	-	-	-	-
54	Fuel Tank - Type 2	-	6.21	-	-	-	-	-	0.000	-	-	-	-
58	Boiler/Space Heater - Type 86	15,067.00	997.75	5,910.90	115.90	1,390.80	1,390.80	0.017	0.001	0.007	0.000	0.002	0.002
							TOTAL	**2.700**	**0.317**	**0.542**	**0.291**	**0.028**	**0.029**

PAL1 WITH PROJECT (2036) AIRCRAFT CRITERIA POLLUTANT EMISSIONS

Aircraft Make/Model	AEDT Aircraft ID/Substitution	LTO Cycles	Sum of CO (g)	Sum of VOC (g)	Sum of NOx (g)	Sum of SOx (g)	Sum of PM 2·5 (g)	Sum of PM 10 (g)	Annual CO (ton)	Annual VOC (ton)	Annual NOx (ton)	Annual SOx (ton)	Annual PM 2·5 (ton)	Annual PM 10 (ton)
Beechcraft Bonanza	Raytheon Beech Bonanza 36	2,613	46,614.28	638.56	11.23	36.28	29.44	29.44	134.26	1.84	0.03	0.10	0.08	0.08
Beechcraft Baron	Raytheon Beech Baron 58	7,306	34,656.33	799.05	9.18	29.75	19.66	19.66	279.10	6.44	0.07	0.24	0.16	0.16
Bombardier Challenger 600	Bombardier Challenger 600	1,183	8,372.58	1,371.59	1,014.81	274.42	24.27	24.27	10.92	1.79	1.32	0.36	0.03	0.03
Cessna 172	Cessna 172 Skyhawk	25,098	9,723.00	128.87	31.06	10.25	5.54	5.54	268.99	3.57	0.86	0.28	0.15	0.15
Cessna 182	Cessna 182	1,655	12,553.24	148.52	22.46	13.12	7.05	7.05	22.90	0.27	0.04	0.02	0.01	0.01
Cessna 206	Cessna 206	1,129	22,316.23	440.09	4.92	18.48	13.90	13.90	27.77	0.55	0.01	0.02	0.02	0.02
Cessna 208 Caravan	Cessna 208 Caravan	4,166	826.82	69.43	207.06	47.74	8.83	8.83	3.80	0.32	0.95	0.22	0.04	0.04
Cessna Citation CJ4	Cessna 525 CitationJet	3,558	14,806.03	984.14	4,974.56	1,400.20	59.82	59.82	58.07	3.86	19.51	5.49	0.23	0.23
Cessna Citation Bravo	Cessna 550 Citation II	341	10,232.51	4,425.85	743.54	191.03	40.14	40.14	3.85	1.66	0.28	0.07	0.02	0.02
Cessna Citation Sovereign	Cessna 680 Citation Sovereign	585	7,133.09	1,091.46	1,813.69	321.43	31.94	31.94	4.60	0.70	1.17	0.21	0.02	0.02
Cessna Citation X	Cessna 750 Citation X	805	3,653.48	797.20	2,270.32	328.42	21.92	21.92	3.24	0.71	2.01	0.29	0.02	0.02
Bombardier 700	Bombardier CRJ-700	3,103	5,139.50	46.30	3,492.89	546.20	22.48	22.48	17.58	0.16	11.95	1.87	0.08	0.08
Bombardier de Havilland Dash 8 Q200	Bombardier de Havilland Dash 8 Q200	1,095	2,774.64	0.02	878.65	174.61	35.07	35.07	3.35	0.00	1.06	0.21	0.04	0.04
Dornier 328 Jet	Dornier 328-100 Series	4	2,620.05	0.02	1,194.65	208.61	43.31	43.31	0.01	0.00	0.01	0.00	0.00	0.00
Eurocopter EC135	Eurocopter EC-130	14,254	97.72	9.96	727.16	75.57	-	-	1.54	0.16	11.43	1.19	-	-
Eclipse 500	Eclipse 500 / PW610F	1,105	-	-	-	32.86	1.21	1.21	-	-	-	0.04	0.00	0.00
Embraer 120	Embraer EMB120 Brasilia	81	3,843.41	0.02	775.94	167.00	33.43	33.43	0.34	0.00	0.07	0.01	0.00	0.00
Embraer 145	Embraer ERJ145	140	3,983.72	773.84	3,460.55	417.45	26.06	26.06	0.61	0.12	0.53	0.06	0.00	0.00
Embraer E-170	Embraer ERJ170	3,103	4,848.05	49.61	2,842.49	452.70	18.53	18.53	16.58	0.17	9.72	1.55	0.06	0.06
Dassault Falcon 2000	Dassault Falcon 20-C	250	5,074.38	974.06	3,049.01	311.34	21.78	21.78	1.40	0.27	0.84	0.09	0.01	0.01
Gulfstream GV/650	Gulfstream GV/650	705	6,884.96	91.54	5,332.93	738.95	49.14	49.14	5.35	0.07	4.14	0.57	0.04	0.04
Gulfstream G450	Gulfstream G350	908	10,042.19	1,700.34	2,617.93	610.79	141.35	141.35	10.05	1.70	2.62	0.61	0.14	0.14
Dash 6	BAE Jetstream 31	3,677	2,304.65	247.91	476.23	90.00	18.24	18.24	9.34	1.00	1.93	0.36	0.07	0.07
Learjet 70	Bombardier Learjet 70	1,378	5,150.61	1,059.60	858.60	162.21	12.59	12.59	7.82	1.61	1.30	0.25	0.02	0.02
Piaggio P.180 Avanti	Piaggio P.180 Avanti	173	8,288.53	1,433.96	296.86	112.20	28.91	28.91	1.58	0.27	0.06	0.02	0.01	0.01
GASEVP	Piper PA-24 Comanche	7,840	14,243.25	425.79	3.83	12.41	7.54	7.54	123.09	3.68	0.03	0.11	0.07	0.07
Piper Warrior	Piper PA-28 Cherokee Series	4,972	8,891.81	117.52	38.56	10.27	6.29	6.29	48.73	0.64	0.21	0.06	0.03	0.03
Piper Meridian	Piper PA46-TP Meridian	854	7,910.82	3,367.34	145.78	61.07	28.88	28.88	7.45	3.17	0.14	0.06	0.03	0.03
Robinson R22	Robinson R22B	707	12,781.00	107.66	55.11	13.72	-	-	9.96	0.08	0.04	0.01	-	-
Robinson R44	Robinson R44 Raven / Lycoming O-540-F1B5	2,826	53,041.60	440.56	8.22	40.66	-	-	165.23	1.37	0.03	0.13	-	-
Sikorsky SH-60 Seahawk	Sikorsky SH-60 Sea Hawk	478	582.92	37.06	288.38	64.28	-	-	0.31	0.02	0.15	0.03	-	-
Cirrus SR22	EADS Socata TB-9 Tampico	1,439	8,891.81	117.52	38.56	10.27	6.29	6.29	14.10	0.19	0.06	0.02	0.01	0.01
								TOTAL	**1,261.95**	**36.39**	**72.58**	**14.56**	**1.40**	**1.40**

PAL1 APU CRITERIA POLLUTANT EMISSIONS

AEDT ID #	Equipment Type	Annual Operations	CO (g)	VOC (g)	NOx (g)	SOx (g)	PM 2·5 (g)	PM 10 (g)	CO (Ton)	VOC (Ton)	NOx (Ton)	SOx (Ton)	PM 2·5 (Ton)	PM 10 (Ton)
32	APU GTCP 85 (200 HP)	3,103	416.02	27.40	109.84	23.12	33.58	33.58	1.42	0.09	0.38	0.08	0.11	0.11
34	APU GTCP 36-100	1,183	446.25	9.41	76.48	14.35	13.43	13.43	0.58	0.01	0.10	0.02	0.02	0.02
35	APU GTCP 36-150[]	140	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
36	APU GTCP 36-100	908	446.25	9.41	76.48	14.35	13.43	13.43	0.45	0.01	0.08	0.01	0.01	0.01
37	APU GTCP 36 (80HP)	705	44.53	3.75	219.37	21.72	13.43	13.43	0.03	0.00	0.17	0.02	0.01	0.01
38	APU GTCP 36-150[]	4	94.45	10.27	67.16	14.64	13.43	13.43	0.00	0.00	0.00	0.00	0.00	0.00
39	APU GTCP 36-150[]	81	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
40	APU GTCP 85 (200 HP)	3,103	416.02	27.40	109.84	23.12	33.58	33.58	1.42	0.09	0.38	0.08	0.11	0.11
42	APU GTCP 36-100	1,183	446.25	9.41	76.48	14.35	13.43	13.43	0.58	0.01	0.10	0.02	0.02	0.02
43	APU GTCP 36-150[]	140	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
44	APU GTCP 36-100	908	446.25	9.41	76.48	14.35	13.43	13.43	0.45	0.01	0.08	0.01	0.01	0.01
45	APU GTCP 36 (80HP)	705	44.53	3.75	219.37	21.72	13.43	13.43	0.03	0.00	0.17	0.02	0.01	0.01
46	APU GTCP 36-150[]	4	94.45	10.27	67.16	14.64	13.43	13.43	0.00	0.00	0.00	0.00	0.00	0.00
47	APU GTCP 36-150[]	81	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
								TOTAL	**5.02**	**0.24**	**1.48**	**0.27**	**0.32**	**0.32**

PAL1 WITH PROJECT NONAIRCRAFT CRITERIA POLLUTANT EMISSIONS

Operation ID	Equipment Type	CO (g)	VOC (g)	NOx (g)	SOx (g)	PM 2·5 (g)	PM 10 (g)	CO (Ton)	VOC (Ton)	NOx (Ton)	SOx (Ton)	PM 2·5 (Ton)	PM 10 (Ton)
61	Fuel Tank - Type 2	-	3,886.000	-	-	-	-	-	0.004	-	-	-	-
62	Fuel Tank - Type 2	-	3,886.000	-	-	-	-	-	0.004	-	-	-	-
63	Fuel Tank - Type 3	-	14,612.930	-	-	-	-	-	0.016	-	-	-	-
64	Fuel Tank - Type 2	-	2,917.360	-	-	-	-	-	0.003	-	-	-	-
65	Fuel Tank - Type 2	-	2,335.240	-	-	-	-	-	0.003	-	-	-	-
66	Fuel Tank - Type 2	-	3,886.000	-	-	-	-	-	0.004	-	-	-	-
67	Fuel Tank - Type 3	-	18,259.990	-	-	-	-	-	0.020	-	-	-	-
68	Fuel Tank - Type 2	-	4,852.180	-	-	-	-	-	0.005	-	-	-	-
69	Fuel Tank - Type 2	-	4,852.180	-	-	-	-	-	0.005	-	-	-	-
70	Fuel Tank - Type 3	-	24,332.670	-	-	-	-	-	0.027	-	-	-	-
71	Fuel Tank - Type 3	-	-	-	-	-	-	-	-	-	-	-	-
72	Fuel Tank - Type 2	-	2,141.500	-	-	-	-	-	0.002	-	-	-	-
73	Fuel Tank - Type 2	-	1.830	-	-	-	-	-	0.000	-	-	-	-
74	Fuel Tank - Type 2	-	10.270	-	-	-	-	-	0.000	-	-	-	-
75	Fuel Tank - Type 2	-	8.440	-	-	-	-	-	0.000	-	-	-	-
77	Boiler/Space Heater - Type 86	15,067.000	997.750	5,910.900	115.900	1,390.800	1,390.800	0.017	0.001	0.007	0.000	0.002	0.002
76	Diesel - (None specified. EPA default data used.) - Generator	392.290	408.030	833.020	7.610	27.780	28.640	0.000	0.000	0.001	0.000	0.000	0.000
78	Diesel - Hi-Way F650 - Cabin Service Truck	8,297.960	10,200.290	20,824.520	190.300	694.550	716.030	0.009	0.011	0.023	0.000	0.001	0.001
79	Gasoline - Taylor Dunn - Cart	97,570.800	2,098.690	5,556.060	11,488.160	447.940	486.890	0.108	0.002	0.006	0.013	0.000	0.001
80	"LPG - Toyota 5000 lb - Fork Lift"	81,193.850	2,104.740	17,329.070	215.900	1,027.880	1,027.880	0.090	0.002	0.019	0.000	0.001	0.001
81	Diesel - F350 - Fuel Truck	72,483.230	89,411.680	182,638.310	1,669.370	6,014.170	6,200.180	0.080	0.099	0.201	0.002	0.007	0.007
82	Diesel - (None specified. EPA default data used.) - Generator	71,047.670	73,899.310	150,870.030	1,378.690	5,031.860	5,187.480	0.078	0.081	0.166	0.002	0.006	0.006
83	"Diesel - TLD 28 VDC - Ground Power Unit"	5,357.890	2,012.450	44,020.100	41.740	3,014.640	3,107.880	0.006	0.002	0.049	0.000	0.003	0.003
84	Diesel - F250 / F350 - Service Truck	4,857.970	5,971.670	12,191.540	111.410	406.620	419.190	0.005	0.007	0.013	0.000	0.000	0.000
85	Gasoline - F250 / F350 - Service Truck	2,750,931.950	59,607.760	155,751.020	320,684.000	12,595.120	13,690.340	3.032	0.066	0.172	0.353	0.014	0.015
86	Diesel - Tennant - Sweeper	151.090	56.750	1,241.380	1.190	85.010	87.640	0.000	0.000	0.001	0.000	0.000	0.000
87	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	461.540	569.330	1,162.950	10.630	38.300	39.480	0.001	0.001	0.001	0.000	0.000	0.000
89	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	10,491.540	12,941.840	26,435.870	241.630	870.520	897.440	0.012	0.014	0.029	0.000	0.001	0.001
							TOTAL	**3.437**	**0.382**	**0.689**	**0.371**	**0.035**	**0.037**

PAL1 NO PROJECT (2036) AIRCRAFT CRITERIA POLLUTANT EMISSIONS

Aircraft Make/Model	AEDT Aircraft ID/Substitution	LTO Cycles	Sum of CO (g)	Sum of VOC (g)	Sum of NOx (g)	Sum of SOx (g)	Sum of PM 2·5 (g)	Sum of PM 10 (g)	Annual CO (ton)	Annual VOC (ton)	Annual NOx (ton)	Annual SOx (ton)	Annual PM 2·5 (ton)	Annual PM 10 (ton)
Beechcraft Bonanza	Raytheon Beech Bonanza 36	2,613	46,165.24	618.84	11.11	35.89	29.28	29.28	132.97	1.78	0.03	0.10	0.08	0.08
Beechcraft Baron	Raytheon Beech Baron 58	7,306	33,758.25	759.60	8.95	28.97	19.35	19.35	271.87	6.12	0.07	0.23	0.16	0.16
Bombardier Challenger 600	Bombardier Challenger 600	1,183	7,894.43	1,291.44	983.08	262.57	23.21	23.21	10.29	1.68	1.28	0.34	0.03	0.03
Cessna 172	Cessna 172 Skyhawk	25,098	9,622.46	124.27	30.94	10.12	5.50	5.50	266.21	3.44	0.86	0.28	0.15	0.15
Cessna 182	Cessna 182	1,655	12,452.70	143.93	22.34	13.00	7.01	7.01	22.72	0.26	0.04	0.02	0.01	0.01
Cessna 206	Cessna 206	1,129	21,867.19	420.37	4.81	18.09	13.74	13.74	27.21	0.52	0.01	0.02	0.02	0.02
Cessna 208 Caravan	Cessna 208 Caravan	4,166	776.36	65.02	204.61	46.62	8.65	8.65	3.57	0.30	0.94	0.21	0.04	0.04
Cessna Citation CJ4	Cessna 525 CitationJet	3,558	13,919.45	925.22	4,676.56	1,316.28	56.29	56.29	54.59	3.63	18.34	5.16	0.22	0.22
Cessna Citation Bravo	Cessna 550 Citation II	341	9,676.34	4,162.05	730.03	184.55	38.53	38.53	3.64	1.56	0.27	0.07	0.01	0.01
Cessna Citation Sovereign	Cessna 680 Citation Sovereign	585	6,716.78	1,024.22	1,781.69	310.31	30.81	30.81	4.33	0.66	1.15	0.20	0.02	0.02
Cessna Citation X	Cessna 750 Citation X	805	3,435.49	750.01	2,245.39	319.06	21.33	21.33	3.05	0.67	1.99	0.28	0.02	0.02
Bombardier 700	Bombardier CRJ-700	3,103	4,834.79	43.98	3,437.13	528.75	21.82	21.82	16.54	0.15	11.76	1.81	0.07	0.07
Bombardier de Havilland Dash 8 Q200	Bombardier de Havilland Dash 8 Q200	1,095	2,626.89	0.02	847.50	166.50	33.80	33.80	3.17	0.00	1.02	0.20	0.04	0.04
Dornier 328 Jet	Dornier 328-100 Series	4	2,470.34	0.02	1,160.37	199.80	41.93	41.93	0.01	0.00	0.01	0.00	0.00	0.00
Eurocopter EC135	Eurocopter EC-130	14,254	97.72	9.96	727.16	75.57	-	-	1.54	0.16	11.43	1.19	-	-
Eclipse 500	Eclipse 500 / PW610F	1,105	-	-	-	32.86	1.21	1.21	-	-	-	0.04	0.00	0.00
Embraer 120	Embraer EMB120 Brasilia	81	3,619.72	0.02	754.63	160.15	32.39	32.39	0.32	0.00	0.07	0.01	0.00	0.00
Embraer 145	Embraer ERJ145	140	3,742.23	728.37	3,429.29	406.05	25.41	25.41	0.58	0.11	0.53	0.06	0.00	0.00
Embraer E-170	Embraer ERJ170	3,103	4,575.51	47.12	2,788.19	437.30	17.95	17.95	15.65	0.16	9.54	1.50	0.06	0.06
Dassault Falcon 2000	Dassault Falcon 20-C	250	4,801.92	914.67	3,029.97	304.89	21.23	21.23	1.32	0.25	0.83	0.08	0.01	0.01
Gulfstream GV/650	Gulfstream GV/650	705	6,541.79	86.45	5,231.46	715.11	47.66	47.66	5.08	0.07	4.07	0.56	0.04	0.04
Gulfstream G450	Gulfstream G350	908	9,459.81	1,605.84	2,563.81	583.48	137.46	137.46	9.47	1.61	2.57	0.58	0.14	0.14
Dash 6	BAE Jetstream 31	3,677	2,172.98	233.37	469.73	87.33	17.80	17.80	8.81	0.95	1.90	0.35	0.07	0.07
Learjet 70	Bombardier Learjet 70	1,378	4,878.16	1,000.22	839.56	155.75	12.04	12.04	7.41	1.52	1.28	0.24	0.02	0.02
Piaggio P.180 Avanti	Piaggio P.180 Avanti	173	7,824.22	1,344.66	291.36	108.79	27.97	27.97	1.49	0.26	0.06	0.02	0.01	0.01
GASEVP	Piper PA-24 Comanche	7,840	13,794.21	406.07	3.71	12.02	7.38	7.38	119.21	3.51	0.03	0.10	0.06	0.06
Piper Warrior	Piper PA-28 Cherokee Series	4,972	8,824.40	114.24	38.46	10.15	6.25	6.25	48.36	0.63	0.21	0.06	0.03	0.03
Piper Meridian	Piper PA46-TP Meridian	854	7,553.35	3,209.82	143.26	59.20	27.80	27.80	7.11	3.02	0.13	0.06	0.03	0.03
Robinson R22	Robinson R22B	707	12,781.00	107.66	55.11	13.72	-	-	9.96	0.08	0.04	0.01	-	-
Robinson R44	Robinson R44 Raven / Lycoming O-540-F1B5	2,826	53,041.60	440.56	8.22	40.66	-	-	165.23	1.37	0.03	0.13	-	-
Sikorsky SH-60 Seahawk	Sikorsky SH-60 Sea Hawk	478	582.92	37.06	288.38	64.28	-	-	0.31	0.02	0.15	0.03	-	-
Cirrus SR22	EADS Socata TB-9 Tampico	1,439	8,824.40	114.24	38.46	10.15	6.25	6.25	14.00	0.18	0.06	0.02	0.01	0.01
								TOTAL	**1,236.03**	**34.67**	**70.69**	**13.98**	**1.36**	**1.36**

PAL1 NO PROJECT NONAIRCRAFT CRITERIA POLLUTANT EMISSIONS

Operation ID	Equipment Type	CO (g)	VOC (g)	NOx (g)	SOx (g)	PM 2·5 (g)	PM 10 (g)	CO (Ton)	VOC (Ton)	NOx (Ton)	SOx (Ton)	PM 2·5 (Ton)	PM 10 (Ton)
61	Fuel Tank - Type 2	-	3,886.000	-	-	-	-	-	0.004	-	-	-	-
62	Fuel Tank - Type 2	-	3,886.000	-	-	-	-	-	0.004	-	-	-	-
63	Fuel Tank - Type 3	-	14,612.930	-	-	-	-	-	0.016	-	-	-	-
64	Fuel Tank - Type 2	-	2,917.360	-	-	-	-	-	0.003	-	-	-	-
65	Fuel Tank - Type 2	-	2,335.240	-	-	-	-	-	0.003	-	-	-	-
66	Fuel Tank - Type 2	-	3,886.000	-	-	-	-	-	0.004	-	-	-	-
67	Fuel Tank - Type 3	-	18,259.990	-	-	-	-	-	0.020	-	-	-	-
68	Fuel Tank - Type 2	-	4,852.180	-	-	-	-	-	0.005	-	-	-	-
69	Fuel Tank - Type 2	-	4,852.180	-	-	-	-	-	0.005	-	-	-	-
70	Fuel Tank - Type 3	-	24,332.670	-	-	-	-	-	0.027	-	-	-	-
71	Fuel Tank - Type 3	-	-	-	-	-	-	-	-	-	-	-	-
72	Fuel Tank - Type 2	-	2,141.500	-	-	-	-	-	0.002	-	-	-	-
73	Fuel Tank - Type 2	-	1.830	-	-	-	-	-	0.000	-	-	-	-
74	Fuel Tank - Type 2	-	10.270	-	-	-	-	-	0.000	-	-	-	-
75	Fuel Tank - Type 2	-	8.440	-	-	-	-	-	0.000	-	-	-	-
58	Boiler/Space Heater - Type 86	15,067.000	997.750	5,910.900	115.900	1,390.800	1,390.800	0.017	0.001	0.007	0.000	0.002	0.002
76	Diesel - (None specified. EPA default data used.) - Generator	392.290	408.030	833.020	7.610	27.780	28.640	0.000	0.000	0.001	0.000	0.000	0.000
78	Diesel - Hi-Way F650 - Cabin Service Truck	8,297.960	10,200.290	20,824.520	190.300	694.550	716.030	0.009	0.011	0.023	0.000	0.001	0.001
79	Gasoline - Taylor Dunn - Cart	97,570.800	2,098.690	5,556.060	11,488.160	447.940	486.890	0.108	0.002	0.006	0.013	0.000	0.001
80	"LPG - Toyota 5000 lb - Fork Lift"	81,193.850	2,104.740	17,329.070	215.900	1,027.880	1,027.880	0.090	0.002	0.019	0.000	0.001	0.001
81	Diesel - F350 - Fuel Truck	72,483.230	89,411.680	182,638.310	1,669.370	6,014.170	6,200.180	0.080	0.099	0.201	0.002	0.007	0.007
82	Diesel - (None specified. EPA default data used.) - Generator	71,047.670	73,899.310	150,870.030	1,378.690	5,031.860	5,187.480	0.078	0.081	0.166	0.002	0.006	0.006
83	"Diesel - TLD 28 VDC - Ground Power Unit"	5,357.890	2,012.450	44,020.100	41.740	3,014.640	3,107.880	0.006	0.002	0.049	0.000	0.003	0.003
84	Diesel - F250 / F350 - Service Truck	4,857.970	5,971.670	12,191.540	111.410	406.620	419.190	0.005	0.007	0.013	0.000	0.000	0.000
85	Gasoline - F250 / F350 - Service Truck	2,750,931.950	59,607.760	155,751.020	320,684.000	12,595.120	13,690.340	3.032	0.066	0.172	0.353	0.014	0.015
86	Diesel - Tennant - Sweeper	151.090	56.750	1,241.380	1.190	85.010	87.640	0.000	0.000	0.001	0.000	0.000	0.000
87	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	461.540	569.330	1,162.950	10.630	38.300	39.480	0.001	0.001	0.001	0.000	0.000	0.000
89	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	10,491.540	12,941.840	26,435.870	241.630	870.520	897.440	0.012	0.014	0.029	0.000	0.001	0.001
							TOTAL	**3.437**	**0.382**	**0.689**	**0.371**	**0.035**	**0.037**

PAL2 WITH PROJECT (2036) AIRCRAFT CRITERIA POLLUTANT EMISSIONS

Aircraft Make/Model	AEDT Aircraft ID/Substitution	LTO Cycles	Sum of CO (g)	Sum of VOC (g)	Sum of NOx (g)	Sum of SOx (g)	Sum of PM 2·5 (g)	Sum of PM 10 (g)	Annual CO (ton)	Annual VOC (ton)	Annual NOx (ton)	Annual SOx (ton)	Annual PM 2·5 (ton)	Annual PM 10 (ton)
Beechcraft Bonanza	Raytheon Beech Bonanza 36	2,613	46,614.28	638.56	11.23	36.28	29.44	29.44	134.26	1.84	0.03	0.10	0.08	0.08
Beechcraft Baron	Raytheon Beech Baron 58	7,306	34,656.33	799.05	9.18	29.75	19.66	19.66	279.10	6.44	0.07	0.24	0.16	0.16
Bombardier Challenger 600	Bombardier Challenger 600	1,183	8,372.58	1,371.59	1,014.81	274.42	24.27	24.27	10.92	1.79	1.32	0.36	0.03	0.03
Cessna 172	Cessna 172 Skyhawk	25,098	9,723.00	128.87	31.06	10.25	5.54	5.54	268.99	3.57	0.86	0.28	0.15	0.15
Cessna 182	Cessna 182	1,655	12,553.24	148.52	22.46	13.12	7.05	7.05	22.90	0.27	0.04	0.02	0.01	0.01
Cessna 206	Cessna 206	1,129	22,316.23	440.09	4.92	18.48	13.90	13.90	27.77	0.55	0.01	0.02	0.02	0.02
Cessna 208 Caravan	Cessna 208 Caravan	4,166	826.82	69.43	207.06	47.74	8.83	8.83	3.80	0.32	0.95	0.22	0.04	0.04
Cessna Citation CJ4	Cessna 525 CitationJet	3,558	14,806.03	984.14	4,974.56	1,400.20	59.82	59.82	58.07	3.86	19.51	5.49	0.23	0.23
Cessna Citation Bravo	Cessna 550 Citation II	341	10,232.51	4,425.85	743.54	191.03	40.14	40.14	3.85	1.66	0.28	0.07	0.02	0.02
Cessna Citation Sovereign	Cessna 680 Citation Sovereign	585	7,133.09	1,091.46	1,813.69	321.43	31.94	31.94	4.60	0.70	1.17	0.21	0.02	0.02
Cessna Citation X	Cessna 750 Citation X	805	3,653.48	797.20	2,270.32	328.42	21.92	21.92	3.24	0.71	2.01	0.29	0.02	0.02
Bombardier 700	Bombardier CRJ-700	5,855	5,139.50	46.30	3,492.89	546.20	22.48	22.48	33.17	0.30	22.54	3.53	0.15	0.15
Bombardier de Havilland Dash 8 Q200	Bombardier de Havilland Dash 8 Q200	2,067	2,774.64	0.02	878.65	174.61	35.07	35.07	6.32	0.00	2.00	0.40	0.08	0.08
Dornier 328 Jet	Dornier 328-100 Series	4	2,620.05	0.02	1,194.65	208.61	43.31	43.31	0.01	0.00	0.01	0.00	0.00	0.00
Eurocopter EC135	Eurocopter EC-130	14,254	97.72	9.96	727.16	75.57	-	-	1.54	0.16	11.43	1.19	-	-
Eclipse 500	Eclipse 500 / PW610F	1,105	-	-	-	32.86	1.21	1.21	-	-	-	0.04	0.00	0.00
Embraer 120	Embraer EMB120 Brasilia	81	3,843.41	0.02	775.94	167.00	33.43	33.43	0.34	0.00	0.07	0.01	0.00	0.00
Embraer 145	Embraer ERJ145	140	3,983.72	773.84	3,460.55	417.45	26.06	26.06	0.61	0.12	0.53	0.06	0.00	0.00
Embraer E-170	Embraer ERJ170	5,855	4,848.05	49.61	2,842.49	452.70	18.53	18.53	31.29	0.32	18.35	2.92	0.12	0.12
Dassault Falcon 2000	Dassault Falcon 20-C	250	5,074.38	974.06	3,049.01	311.34	21.78	21.78	1.40	0.27	0.84	0.09	0.01	0.01
Gulfstream GV/650	Gulfstream GV/650	705	6,884.96	91.54	5,332.93	738.95	49.14	49.14	5.35	0.07	4.14	0.57	0.04	0.04
Gulfstream G450	Gulfstream G350	908	10,042.19	1,700.34	2,617.93	610.79	141.35	141.35	10.05	1.70	2.62	0.61	0.14	0.14
Dash 6	BAE Jetstream 31	3,677	2,304.65	247.91	476.23	90.00	18.24	18.24	9.34	1.00	1.93	0.36	0.07	0.07
Learjet 70	Bombardier Learjet 70	1,378	5,150.61	1,059.60	858.60	162.21	12.59	12.59	7.82	1.61	1.30	0.25	0.02	0.02
Piaggio P.180 Avanti	Piaggio P.180 Avanti	173	8,288.53	1,433.96	296.86	112.20	28.91	28.91	1.58	0.27	0.06	0.02	0.01	0.01
GASEVP	Piper PA-24 Comanche	7,840	14,243.25	425.79	3.83	12.41	7.54	7.54	123.09	3.68	0.03	0.11	0.07	0.07
Piper Warrior	Piper PA-28 Cherokee Series	4,972	8,891.81	117.52	38.56	10.27	6.29	6.29	48.73	0.64	0.21	0.06	0.03	0.03
Piper Meridian	Piper PA46-TP Meridian	854	7,910.82	3,367.34	145.78	61.07	28.88	28.88	7.45	3.17	0.14	0.06	0.03	0.03
Robinson R22	Robinson R22B	707	12,781.00	107.66	55.11	13.72	-	-	9.96	0.08	0.04	0.01	-	-
Robinson R44	Robinson R44 Raven / Lycoming O-540-F1B5	2,826	53,041.60	440.56	8.22	40.66	-	-	165.23	1.37	0.03	0.13	-	-
Sikorsky SH-60 Seahawk	Sikorsky SH-60 Sea Hawk	478	582.92	37.06	288.38	64.28	-	-	0.31	0.02	0.15	0.03	-	-
Cirrus SR22	EADS Socata TB-9 Tampico	1,439	8,891.81	117.52	38.56	10.27	6.29	6.29	14.10	0.19	0.06	0.02	0.01	0.01
								TOTAL	**1,295.22**	**36.68**	**92.74**	**17.78**	**1.56**	**1.56**

PAL2 APU CRITERIA POLLUTANT EMISSIONS

Operation ID	Equipment Type	Annual Operations	CO (g)	VOC (g)	NOx (g)	SOx (g)	PM 2·5 (g)	PM 10 (g)	CO (Ton)	VOC (Ton)	NOx (Ton)	SOx (Ton)	PM 2·5 (Ton)	PM 10 (Ton)
16	APU GTCP 85 (200 HP)	5,855	416.02	27.40	109.84	23.12	33.58	33.58	2.69	0.18	0.71	0.15	0.22	0.22
24	APU GTCP 85 (200 HP)	5,855	416.02	27.40	109.84	23.12	33.58	33.58	2.69	0.18	0.71	0.15	0.22	0.22
34	APU GTCP 36-100	1,183	446.25	9.41	76.48	14.35	13.43	13.43	0.58	0.01	0.10	0.02	0.02	0.02
35	APU GTCP 36-150[]	140	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
36	APU GTCP 36-100	908	446.25	9.41	76.48	14.35	13.43	13.43	0.45	0.01	0.08	0.01	0.01	0.01
37	APU GTCP 36 (80HP)	705	44.53	3.75	219.37	21.72	13.43	13.43	0.03	0.00	0.17	0.02	0.01	0.01
38	APU GTCP 36-150[]	4	94.45	10.27	67.16	14.64	13.43	13.43	0.00	0.00	0.00	0.00	0.00	0.00
39	APU GTCP 36-150[]	81	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
42	APU GTCP 36-100	1,183	446.25	9.41	76.48	14.35	13.43	13.43	0.58	0.01	0.10	0.02	0.02	0.02
43	APU GTCP 36-150[]	140	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
44	APU GTCP 36-100	908	446.25	9.41	76.48	14.35	13.43	13.43	0.45	0.01	0.08	0.01	0.01	0.01
45	APU GTCP 36 (80HP)	705	44.53	3.75	219.37	21.72	13.43	13.43	0.03	0.00	0.17	0.02	0.01	0.01
46	APU GTCP 36-150[]	4	94.45	10.27	67.16	14.64	13.43	13.43	0.00	0.00	0.00	0.00	0.00	0.00
47	APU GTCP 36-150[]	81	94.45	10.27	67.16	14.64	13.43	13.43	0.01	0.00	0.01	0.00	0.00	0.00
								TOTAL	**7.54**	**0.41**	**2.14**	**0.41**	**0.52**	**0.52**

PAL2 WITH PROJECT NONAIRCRAFT CRITERIA POLLUTANT EMISSIONS

Operation ID	Equipment Type	CO (g)	VOC (g)	NOx (g)	SOx (g)	PM 2·5 (g)	PM 10 (g)	Annual CO (tons)	Annual VOC (tons)	Annual NOx (tons)	Annual SOx (tons)	Annual PM 2·5 (tons)	Annual PM 10 (tons)
27	Diesel - Hi-Way F650 - Cabin Service Truck	8,849.060	10,877.730	22,207.560	202.940	740.670	763.580	0.010	0.012	0.024	0.000	0.001	0.001
28	Gasoline - Taylor Dunn - Cart	104,050.840	2,238.070	5,925.050	12,251.140	477.690	519.230	0.115	0.002	0.007	0.014	0.001	0.001
29	"LPG - Toyota 5000 lb - Fork Lift"	86,586.230	2,244.530	18,479.960	230.230	1,096.150	1,096.150	0.095	0.002	0.020	0.000	0.001	0.001
30	Diesel - F350 - Fuel Truck	77,297.110	95,349.840	194,768.010	1,780.240	6,413.600	6,611.950	0.085	0.105	0.215	0.002	0.007	0.007
31	Diesel - (None specified. EPA default data used.) - Generator	75,766.210	78,807.240	160,889.870	1,470.250	5,366.040	5,532.000	0.084	0.087	0.177	0.002	0.006	0.006
32	"Diesel - TLD 28 VDC - Ground Power Unit"	5,713.730	2,146.100	46,943.640	44.520	3,214.860	3,314.280	0.006	0.002	0.052	0.000	0.004	0.004
33	Diesel - F250 / F350 - Service Truck	5,180.610	6,368.270	13,001.230	118.810	433.620	447.030	0.006	0.007	0.014	0.000	0.000	0.000
34	Gasoline - F250 / F350 - Service Truck	2,933,631.630	63,566.530	166,095.030	341,981.830	13,431.610	14,599.570	3.234	0.070	0.183	0.377	0.015	0.016
35	Diesel - Tennant - Sweeper	161.130	60.520	1,323.830	1.270	90.660	93.460	0.000	0.000	0.001	0.000	0.000	0.000
36	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	492.190	607.140	1,240.190	11.340	40.840	42.100	0.001	0.001	0.001	0.000	0.000	0.000
38	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	11,188.320	13,801.360	28,191.580	257.680	928.330	957.040	0.012	0.015	0.031	0.000	0.001	0.001
39	Fuel Tank - Type 2	-	3,240.190	-	-	-	-	-	0.004	-	-	-	-
40	Fuel Tank - Type 2	-	3,240.190	-	-	-	-	-	0.004	-	-	-	-
41	Fuel Tank - Type 3	-	14,612.930	-	-	-	-	-	0.016	-	-	-	-
42	Fuel Tank - Type 2	-	2,432.520	-	-	-	-	-	0.003	-	-	-	-
43	Fuel Tank - Type 2	-	1,947.140	-	-	-	-	-	0.002	-	-	-	-
44	Fuel Tank - Type 2	-	3,240.190	-	-	-	-	-	0.004	-	-	-	-
45	Fuel Tank - Type 3	-	18,259.990	-	-	-	-	-	0.020	-	-	-	-
46	Fuel Tank - Type 2	-	4,045.800	-	-	-	-	-	0.004	-	-	-	-
47	Fuel Tank - Type 2	-	4,045.800	-	-	-	-	-	0.004	-	-	-	-
48	Fuel Tank - Type 3	-	24,332.670	-	-	-	-	-	0.027	-	-	-	-
49	Fuel Tank - Type 3	-	-	-	-	-	-	-	-	-	-	-	-
50	Fuel Tank - Type 2	-	1,785.600	-	-	-	-	-	0.002	-	-	-	-
51	Diesel - (None specified. EPA default data used.) - Generator	418.340	435.130	888.350	8.120	29.630	30.540	0.000	0.000	0.001	0.000	0.000	0.000
55	Fuel Tank - Type 2	-	1.720	-	-	-	-	-	0.000	-	-	-	-
56	Fuel Tank - Type 2	-	9.630	-	-	-	-	-	0.000	-	-	-	-
57	Fuel Tank - Type 2	-	7.920	-	-	-	-	-	0.000	-	-	-	-
59	Boiler/Space Heater - Type 86	23,205.000	1,536.650	9,103.500	178.500	2,142.000	2,142.000	0.026	0.002	0.010	0.000	0.002	0.002
							TOTAL	**3.673**	**0.396**	**0.738**	**0.395**	**0.038**	**0.040**

PAL2 NO PROJECT (2036) AIRCRAFT CRITERIA POLLUTANT EMISSIONS

Aircraft Make/Model	AEDT Aircraft ID/Substitution	LTO Cycles	Sum of CO (g)	Sum of VOC (g)	Sum of NOx (g)	Sum of SOx (g)	Sum of PM 2·5 (g)	Sum of PM 10 (g)	Annual CO (ton)	Annual VOC (ton)	Annual NOx (ton)	Annual SOx (ton)	Annual PM 2·5 (ton)	Annual PM 10 (ton)
Beechcraft Bonanza	Raytheon Beech Bonanza 36	2,613	46,165.24	618.84	11.11	35.89	29.28	29.28	132.97	1.78	0.03	0.10	0.08	0.08
Beechcraft Baron	Raytheon Beech Baron 58	7,306	33,758.25	759.60	8.95	28.97	19.35	19.35	271.87	6.12	0.07	0.23	0.16	0.16
Bombardier Challenger 600	Bombardier Challenger 600	1,183	7,894.43	1,291.44	983.08	262.57	23.21	23.21	10.29	1.68	1.28	0.34	0.03	0.03
Cessna 172	Cessna 172 Skyhawk	25,098	9,622.46	124.27	30.94	10.12	5.50	5.50	266.21	3.44	0.86	0.28	0.15	0.15
Cessna 182	Cessna 182	1,655	12,452.70	143.93	22.34	13.00	7.01	7.01	22.72	0.26	0.04	0.02	0.01	0.01
Cessna 206	Cessna 206	1,129	21,867.19	420.37	4.81	18.09	13.74	13.74	27.21	0.52	0.01	0.02	0.02	0.02
Cessna 208 Caravan	Cessna 208 Caravan	4,166	776.36	65.02	204.61	46.62	8.65	8.65	3.57	0.30	0.94	0.21	0.04	0.04
Cessna Citation CJ4	Cessna 525 CitationJet	3,558	13,919.45	925.22	4,676.56	1,316.28	56.29	56.29	54.59	3.63	18.34	5.16	0.22	0.22
Cessna Citation Bravo	Cessna 550 Citation II	341	9,676.34	4,162.05	730.03	184.55	38.53	38.53	3.64	1.56	0.27	0.07	0.01	0.01
Cessna Citation Sovereign	Cessna 680 Citation Sovereign	585	6,716.78	1,024.22	1,781.69	310.31	30.81	30.81	4.33	0.66	1.15	0.20	0.02	0.02
Cessna Citation X	Cessna 750 Citation X	805	3,435.49	750.01	2,245.39	319.06	21.33	21.33	3.05	0.67	1.99	0.28	0.02	0.02
Bombardier 700	Bombardier CRJ-700	5,855	4,834.79	43.98	3,437.13	528.75	21.82	21.82	31.20	0.28	22.18	3.41	0.14	0.14
Bombardier de Havilland Dash 8 Q200	Bombardier de Havilland Dash 8 Q200	2,067	2,626.89	0.02	847.50	166.50	33.80	33.80	5.99	0.00	1.93	0.38	0.08	0.08
Dornier 328 Jet	Dornier 328-100 Series	4	2,470.34	0.02	1,160.37	199.80	41.93	41.93	0.01	0.00	0.01	0.00	0.00	0.00
Eurocopter EC135	Eurocopter EC-130	14,254	97.72	9.96	727.16	75.57	-	-	1.54	0.16	11.43	1.19	-	-
Eclipse 500	Eclipse 500 / PW610F	1,105	-	-	-	32.86	1.21	1.21	-	-	-	0.04	0.00	0.00
Embraer 120	Embraer EMB120 Brasilia	81	3,619.72	0.02	754.63	160.15	32.39	32.39	0.32	0.00	0.07	0.01	0.00	0.00
Embraer 145	Embraer ERJ145	140	3,742.23	728.37	3,429.29	406.05	25.41	25.41	0.58	0.11	0.53	0.06	0.00	0.00
Embraer E-170	Embraer ERJ170	5,855	4,575.51	47.12	2,788.19	437.30	17.95	17.95	29.53	0.30	18.00	2.82	0.12	0.12
Dassault Falcon 2000	Dassault Falcon 20-C	250	4,801.92	914.67	3,029.97	304.89	21.23	21.23	1.32	0.25	0.83	0.08	0.01	0.01
Gulfstream GV/650	Gulfstream GV/650	705	6,541.79	86.45	5,231.46	715.11	47.66	47.66	5.08	0.07	4.07	0.56	0.04	0.04
Gulfstream G450	Gulfstream G350	908	9,459.81	1,605.84	2,563.81	583.48	137.46	137.46	9.47	1.61	2.57	0.58	0.14	0.14
Dash 6	BAE Jetstream 31	3,677	2,172.98	233.37	469.73	87.33	17.80	17.80	8.81	0.95	1.90	0.35	0.07	0.07
Learjet 70	Bombardier Learjet 70	1,378	4,878.16	1,000.22	839.56	155.75	12.04	12.04	7.41	1.52	1.28	0.24	0.02	0.02
Piaggio P.180 Avanti	Piaggio P.180 Avanti	173	7,824.22	1,344.66	291.36	108.79	27.97	27.97	1.49	0.26	0.06	0.02	0.01	0.01
GASEVP	Piper PA-24 Comanche	7,840	13,794.21	406.07	3.71	12.02	7.38	7.38	119.21	3.51	0.03	0.10	0.06	0.06
Piper Warrior	Piper PA-28 Cherokee Series	4,972	8,824.40	114.24	38.46	10.15	6.25	6.25	48.36	0.63	0.21	0.06	0.03	0.03
Piper Meridian	Piper PA46-TP Meridian	854	7,553.35	3,209.82	143.26	59.20	27.80	27.80	7.11	3.02	0.13	0.06	0.03	0.03
Robinson R22	Robinson R22B	707	12,781.00	107.66	55.11	13.72	-	-	9.96	0.08	0.04	0.01	-	-
Robinson R44	Robinson R44 Raven / Lycoming O-540-F1B5	2,826	53,041.60	440.56	8.22	40.66	-	-	165.23	1.37	0.03	0.13	-	-
Sikorsky SH-60 Seahawk	Sikorsky SH-60 Sea Hawk	478	582.92	37.06	288.38	64.28	-	-	0.31	0.02	0.15	0.03	-	-
Cirrus SR22	EADS Socata TB-9 Tampico	1,439	8,824.40	114.24	38.46	10.15	6.25	6.25	14.00	0.18	0.06	0.02	0.01	0.01
								TOTAL	**1,267.39**	**34.94**	**90.48**	**17.09**	**1.52**	**1.52**

PAL2 NO PROJECT NONAIRCRAFT CRITERIA POLLUTANT EMISSIONS

Operation ID	Equipment Type	CO (g)	VOC (g)	NOx (g)	SOx (g)	PM 2·5 (g)	PM 10 (g)	Annual CO (tons)	Annual VOC (tons)	Annual NOx (tons)	Annual SOx (tons)	Annual PM 2·5 (tons)	Annual PM 10 (tons)
27	Diesel - Hi-Way F650 - Cabin Service Truck	8,849.060	10,877.730	22,207.560	202.940	740.670	763.580	0.010	0.012	0.024	0.000	0.001	0.001
28	Gasoline - Taylor Dunn - Cart	104,050.840	2,238.070	5,925.050	12,251.140	477.690	519.230	0.115	0.002	0.007	0.014	0.001	0.001
29	"LPG - Toyota 5000 lb - Fork Lift"	86,586.230	2,244.530	18,479.960	230.230	1,096.150	1,096.150	0.095	0.002	0.020	0.000	0.001	0.001
30	Diesel - F350 - Fuel Truck	77,297.110	95,349.840	194,768.010	1,780.240	6,413.600	6,611.950	0.085	0.105	0.215	0.002	0.007	0.007
31	Diesel - (None specified. EPA default data used.) - Generator	75,766.210	78,807.240	160,889.870	1,470.250	5,366.040	5,532.000	0.084	0.087	0.177	0.002	0.006	0.006
32	"Diesel - TLD 28 VDC - Ground Power Unit"	5,713.730	2,146.100	46,943.640	44.520	3,214.860	3,314.280	0.006	0.002	0.052	0.000	0.004	0.004
33	Diesel - F250 / F350 - Service Truck	5,180.610	6,368.270	13,001.230	118.810	433.620	447.030	0.006	0.007	0.014	0.000	0.000	0.000
34	Gasoline - F250 / F350 - Service Truck	2,933,631.630	63,566.530	166,095.030	341,981.830	13,431.610	14,599.570	3.234	0.070	0.183	0.377	0.015	0.016
35	Diesel - Tennant - Sweeper	161.130	60.520	1,323.830	1.270	90.660	93.460	0.000	0.000	0.001	0.000	0.000	0.000
36	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	492.190	607.140	1,240.190	11.340	40.840	42.100	0.001	0.001	0.001	0.000	0.000	0.000
38	"Diesel - F750 Dukes Transportation Services DART 3000 to 6000 gallon - Fuel Truck"	11,188.320	13,801.360	28,191.580	257.680	928.330	957.040	0.012	0.015	0.031	0.000	0.001	0.001
39	Fuel Tank - Type 2	-	3,240.190	-	-	-	-	-	0.004	-	-	-	-
40	Fuel Tank - Type 2	-	3,240.190	-	-	-	-	-	0.004	-	-	-	-
41	Fuel Tank - Type 3	-	14,612.930	-	-	-	-	-	0.016	-	-	-	-
42	Fuel Tank - Type 2	-	2,432.520	-	-	-	-	-	0.003	-	-	-	-
43	Fuel Tank - Type 2	-	1,947.140	-	-	-	-	-	0.002	-	-	-	-
44	Fuel Tank - Type 2	-	3,240.190	-	-	-	-	-	0.004	-	-	-	-
45	Fuel Tank - Type 3	-	18,259.990	-	-	-	-	-	0.020	-	-	-	-
46	Fuel Tank - Type 2	-	4,045.800	-	-	-	-	-	0.004	-	-	-	-
47	Fuel Tank - Type 2	-	4,045.800	-	-	-	-	-	0.004	-	-	-	-
48	Fuel Tank - Type 3	-	24,332.670	-	-	-	-	-	0.027	-	-	-	-
49	Fuel Tank - Type 3	-	-	-	-	-	-	-	-	-	-	-	-
50	Fuel Tank - Type 2	-	1,785.600	-	-	-	-	-	0.002	-	-	-	-
51	Diesel - (None specified. EPA default data used.) - Generator	418.340	435.130	888.350	8.120	29.630	30.540	0.000	0.000	0.001	0.000	0.000	0.000
55	Fuel Tank - Type 2	-	1.720	-	-	-	-	-	0.000	-	-	-	-
56	Fuel Tank - Type 2	-	9.630	-	-	-	-	-	0.000	-	-	-	-
57	Fuel Tank - Type 2	-	7.920	-	-	-	-	-	0.000	-	-	-	-
58	Boiler/Space Heater - Type 86	15,067.000	997.750	5,910.900	115.900	1,390.800	1,390.800	0.017	0.001	0.007	0.000	0.002	0.002
							TOTAL	**3.665**	**0.395**	**0.734**	**0.395**	**0.037**	**0.039**

LEAD EMISSIONS FOR ALL SCENARIOS

Aircraft Fueled by AVGAS	LTO Cycles (Baseline)	Gallons of Fuel Used pet LTO	Lead Emissions (Tons)	LTO Cycles (PAL1 and PAL2 No Project)	Gallons of Fuel Used pet LTO	Lead Emissions (Tons)	LTO Cycles (PAL1 and PAL2 With Project)	Gallons of Fuel Used pet LTO	Lead Emissions (Tons)
Beechcraft Bonanza	2,623	11.26	0.0656	2,613	11.26	0.0653	2,613	11.38	0.0660
Beechcraft Baron	9,162	9.09	0.1849	7,306	9.09	0.1474	7,306	9.33	0.1514
Cessna 172	25,187	2.71	0.1514	25,098	3.18	0.1770	25,098	3.22	0.1792
Cessna 182	1,661	4.08	0.0150	1,655	4.08	0.0150	1,655	4.12	0.0151
Cessna 206	1,133	5.67	0.0143	1,129	5.67	0.0142	1,129	5.80	0.0145
GASEVP	7,868	3.77	0.0659	7,840	3.77	0.0656	7,840	3.89	0.0678
Piper Warrior	4,989	3.18	0.0353	4,972	3.18	0.0351	4,972	3.22	0.0356
Robinson R22	381	4.30	0.0036	707	4.30	0.0068	707	4.30	0.0068
Robinson R44	1,524	12.75	0.0431	2,826	12.75	0.0800	2,826	12.75	0.0800
Cirrus SR22	1,444	3.18	0.0102	1,439	3.18	0.0102	1,439	3.22	0.0103
TOTAL	**55,972**	**59.99**	**0.5893**	**55,585**	**60.47**	**0.6167**	**55,585**	**61.24**	**0.6267**

Notes:

1) Lead emissions calculated using Equation A1-3 (page 4 of Appendix A1) from the FAA Air Quality Handbook.

Appendix C – On-Road Vehicle Modeling Results

Prepared by Helix Environmental Planning, Inc. 2017

Memorandum

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

Date: December 12, 2017

To: Ralph Redman, C&S Companies

Cc:

From: Joanne Dramko, AICP, HELIX Environmental Planning, Inc.
Victor Ortiz, HELIX Environmental Planning, Inc.
Amy Mila de la Roca, HELIX Environmental Planning, Inc.

Subject: McClellan Palomar Airport Master Plan Mobile Emissions

HELIX Proj. No.: CSE-09.01

Message:

Per your request, HELIX Environmental Planning, Inc. (HELIX) has calculated mobile source emissions associated with an updated aviation demand forecast for the proposed Palomar Airport Master Plan (Project). Calculations and analyses were conducted for two alternative future scenarios based on different volumes of daily trips to and from the Palomar Airport. Alternative 1 anticipates 2,230 average daily trips (ADT), while Alternative 2 anticipates an ADT of 4,206.

The emissions associated with on-road mobile sources includes running and starting exhaust emissions, evaporative emissions, brake and tire wear, and fugitive dust from paved roads. Starting and evaporative emissions are associated with the number of starts or time between vehicle uses. All other emissions are dependent on vehicle miles traveled (VMT). The methods and assumptions used are described below.

METHODS

The emissions from mobile sources were calculated with the trip rates and trip lengths provided in the Traffic Impact Analysis prepared for the Project by Linscott, Law, and Greenspan Engineers (LLG) and running exhaust emission factors from EMFAC2014 as follows:

$$Emissions_{pollutant} = VMT \times EF_{running,pollutant}$$

Where:

$Emissions_{pollutant}$	= emissions from vehicle running for each pollutant
VMT	= vehicle miles traveled
$EF_{running,pollutant}$	= emission factor for running emissions

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

Total VMT was calculated by multiplying the average roundtrip distance of 13 miles (6.25-mile one-way trip multiplied by 2 and rounded up) by the total number of trips per alternative.

To obtain the emission factor for running emissions, emission rates were obtained from EMFAC2014 for San Diego County. Running emissions for all pollutants and particulate matter (PM) emissions from tire and brake wear were divided by the VMT of each respective vehicle class for the buildout year (2036) and adjusted for unit conversion to derive emission factors in units of grams per VMT. VMT fractions, calculated as the ratio of VMT for each vehicle class to total VMT for all vehicles were also derived to calculate emission factors weighted by vehicle class.

Similarly, evaporative, starting, and idling emissions were divided by the number of trips to derive emission factors in units of grams per trip. Evaporative emissions, starting and idling emissions are multiplied by the number of trips times the respective emission factor for each pollutant.

Vehicles that drive on both paved and unpaved roads generate fugitive dust by dispersing the silt from the roads. The following equation is used to calculate the fugitive dust emissions associated with paved roads:

$$E = k(sL)^{0.91} \times (W)^{1.02}$$

Where:

- E = emission factor
- k = particle size multiplier (0.0022 for PM_{10}; 0.00054 for $PM_{2.5}$)
- sL = road surface silt loading (0.1 grams per square meter)
- W = average weight of all vehicles traveling the road (2.2 tons)

Once emission factors are determined, dust emissions can be calculated by multiplying the emission factor by the VMT.

RESULTS

Mobile emissions for each alternative are shown in the table below. As shown therein, the emissions correlate with the ADT anticipated for each alternative; Alternative 2 had nearly twice the ADT, and subsequently nearly twice the emissions as Alternative 1).

Total Mobile Emissions (lbs/day)

Alternative	ROC	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2 (MT/yr)
1	7.74	58.74	7.23	0.15	19.84	5.37	2,547.41
2	14.59	110.78	13.63	0.29	37.43	10.12	4,804.67

Source: EMFAC2014

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

CONCLUSION

As shown in the table above, mobile emissions would be higher for Alternative 2 due to the anticipated higher ADT.

REFERENCES

California Air Resources Board. 2014. Mobile Sources Emissions Inventory for On-Road Motor Vehicles (EMFAC2014).

Linscott, Law, and Greenspan Engineers (LLG). 2017. Traffic Impact Analysis for the McClellan-Palomar Airport Master Plan.

(Enclosure): Modeling Results

Palomar Airport Master Plan
Alternative 1 - Mobile Emissions

Assumptions

Year	2036
Total Trips	2,230
Roundtrip Distance	13
Total VMT	27,875

Grams per Trip Emission Factors

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2
0.67	1.14	0.28	0.00	0.00	0.00	120.70

Grams per Mile Emission Factors

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2
0.07	0.86	0.10	0.00	0.32	0.09	240.72

Trip Emissions (lbs/day)

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2 (MT/yr)
3.28	5.59	1.39	0.01	0.01	0.01	98.25

VMT Emissions (lbs/day)

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2 (MT/yr)
4.46	53.15	5.84	0.15	19.84	5.36	2,449.16

Total Mobile Emissions (lbs/day)

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2 (MT/yr)
7.74	58.74	7.23	0.15	19.84	5.37	2,547.41

Palomar Airport Master Plan
Alternative 2 - Mobile Emissions

Assumptions

Year	2036
Total Trips	4,206
Roundtrip Distance	13
Total VMT	52,575

Grams per Trip Emission Factors

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2
0.67	1.14	0.28	0.00	0.00	0.00	120.70

Grams per Mile Emission Factors

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2
0.07	0.86	0.10	0.00	0.32	0.09	240.72

Trip Emissions (lbs/day)

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2 (MT/yr)
6.19	10.54	2.61	0.01	0.01	0.01	185.30

VMT Emissions (lbs/day)

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2 (MT/yr)
8.41	100.25	11.02	0.28	37.41	10.11	4,619.37

Total Mobile Emissions (lbs/day)

ROC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2 (MT/yr)
14.59	110.78	13.63	0.29	37.43	10.12	4,804.67

Supplement to
PEIR Appendix F

Air Quality and Greenhouse Gas Emissions
Supplemental Report for the

McClellan-Palomar Airport Master Plan Update:
Eastern Parcel MALSR (Medium-Intensity
Approach Lighting System with Runway
Alignment Indicator Lights) Construction

(Helix Environmental Planning,
dated August 31, 2018)

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HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

August 31, 2018 CSD-05.16

Ms. Cynthia Curtis
Department of Public Works, Environmental
5510 Overland Ave, Suite 410
San Diego, CA 92123

Subject: Air Quality and Greenhouse Gas Emissions Supplemental Report for the McClellan-Palomar Airport Master Plan Update: Eastern Parcel Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) Construction

Dear Ms. Curtis:

This letter summarizes potential air quality and greenhouse gas (GHG) emissions impacts on County Airports-owned property on the 18.8-acre Eastern Parcel study area of the McClellan-Palomar Airport Master Plan (Master Plan), which is a part of a larger County-owned parcel east of El Camino Real. These impacts are associated with the potential shifts of existing Federal Aviation Administration (FAA)-owned navigational aid lighting on the Eastern Parcel from its current location to approximately 123 feet farther north on the Eastern parcel to parallel the associated shift in the runway on the airport site.

The purpose of this report is to provide an analysis of potential air quality and GHG emissions impacts associated with Phase 12 construction within the Eastern Parcel. These impacts, which were not analyzed in the 2018 Draft Program Environmental Impact Report (Draft PEIR; County 2018a), the Air Quality Technical Report (AQTR; C&S Engineers 2018), the Climate Change Technical Report (CCTR; C&S Engineers 2017), or the Greenhouse Gas Emissions Memorandum (GHG Memo; County 2018b) for the project, are addressed in this supplemental document. This supplemental letter report provides the air quality and GHG resources technical documentation necessary for review of the Eastern Parcel impacts under the California Environmental Quality Act (CEQA) by the County of San Diego (County) and other responsible agencies for the project and is intended to supplement the information provided in the 2018 Draft PEIR, 2018 AQTR, 2017 CCTR, and 2018 GHG Memo for the project.

EASTERN PARCEL PROJECT COMPONENTS

In addition to the project components described in the 2018 AQTR and 2017 CCTR, the project may relocate the existing navigation aids known as Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) on the Eastern Parcel. The MALSR is a FAA-owned and operated system of lights that provide pilots with navigational assistance at the runway end. It is anticipated that with the shift of the runway to the north, a corresponding shift in the location of the existing MALSR lights footings and associated gravel access road would be needed. FAA design standards require a 20 foot-wide maintenance access road to and between each lighting structure. Entry to the proposed access road will be via the existing curb entry at El Camino Real. It is anticipated that once installation of the new MALSR location is completed, the existing gravel access road and light structures would be removed as they are no longer necessary.

If MALSR structures relocation is deemed necessary by the FAA, the FAA-required 20 foot-wide gravel access road would extend approximately 1,200 feet east from El Camino Real with light structures installed every 200 feet. Each structure would sit on a concrete pad of approximately 10 feet by 10 feet. Conduit would be trenched in between concrete pads underneath the gravel access road. If the runway is extended an additional 200 feet in its current alignment, an additional concrete pad and lighting structure would be placed 200 feet east of the existing lighting, in line with the existing access road along the MALSR's existing location. Electrical lines would be extended underground to the new structure by an approximately 4-foot wide temporary construction trench.

The FAA is the owner and responsible agency for all aspects of this navigational aid lighting system (i.e. layout and placement of the structure according to FAA design standards, property ownership, maintenance, etc.), and relocation of the lights would be considered a federal action. The FAA has an existing lease with the County for the current MALSR system at the Eastern Parcel, and has the ability to manage the structure as they deem necessary for airport safety. Although this project element was shown and described in the PEIR released for public review, the conceptual placement and alignment of the light relocation was not designed or calculated for potential impacts. This Eastern Parcel component of Phase 12 is being analyzed now to describe the potential air quality and GHG emissions impacts on the County-owned property if or when the FAA funds relocation of the structures and access road.

METHODOLOGY

As described in the AQTR and CCTR (C&S Engineers 2018; C&S Engineers 2017), construction emissions are assessed using the California Emissions Estimator Model (CalEEMod). It is important to note that where the AQTR and CCTR utilized CalEEMod Version 2013.2.2, this analysis utilized CalEEMod Version 2016.3.2 which contains OFFROAD and EMFAC2014 updates from the California Air Resource Board (CARB) models for off-road equipment and on-road vehicles, respectively. The construction analysis included modeling of the projected

construction equipment that would be used during each construction activity and quantities of earth and debris to be moved. Only temporary impacts are associated with the MALSR relocation; operation of the lighting system would not generate ongoing air emissions. The model calculates emissions of the following criteria pollutants: carbon monoxide (CO), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), and the ozone precursors volatile organic gases (VOCs) and nitrogen oxides (NO_X). CalEEMod also calculates GHG emissions, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and carbon dioxide equivalent (CO_2e).

Construction input data for CalEEMod include, but are not limited to, (1) the anticipated start and finish dates of construction activity; (2) inventories of construction equipment to be used; (3) areas to be excavated and graded; and (4) volumes of materials to be exported from and imported to the project area.

Previous Analysis

The previous analysis assessed runway relocation and extension for Phase 12 of the Master Plan; including demolition of approximately 738,000 square feet (or 82,000 square yards) over 195 days, and paving over 16 days. Schedule was based on the assumption of 420 square yards of pavement removal per shift and 2,000 cubic yards of asphalt/concrete production per shift with two crews (C&S Engineers 2018). Demolition volumes were calculated using a pavement density of 2.1 tons per cubic yard, yielding approximately 115,374 tons of demolition debris (C&S Engineers 2018). Emissions in the previous analysis were estimated using CalEEMod Version 2013.2.2.

Revised Analysis

The revised analysis, provided herein, includes the assumptions specified in the previous analysis, as well as construction emissions for demolition of the existing MALSR and relocation and installation of the new MALSR and access road. Assuming a pavement density of 2.1 tons per cubic yard of pavement, the existing light structures, which sit on 100-square foot concrete pads, would produce approximately 79 tons of demolition debris. Therefore, revised Phase 12 (incorporates MALSR relocation) demolition would produce a total of approximately 115,435 tons. The MALSR relocation would require grading of approximately 24,600 square feet; including 600 square feet for the installation of six new concrete pads and 24,000 square feet for the new gravel access road. Construction would require heavy equipment during demolition, grading, construction of concrete pad and lighting installation, and paving. Construction equipment estimates are based on assumptions provided in the AQTR (C&S Engineers 2018) and CalEEMod defaults. The latest version of CalEEMod, Version 2016.3.2, which contains updated emission factors for on- and off-road equipment, was used for this revised analysis.

Construction design features would be in accordance with San Diego Air Pollution Control District (SDAPCD) Rule 55 Fugitive Dust Control Practices; requiring the use of an on-site water truck to wet down active grading areas and roads at least twice daily, providing 12 percent moisture content to unpaved roads, and limiting vehicle speeds to 15 miles per hour.

AIR QUALITY EMISSIONS IMPACT ANALYSIS

Maximum Daily Construction Emissions

The project would generate criteria pollutants during demolition, grading for the gravel access road, construction and installation of MALSR, and paving of the new runway. Construction emissions would be short-term and temporary and would cease with construction termination.

The results of the calculations for Phase 12 construction are shown in Table 1, *Phase 12 Maximum Daily Construction Emissions*. The data are presented as the maximum anticipated daily emissions and are compared to construction emissions from the previous analysis. As shown, when compared to the previous analysis (C&S Engineers 2018), Phase 12 construction emissions would not change substantially. As shown in Table 1, emissions of CO, PM_{10}, and $PM_{2.5}$ decrease under the revised analysis. This is due to the updated emission factors contained in the latest version of CalEEMod used.

Table 1
PHASE 12 MAXIMUM DAILY CONSTRUCTION EMISSIONS

Phase 12	Pollutant Emissions (pounds/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Demolition	2.42	27.65	23.44	0.08	7.79	2.00
Grading	0.60	6.14	6.18	0.01	0.52	0.25
Construction and Installation of MALSR	0.72	6.65	6.87	0.02	0.38	0.29
Paving	3.73	8.60	14.81	0.02	0.54	0.42
Revised Phase 12 Maximum Daily Emissions[a]	**3.73**	**27.65**	**23.44**	**0.08**	**7.79**	**2.00**
Previous Phase 12 Emissions[b]	3.70	24.20	35.79	0.08	14.96	3.18
Difference in Maximum Daily Emissions	*+0.03*	*+3.44*	*-12.35*	*0.00*	*-7.17*	*-1.19*

[a] Revised Phase 12 Emissions (CalEEMod; Attachment A)
[b] Previous Phase 12 Emissions (C&S Engineers 2018; Table 12, Page 3-13)

As stated in the AQTR, if each component of the project is constructed with no overlap in construction phasing, there would be no exceedance of the SDAPCD's screening level thresholds (SLTs). However, in the event that phasing overlaps, emissions for each Master Plan Term, Near Term, Intermediate Term, and Long Term, are summed and compared to the SDAPCD SLTs. Phase 12 is a Long Term project component and therefore, no changes would occur to Near Term or Intermediate Term emissions. As shown in Table 2, *Long Term Maximum Daily Construction Emissions*, total Long Term project emissions would remain below SDAPCD SLTs.

Table 2
LONG TERM PHASE PROJECTS MAXIMUM DAILY CONSTRUCTION EMISSIONS

Master Plan Term	Master Plan Project Phases	Pollutant Emissions (pounds/day)					
		VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Previous Total Long-Term Project Emissions	Phases 12[a]-16	62.87	83.13	127.35	0.28	61.24	23.78
Revised Total Long-Term Project Emissions	**Phases 12[b]-16**	**62.90**	**86.57**	**115.00**	**0.28**	**54.07**	**22.60**
SDAPCD SLT Threshold (lbs/day)		*75*	*250*	*550*	*250*	*100*	*55*
Significant Impact?		***No***	***No***	***No***	***No***	***No***	***No***

[a] Previous Phase 12 Emissions (C&S Engineers 2018; Table 14, Page 4-5)
[b] Revised Phase 12 Emissions (CalEEMod; Attachment A)

Maximum Annual Construction Emissions

Master Plan Phase 12 annual construction emissions are presented in Table 3, *Phase 12 Maximum Annual Construction Emissions*. For comparison, Table 3 displays the maximum construction emissions in tons per year for the previous and revised analysis.

Table 3
PHASE 12 MAXIMUM ANNUAL CONSTRUCTION EMISSIONS

Phase 12	Pollutant Emissions (tons/year)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Previous Phase 12 Maximum Annual Emissions[a] – 2028	0.32	2.43	3.53	0.01	1.46	0.31
Revised Phase 12 Maximum Annual Emissions[b] – 2028	**0.27**	**2.82**	**2.44**	**0.01**	**0.76**	**0.20**
Difference in Maximum Annual Emissions	*-0.05*	*+0.39*	*-1.08*	*0.00*	*-0.70*	*-0.11*

[a] Previous Phase 12 Emissions (C&S Engineers 2018)
[b] Revised Phase 12 Emissions (CalEEMod; Attachment A)

Long Term annual construction emissions are compared to both SLTs and the federal de minimis threshold levels (tons per year). Table 4, *Total Long Term Maximum Annual Construction Emissions*, shows no exceedances would occur as a result of Master Plan Phases 12 through 16.

Table 4
TOTAL LONG TERM MAXIMUM ANNUAL CONSTRUCTION EMISSIONS

Master Plan Term	Master Plan Project Numbers	Pollutant Emissions (tons/year)					
		VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Previous Total Long-Term Project Emissions	Phases 12[a]-16	0.54	4.11	5.99	0.01	2.44	0.6
Total Long-Term Project Emissions	**Phases 12[b]-16**	**0.49**	**4.50**	**4.91**	**0.01**	**1.74**	**0.49**
SDAPCD SLT Threshold		*13.7*	*40*	*100*	*40*	*15*	*10*
Federal De Minimis Threshold Levels[c]		*100*	*100*	*n/a*	*n/a*	*n/a*	*n/a*
Significant Impact?		***No***	***No***	***No***	***No***	***No***	***No***

[a] Previous Phase 12 Emissions (C&S Engineers 2018; Table 15, Page 4-6)
[b] Revised Phase 12 Emissions (CalEEMod; Attachment A)
[c] For construction emissions, federal de minimis threshold levels are only applicable to the criteria pollutants in which San Diego County is designated as non-attainment or maintenance

GREENHOUSE GAS EMISSIONS IMPACT ANALYSIS

Total Phase 12 Construction Emissions

The project would generate GHG emissions during construction. Construction GHG emissions are generated by vehicle exhaust from off-road construction equipment, on-road hauling trucks, and worker commuting trips. As described above, GHG emissions were estimated using CalEEMod. Input details and output are provided in Attachment A. The estimated GHG emissions for the project are shown in Table 5, *Phase 12 Greenhouse Gas Construction Emissions*. For comparison purposes, Table 5 also includes GHG emissions totals from the previous analysis for Phase 12. As presented, the revised Phase 12 analysis, which incorporates MALSR relocation, would not substantially increase GHG emissions as compared to the previous analysis.

Table 5
PHASE 12 GREENHOUSE GAS CONSTRUCTION EMISSIONS

Construction Phase	Metric Tons			
	CO_2	CH_4	N_2O	Total CO_2e
Demolition	741.53	0.13	0.00	744.80
Grading	5.86	0.00	0.00	5.91
Construction and Installation of MALSR	3.35	0.00	0.00	3.36
Paving	16.66	0.01	0.00	16.79
Revised Phase 12 Total[a] Daily Emissions[c]	**767.41**	**0.14**	**0.00**	**770.86**
Previous Phase 12 Analysis[b]	725.32	0.10	0.00	727.50
Difference in Phase 12 Greenhouse Gas Emissions	*+42.09*	*+0.04*	*0.00*	*+43.36*

[a] Revised Phase 12 Emissions (CalEEMod; Attachment A)
[b] Previous Phase 12 Emissions (C&S Engineers 2017; Table 3, Page 3-5)
[c] Totals may not sum due to rounding

As recommended by the California Air Pollution Control Officer's Association (CAPCOA; 2008) and used in the GHG Memo (County 2018b), the total Master Plan project emissions (Phases 1-16) are amortized over the lifetime of the project component. The Draft PEIR (County 2018a) identifies the lifetime of each project componentas 20 years. Therefore, as shown in Table 6, *Project Total Greenhouse Gas Construction Emissions*, total project GHG emissions would generate 3,597.27 metric tons CO_2e, resulting in approximately 182.4 metric tons CO_2e per year.

Table 6
PROJECT TOTAL GREENHOUSE GAS CONSTRUCTION EMISSIONS

Construction Phase	Total CO_2e (Metric Tons)
Previous Project Total[a]	3,605.01
Revised Project Total[b]	**3,648.37**
Amortized GHG Emissions (of revised total)	***182.4***
Screening Threshold[c]	*900 MT CO_2e per year*
Significant Impact?	***No***

[a] Previous Phase 12 Emissions (C&S Engineers 2017; Table 3, Page 3-5)
[b] Revised Phase 12 Emissions (CalEEMod; Attachment A)
[c] CAPCOA 2008

SUMMARY

As described above, when compared to previous analyses (C&S Engineers 2017, 2018; County 2018b), the revised analysis of Phase 12 construction emissions would not result in a substantial increase and emissions of criteria pollutants and GHGs would be below applicable thresholds. Potential air quality and GHG emissions impacts on the Eastern Parcel associated with the relocation of navigational lighting would be less than significant and no additional mitigation measures would be required.

We appreciate the opportunity to provide you with this letter report. Please do not hesitate to contact me at 619-462-1515 if you have any questions or require further assistance.

Sincerely,

Victor Ortiz
Senior Air Quality Specialist

Enclosures:

Attachment A: CalEEMod Output

REFERENCES

California Air Pollution Control Officer's Association (CAPCOA). 2008. CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act.

C&S Engineers, Inc. 2018. Draft Air Quality Technical Report for the McClellan-Palomar Airport Master Plan Update. January.

2017. Draft Climate Change Technical Report for the McClellan-Palomar Airport Master Plan Update. December.

County of San Diego (County). 2018a. Draft Program Environmental Impact Report. McClellan-Palomar Airport Master Plan Update. SCH# 2016021105. January.

2018b. Supplement to Draft Program Environmental Impact Report Appendix H – Greenhouse Gas Emissions Analysis Memorandum for the McClellan-Palomar Airport Master Plan Update Draft PEIR. June.

2007. Guidelines for Determining Significance and Report Format and Content Requirements, Air Quality. March.

Attachment A

CalEEMod Model Outputs

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24)

San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	738.00	1000sqft	16.94	738,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2035
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

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Summer

Project Characteristics -

Land Use -

Construction Phase - Schedule based on the assumption of 420 square yards of pavement removal per shift and 2,000 cubic yards of asphalt/concrete production per shift with two crews (AQTR C&S Engineers 2018)
Additional phases added for grading new gravel access road and installation of new MALSR

Off-road Equipment - Grading for 1,200' gravel access road

Off-road Equipment - Installing new MALSR

Off-road Equipment -

Grading -

Demolition - Includes demo debris for 82,000 SY, and 56 SY for existing MALSR
Assumes pavement density of 2.1 CY/Ton (AQTR C&S Engineers 2017)

Trips and VMT - Building trips per CalEEMod Appendix A:
0.42 worker trips per 1,000sf
0.1639 vendor trips per 1,000sf
MALSR installation area and Gravel Access Road: 24,000sf

Construction Off-road Equipment Mitigation -

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Summer

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	5.00
tblConstructionPhase	NumDays	20.00	195.00
tblConstructionPhase	NumDays	30.00	10.00
tblConstructionPhase	NumDays	20.00	16.00
tblConstructionPhase	PhaseEndDate	5/18/2018	10/20/2028
tblConstructionPhase	PhaseEndDate	1/27/2017	9/29/2028
tblConstructionPhase	PhaseEndDate	3/24/2017	10/13/2028
tblConstructionPhase	PhaseEndDate	6/15/2018	11/13/2028
tblConstructionPhase	PhaseStartDate	3/25/2017	10/16/2028
tblConstructionPhase	PhaseStartDate	1/1/2017	1/3/2028
tblConstructionPhase	PhaseStartDate	2/11/2017	10/2/2028
tblConstructionPhase	PhaseStartDate	5/19/2018	10/23/2028
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblTripsAndVMT	VendorTripNumber	121.00	3.93
tblTripsAndVMT	WorkerTripNumber	310.00	10.08

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					
2028	3.7258	27.6185	23.3157	0.0808	13.9739	0.8691	14.8429	2.2556	0.8075	3.0631	0.0000	8,420.9901	8,420.9901	1.4718	0.0000	8,457.7841
Maximum	**3.7258**	**27.6185**	**23.3157**	**0.0808**	**13.9739**	**0.8691**	**14.8429**	**2.2556**	**0.8075**	**3.0631**	**0.0000**	**8,420.9901**	**8,420.9901**	**1.4718**	**0.0000**	**8,457.7841**

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					
2028	3.7258	27.6185	23.3157	0.0808	6.9186	0.8691	7.7877	1.1872	0.8075	1.9947	0.0000	8,420.9901	8,420.9901	1.4718	0.0000	8,457.7841
Maximum	**3.7258**	**27.6185**	**23.3157**	**0.0808**	**6.9186**	**0.8691**	**7.7877**	**1.1872**	**0.8075**	**1.9947**	**0.0000**	**8,420.9901**	**8,420.9901**	**1.4718**	**0.0000**	**8,457.7841**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.49**	**0.00**	**47.53**	**47.37**	**0.00**	**34.88**	**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	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**	**0.0000**	**0.1719**

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	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**	**0.0000**	**0.1719**

	ROG	NOx	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**

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	1/3/2028	9/29/2028	5	195	
2	Grading	Grading	10/2/2028	10/13/2028	5	10	
3	Building Construction	Building Construction	10/16/2028	10/20/2028	5	5	
4	Paving	Paving	10/23/2028	11/13/2028	5	16	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 5

Acres of Paving: 16.94

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

OffRoad Equipment

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	0	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Grading	Scrapers	0	8.00	367	0.48
Building Construction	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	11,416.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	10.08	3.93	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

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2028

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					12.8277	0.0000	12.8277	1.9426	0.0000	1.9426			0.0000			0.0000
Off-Road	2.0926	19.1966	19.4184	0.0388		0.8528	0.8528		0.7920	0.7920		3,747.5996	3,747.5996	1.0464		3,773.7606
Total	**2.0926**	**19.1966**	**19.4184**	**0.0388**	**12.8277**	**0.8528**	**13.6805**	**1.9426**	**0.7920**	**2.7345**		**3,747.5996**	**3,747.5996**	**1.0464**		**3,773.7606**

3.2 Demolition - 2028

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	0.2728	8.4026	3.6447	0.0411	1.0229	0.0156	1.0386	0.2803	0.0150	0.2953		4,579.2016	4,579.2016	0.4233		4,589.7834
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	0.0367	0.0193	0.2527	9.4000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		94.1890	94.1890	2.0400e-003		94.2401
Total	**0.3095**	**8.4219**	**3.8973**	**0.0420**	**1.1462**	**0.0163**	**1.1625**	**0.3130**	**0.0156**	**0.3286**		**4,673.3905**	**4,673.3905**	**0.4253**		**4,684.0235**

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					5.7725	0.0000	5.7725	0.8742	0.0000	0.8742			0.0000			0.0000
Off-Road	2.0926	19.1966	19.4184	0.0388		0.8528	0.8528		0.7920	0.7920	0.0000	3,747.5996	3,747.5996	1.0464		3,773.7606
Total	**2.0926**	**19.1966**	**19.4184**	**0.0388**	**5.7725**	**0.8528**	**6.6252**	**0.8742**	**0.7920**	**1.6661**	**0.0000**	**3,747.5996**	**3,747.5996**	**1.0464**		**3,773.7606**

3.2 Demolition - 2028

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	0.2728	8.4026	3.6447	0.0411	1.0229	0.0156	1.0386	0.2803	0.0150	0.2953		4,579.2016	4,579.2016	0.4233		4,589.7834
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	0.0367	0.0193	0.2527	9.4000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		94.1890	94.1890	2.0400e-003		94.2401
Total	**0.3095**	**8.4219**	**3.8973**	**0.0420**	**1.1462**	**0.0163**	**1.1625**	**0.3130**	**0.0156**	**0.3286**		**4,673.3905**	**4,673.3905**	**0.4253**		**4,684.0235**

3.3 Grading - 2028

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5754	6.1269	6.0534	0.0129		0.2194	0.2194		0.2019	0.2019		1,244.3513	1,244.3513	0.4025		1,254.4125
Total	**0.5754**	**6.1269**	**6.0534**	**0.0129**	**0.5303**	**0.2194**	**0.7497**	**0.0573**	**0.2019**	**0.2591**		**1,244.3513**	**1,244.3513**	**0.4025**		**1,254.4125**

3.3 Grading - 2028

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	0.0196	0.0103	0.1348	5.0000e-004	0.0657	3.6000e-004	0.0661	0.0174	3.3000e-004	0.0178		50.2341	50.2341	1.0900e-003		50.2614
Total	**0.0196**	**0.0103**	**0.1348**	**5.0000e-004**	**0.0657**	**3.6000e-004**	**0.0661**	**0.0174**	**3.3000e-004**	**0.0178**		**50.2341**	**50.2341**	**1.0900e-003**		**50.2614**

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					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.5754	6.1269	6.0534	0.0129		0.2194	0.2194		0.2019	0.2019	0.0000	1,244.3513	1,244.3513	0.4025		1,254.4125
Total	**0.5754**	**6.1269**	**6.0534**	**0.0129**	**0.2386**	**0.2194**	**0.4581**	**0.0258**	**0.2019**	**0.2277**	**0.0000**	**1,244.3513**	**1,244.3513**	**0.4025**		**1,254.4125**

3.3 Grading - 2028

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	0.0196	0.0103	0.1348	5.0000e-004	0.0657	3.6000e-004	0.0661	0.0174	3.3000e-004	0.0178		50.2341	50.2341	1.0900e-003		50.2614
Total	**0.0196**	**0.0103**	**0.1348**	**5.0000e-004**	**0.0657**	**3.6000e-004**	**0.0661**	**0.0174**	**3.3000e-004**	**0.0178**		**50.2341**	**50.2341**	**1.0900e-003**		**50.2614**

3.4 Building Construction - 2028

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	0.6858	6.3541	6.6210	0.0139		0.2713	0.2713		0.2584	0.2584		1,310.5547	1,310.5547	0.2343		1,316.4119
Total	**0.6858**	**6.3541**	**6.6210**	**0.0139**		**0.2713**	**0.2713**		**0.2584**	**0.2584**		**1,310.5547**	**1,310.5547**	**0.2343**		**1,316.4119**

3.4 Building Construction - 2028

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	7.4800e-003	0.2783	0.0815	9.9000e-004	0.0266	3.1000e-004	0.0269	7.6700e-003	3.0000e-004	7.9600e-003		107.5731	107.5731	6.9300e-003		107.7464
Worker	0.0246	0.0130	0.1698	6.3000e-004	0.0828	4.5000e-004	0.0833	0.0220	4.1000e-004	0.0224		63.2950	63.2950	1.3700e-003		63.3293
Total	**0.0321**	**0.2913**	**0.2513**	**1.6200e-003**	**0.1094**	**7.6000e-004**	**0.1102**	**0.0296**	**7.1000e-004**	**0.0303**		**170.8681**	**170.8681**	**8.3000e-003**		**171.0757**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6858	6.3541	6.6210	0.0139		0.2713	0.2713		0.2584	0.2584	0.0000	1,310.5547	1,310.5547	0.2343		1,316.4119
Total	**0.6858**	**6.3541**	**6.6210**	**0.0139**		**0.2713**	**0.2713**		**0.2584**	**0.2584**	**0.0000**	**1,310.5547**	**1,310.5547**	**0.2343**		**1,316.4119**

3.4 Building Construction - 2028

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	7.4800e-003	0.2783	0.0815	9.9000e-004	0.0266	3.1000e-004	0.0269	7.6700e-003	3.0000e-004	7.9600e-003		107.5731	107.5731	6.9300e-003		107.7464
Worker	0.0246	0.0130	0.1698	6.3000e-004	0.0828	4.5000e-004	0.0833	0.0220	4.1000e-004	0.0224		63.2950	63.2950	1.3700e-003		63.3293
Total	**0.0321**	**0.2913**	**0.2513**	**1.6200e-003**	**0.1094**	**7.6000e-004**	**0.1102**	**0.0296**	**7.1000e-004**	**0.0303**		**170.8681**	**170.8681**	**8.3000e-003**		**171.0757**

3.5 Paving - 2028

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	2.7739					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.6891**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.5 Paving - 2028

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	0.0367	0.0193	0.2527	9.4000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		94.1890	94.1890	2.0400e-003		94.2401
Total	**0.0367**	**0.0193**	**0.2527**	**9.4000e-004**	**0.1232**	**6.7000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**94.1890**	**94.1890**	**2.0400e-003**		**94.2401**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	2.7739					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.6891**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.5 Paving - 2028

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	0.0367	0.0193	0.2527	9.4000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		94.1890	94.1890	2.0400e-003		94.2401
Total	**0.0367**	**0.0193**	**0.2527**	**9.4000e-004**	**0.1232**	**6.7000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**94.1890**	**94.1890**	**2.0400e-003**		**94.2401**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.617626	0.036451	0.176904	0.096837	0.011340	0.005282	0.018425	0.026503	0.001944	0.001632	0.005548	0.000800	0.000709

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Unmitigated	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719

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	0.1406					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.8500e-003	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**		**0.1719**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1406					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.8500e-003	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**		**0.1719**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24)

San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	738.00	1000sqft	16.94	738,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2035
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

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Winter

Project Characteristics -

Land Use -

Construction Phase - Schedule based on the assumption of 420 square yards of pavement removal per shift and 2,000 cubic yards of asphalt/concrete production per shift with two crews (AQTR C&S Engineers 2018)
Additional phases added for grading new gravel access road and installation of new MALSR

Off-road Equipment - Grading for 1,200' gravel access road

Off-road Equipment - Installing new MALSR

Off-road Equipment -

Grading -

Demolition - Includes demo debris for 82,000 SY, and 56 SY for existing MALSR
Assumes pavement density of 2.1 CY/Ton (AQTR C&S Engineers 2017)

Trips and VMT - Building trips per CalEEMod Appendix A:
0.42 worker trips per 1,000sf
0.1639 vendor trips per 1,000sf
MALSR installation area and Gravel Access Road: 24,000sf

Construction Off-road Equipment Mitigation -

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Winter

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	5.00
tblConstructionPhase	NumDays	20.00	195.00
tblConstructionPhase	NumDays	30.00	10.00
tblConstructionPhase	NumDays	20.00	16.00
tblConstructionPhase	PhaseEndDate	5/18/2018	10/20/2028
tblConstructionPhase	PhaseEndDate	1/27/2017	9/29/2028
tblConstructionPhase	PhaseEndDate	3/24/2017	10/13/2028
tblConstructionPhase	PhaseEndDate	6/15/2018	11/13/2028
tblConstructionPhase	PhaseStartDate	3/25/2017	10/16/2028
tblConstructionPhase	PhaseStartDate	1/1/2017	1/3/2028
tblConstructionPhase	PhaseStartDate	2/11/2017	10/2/2028
tblConstructionPhase	PhaseStartDate	5/19/2018	10/23/2028
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblTripsAndVMT	VendorTripNumber	121.00	3.93
tblTripsAndVMT	WorkerTripNumber	310.00	10.08

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					
2028	3.7314	27.6451	23.4408	0.0801	13.9739	0.8694	14.8433	2.2556	0.8078	3.0634	0.0000	8,337.8338	8,337.8338	1.4806	0.0000	8,374.8483
Maximum	**3.7314**	**27.6451**	**23.4408**	**0.0801**	**13.9739**	**0.8694**	**14.8433**	**2.2556**	**0.8078**	**3.0634**	**0.0000**	**8,337.8338**	**8,337.8338**	**1.4806**	**0.0000**	**8,374.8483**

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					
2028	3.7314	27.6451	23.4408	0.0801	6.9186	0.8694	7.7880	1.1872	0.8078	1.9950	0.0000	8,337.8338	8,337.8338	1.4806	0.0000	8,374.8483
Maximum	**3.7314**	**27.6451**	**23.4408**	**0.0801**	**6.9186**	**0.8694**	**7.7880**	**1.1872**	**0.8078**	**1.9950**	**0.0000**	**8,337.8338**	**8,337.8338**	**1.4806**	**0.0000**	**8,374.8483**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.49**	**0.00**	**47.53**	**47.37**	**0.00**	**34.88**	**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	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**	**0.0000**	**0.1719**

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	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**	**0.0000**	**2.7000e-004**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**	**0.0000**	**0.1719**

	ROG	NOx	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**

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	1/3/2028	9/29/2028	5	195	
2	Grading	Grading	10/2/2028	10/13/2028	5	10	
3	Building Construction	Building Construction	10/16/2028	10/20/2028	5	5	
4	Paving	Paving	10/23/2028	11/13/2028	5	16	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 5

Acres of Paving: 16.94

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

OffRoad Equipment

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	0	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Grading	Scrapers	0	8.00	367	0.48
Building Construction	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	11,416.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	10.08	3.93	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

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2028

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					12.8277	0.0000	12.8277	1.9426	0.0000	1.9426			0.0000			0.0000
Off-Road	2.0926	19.1966	19.4184	0.0388		0.8528	0.8528		0.7920	0.7920		3,747.5996	3,747.5996	1.0464		3,773.7606
Total	**2.0926**	**19.1966**	**19.4184**	**0.0388**	**12.8277**	**0.8528**	**13.6805**	**1.9426**	**0.7920**	**2.7345**		**3,747.5996**	**3,747.5996**	**1.0464**		**3,773.7606**

3.2 Demolition - 2028

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	0.2801	8.4269	3.7872	0.0404	1.0229	0.0159	1.0389	0.2803	0.0152	0.2956		4,501.8063	4,501.8063	0.4322		4,512.6118
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	0.0423	0.0217	0.2351	8.9000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		88.4280	88.4280	1.9200e-003		88.4760
Total	**0.3224**	**8.4485**	**4.0224**	**0.0413**	**1.1462**	**0.0166**	**1.1628**	**0.3130**	**0.0159**	**0.3289**		**4,590.2343**	**4,590.2343**	**0.4341**		**4,601.0877**

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					5.7725	0.0000	5.7725	0.8742	0.0000	0.8742			0.0000			0.0000
Off-Road	2.0926	19.1966	19.4184	0.0388		0.8528	0.8528		0.7920	0.7920	0.0000	3,747.5996	3,747.5996	1.0464		3,773.7606
Total	**2.0926**	**19.1966**	**19.4184**	**0.0388**	**5.7725**	**0.8528**	**6.6252**	**0.8742**	**0.7920**	**1.6661**	**0.0000**	**3,747.5996**	**3,747.5996**	**1.0464**		**3,773.7606**

3.2 Demolition - 2028

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	0.2801	8.4269	3.7872	0.0404	1.0229	0.0159	1.0389	0.2803	0.0152	0.2956		4,501.8063	4,501.8063	0.4322		4,512.6118
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	0.0423	0.0217	0.2351	8.9000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		88.4280	88.4280	1.9200e-003		88.4760
Total	**0.3224**	**8.4485**	**4.0224**	**0.0413**	**1.1462**	**0.0166**	**1.1628**	**0.3130**	**0.0159**	**0.3289**		**4,590.2343**	**4,590.2343**	**0.4341**		**4,601.0877**

3.3 Grading - 2028

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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5754	6.1269	6.0534	0.0129		0.2194	0.2194		0.2019	0.2019		1,244.3513	1,244.3513	0.4025		1,254.4125
Total	**0.5754**	**6.1269**	**6.0534**	**0.0129**	**0.5303**	**0.2194**	**0.7497**	**0.0573**	**0.2019**	**0.2591**		**1,244.3513**	**1,244.3513**	**0.4025**		**1,254.4125**

3.3 Grading - 2028

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	0.0226	0.0116	0.1254	4.7000e-004	0.0657	3.6000e-004	0.0661	0.0174	3.3000e-004	0.0178		47.1616	47.1616	1.0200e-003		47.1872
Total	**0.0226**	**0.0116**	**0.1254**	**4.7000e-004**	**0.0657**	**3.6000e-004**	**0.0661**	**0.0174**	**3.3000e-004**	**0.0178**		**47.1616**	**47.1616**	**1.0200e-003**		**47.1872**

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					0.2386	0.0000	0.2386	0.0258	0.0000	0.0258			0.0000			0.0000
Off-Road	0.5754	6.1269	6.0534	0.0129		0.2194	0.2194		0.2019	0.2019	0.0000	1,244.3513	1,244.3513	0.4025		1,254.4125
Total	**0.5754**	**6.1269**	**6.0534**	**0.0129**	**0.2386**	**0.2194**	**0.4581**	**0.0258**	**0.2019**	**0.2277**	**0.0000**	**1,244.3513**	**1,244.3513**	**0.4025**		**1,254.4125**

3.3 Grading - 2028

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	0.0226	0.0116	0.1254	4.7000e-004	0.0657	3.6000e-004	0.0661	0.0174	3.3000e-004	0.0178		47.1616	47.1616	1.0200e-003		47.1872
Total	**0.0226**	**0.0116**	**0.1254**	**4.7000e-004**	**0.0657**	**3.6000e-004**	**0.0661**	**0.0174**	**3.3000e-004**	**0.0178**		**47.1616**	**47.1616**	**1.0200e-003**		**47.1872**

3.4 Building Construction - 2028

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	0.6858	6.3541	6.6210	0.0139		0.2713	0.2713		0.2584	0.2584		1,310.5547	1,310.5547	0.2343		1,316.4119
Total	**0.6858**	**6.3541**	**6.6210**	**0.0139**		**0.2713**	**0.2713**		**0.2584**	**0.2584**		**1,310.5547**	**1,310.5547**	**0.2343**		**1,316.4119**

3.4 Building Construction - 2028

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	7.8800e-003	0.2770	0.0891	9.7000e-004	0.0266	3.2000e-004	0.0270	7.6700e-003	3.1000e-004	7.9700e-003		104.8840	104.8840	7.2500e-003		105.0653
Worker	0.0285	0.0146	0.1580	6.0000e-004	0.0828	4.5000e-004	0.0833	0.0220	4.1000e-004	0.0224		59.4236	59.4236	1.2900e-003		59.4558
Total	**0.0363**	**0.2916**	**0.2471**	**1.5700e-003**	**0.1094**	**7.7000e-004**	**0.1102**	**0.0296**	**7.2000e-004**	**0.0304**		**164.3076**	**164.3076**	**8.5400e-003**		**164.5212**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6858	6.3541	6.6210	0.0139		0.2713	0.2713		0.2584	0.2584	0.0000	1,310.5547	1,310.5547	0.2343		1,316.4119
Total	**0.6858**	**6.3541**	**6.6210**	**0.0139**		**0.2713**	**0.2713**		**0.2584**	**0.2584**	**0.0000**	**1,310.5547**	**1,310.5547**	**0.2343**		**1,316.4119**

3.4 Building Construction - 2028

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	7.8800e-003	0.2770	0.0891	9.7000e-004	0.0266	3.2000e-004	0.0270	7.6700e-003	3.1000e-004	7.9700e-003		104.8840	104.8840	7.2500e-003		105.0653
Worker	0.0285	0.0146	0.1580	6.0000e-004	0.0828	4.5000e-004	0.0833	0.0220	4.1000e-004	0.0224		59.4236	59.4236	1.2900e-003		59.4558
Total	**0.0363**	**0.2916**	**0.2471**	**1.5700e-003**	**0.1094**	**7.7000e-004**	**0.1102**	**0.0296**	**7.2000e-004**	**0.0304**		**164.3076**	**164.3076**	**8.5400e-003**		**164.5212**

3.5 Paving - 2028

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	2.7739					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.6891**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.5 Paving - 2028

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	0.0423	0.0217	0.2351	8.9000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		88.4280	88.4280	1.9200e-003		88.4760
Total	**0.0423**	**0.0217**	**0.2351**	**8.9000e-004**	**0.1232**	**6.7000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**88.4280**	**88.4280**	**1.9200e-003**		**88.4760**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	2.7739					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.6891**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

3.5 Paving - 2028

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	0.0423	0.0217	0.2351	8.9000e-004	0.1232	6.7000e-004	0.1239	0.0327	6.2000e-004	0.0333		88.4280	88.4280	1.9200e-003		88.4760
Total	**0.0423**	**0.0217**	**0.2351**	**8.9000e-004**	**0.1232**	**6.7000e-004**	**0.1239**	**0.0327**	**6.2000e-004**	**0.0333**		**88.4280**	**88.4280**	**1.9200e-003**		**88.4760**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.617626	0.036451	0.176904	0.096837	0.011340	0.005282	0.018425	0.026503	0.001944	0.001632	0.005548	0.000800	0.000709

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

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					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Unmitigated	0.4088	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719

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	0.1406					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.8500e-003	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**		**0.1719**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1406					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2614					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	6.8500e-003	6.7000e-004	0.0749	1.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004		0.1615	0.1615	4.2000e-004		0.1719
Total	**0.4088**	**6.7000e-004**	**0.0749**	**1.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**		**0.1615**	**0.1615**	**4.2000e-004**		**0.1719**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24)

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	738.00	1000sqft	16.94	738,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	40
Climate Zone	13			**Operational Year**	2035
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

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Annual

Project Characteristics -

Land Use -

Construction Phase - Schedule based on the assumption of 420 square yards of pavement removal per shift and 2,000 cubic yards of asphalt/concrete production per shift with two crews (AQTR C&S Engineers 2018)
Additional phases added for grading new gravel access road and installation of new MALSR

Off-road Equipment - Grading for 1,200' gravel access road

Off-road Equipment - Installing new MALSR

Off-road Equipment -

Grading -

Demolition - Includes demo debris for 82,000 SY, and 56 SY for existing MALSR
Assumes pavement density of 2.1 CY/Ton (AQTR C&S Engineers 2017)

Trips and VMT - Building trips per CalEEMod Appendix A:
0.42 worker trips per 1,000sf
0.1639 vendor trips per 1,000sf
MALSR installation area and Gravel Access Road: 24,000sf

Construction Off-road Equipment Mitigation -

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Annual

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	5.00
tblConstructionPhase	NumDays	20.00	195.00
tblConstructionPhase	NumDays	30.00	10.00
tblConstructionPhase	NumDays	20.00	16.00
tblConstructionPhase	PhaseEndDate	5/18/2018	10/20/2028
tblConstructionPhase	PhaseEndDate	1/27/2017	9/29/2028
tblConstructionPhase	PhaseEndDate	3/24/2017	10/13/2028
tblConstructionPhase	PhaseEndDate	6/15/2018	11/13/2028
tblConstructionPhase	PhaseStartDate	3/25/2017	10/16/2028
tblConstructionPhase	PhaseStartDate	1/1/2017	1/3/2028
tblConstructionPhase	PhaseStartDate	2/11/2017	10/2/2028
tblConstructionPhase	PhaseStartDate	5/19/2018	10/23/2028
tblOffRoadEquipment	OffRoadEquipmentType		Cement and Mortar Mixers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblTripsAndVMT	VendorTripNumber	121.00	3.93
tblTripsAndVMT	WorkerTripNumber	310.00	10.08

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					
2028	0.2691	2.8200	2.4444	8.1400e-003	1.3643	0.0899	1.4542	0.2200	0.0835	0.3035	0.0000	767.4080	767.4080	0.1381	0.0000	770.8601
Maximum	**0.2691**	**2.8200**	**2.4444**	**8.1400e-003**	**1.3643**	**0.0899**	**1.4542**	**0.2200**	**0.0835**	**0.3035**	**0.0000**	**767.4080**	**767.4080**	**0.1381**	**0.0000**	**770.8601**

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					
2028	0.2691	2.8200	2.4444	8.1400e-003	0.6750	0.0899	0.7648	0.1157	0.0835	0.1992	0.0000	767.4076	767.4076	0.1381	0.0000	770.8597
Maximum	**0.2691**	**2.8200**	**2.4444**	**8.1400e-003**	**0.6750**	**0.0899**	**0.7648**	**0.1157**	**0.0835**	**0.1992**	**0.0000**	**767.4076**	**767.4076**	**0.1381**	**0.0000**	**770.8597**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.53**	**0.00**	**47.40**	**47.41**	**0.00**	**34.37**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
45	**1-1-2028**	**3-31-2028**	0.9555	0.9555
46	**4-1-2028**	**6-30-2028**	0.9757	0.9757
47	**7-1-2028**	**9-30-2028**	0.9757	0.9757
		Highest	0.9757	0.9757

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	0.0740	6.0000e-005	6.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0140
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0740**	**6.0000e-005**	**6.7400e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0140**

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	0.0740	6.0000e-005	6.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0140
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0740**	**6.0000e-005**	**6.7400e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0140**

	ROG	NOx	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**

3.0 Construction Detail

Construction Phase

Revised: CRQ MP EIR Long Term Phase 12 (Relocation/Extension RW 6-24) - San Diego County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2028	9/29/2028	5	195	
2	Grading	Grading	10/2/2028	10/13/2028	5	10	
3	Building Construction	Building Construction	10/16/2028	10/20/2028	5	5	
4	Paving	Paving	10/23/2028	11/13/2028	5	16	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 5

Acres of Paving: 16.94

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Building Construction	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Excavators	3	8.00	158	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Excavators	0	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	1	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Grading	Scrapers	0	8.00	367	0.48
Building Construction	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	11,416.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	10.08	3.93	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

3.1 Mitigation Measures Construction

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.2507	0.0000	1.2507	0.1894	0.0000	0.1894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2040	1.8717	1.8933	3.7900e-003		0.0831	0.0831		0.0772	0.0772	0.0000	331.4771	331.4771	0.0926	0.0000	333.7911
Total	**0.2040**	**1.8717**	**1.8933**	**3.7900e-003**	**1.2507**	**0.0831**	**1.3338**	**0.1894**	**0.0772**	**0.2666**	**0.0000**	**331.4771**	**331.4771**	**0.0926**	**0.0000**	**333.7911**

3.2 Demolition - 2028

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	0.0269	0.8302	0.3615	3.9700e-003	0.0977	1.5400e-003	0.0992	0.0268	1.4700e-003	0.0283	0.0000	402.1576	402.1576	0.0378	0.0000	403.1021
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6200e-003	2.0800e-003	0.0230	9.0000e-005	0.0117	7.0000e-005	0.0118	3.1200e-003	6.0000e-005	3.1800e-003	0.0000	7.8996	7.8996	1.7000e-004	0.0000	7.9039
Total	**0.0305**	**0.8322**	**0.3845**	**4.0600e-003**	**0.1094**	**1.6100e-003**	**0.1110**	**0.0300**	**1.5300e-003**	**0.0315**	**0.0000**	**410.0572**	**410.0572**	**0.0380**	**0.0000**	**411.0059**

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					0.5628	0.0000	0.5628	0.0852	0.0000	0.0852	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2040	1.8717	1.8933	3.7900e-003		0.0831	0.0831		0.0772	0.0772	0.0000	331.4767	331.4767	0.0926	0.0000	333.7907
Total	**0.2040**	**1.8717**	**1.8933**	**3.7900e-003**	**0.5628**	**0.0831**	**0.6460**	**0.0852**	**0.0772**	**0.1625**	**0.0000**	**331.4767**	**331.4767**	**0.0926**	**0.0000**	**333.7907**

3.2 Demolition - 2028

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	0.0269	0.8302	0.3615	3.9700e-003	0.0977	1.5400e-003	0.0992	0.0268	1.4700e-003	0.0283	0.0000	402.1576	402.1576	0.0378	0.0000	403.1021
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.6200e-003	2.0800e-003	0.0230	9.0000e-005	0.0117	7.0000e-005	0.0118	3.1200e-003	6.0000e-005	3.1800e-003	0.0000	7.8996	7.8996	1.7000e-004	0.0000	7.9039
Total	**0.0305**	**0.8322**	**0.3845**	**4.0600e-003**	**0.1094**	**1.6100e-003**	**0.1110**	**0.0300**	**1.5300e-003**	**0.0315**	**0.0000**	**410.0572**	**410.0572**	**0.0380**	**0.0000**	**411.0059**

3.3 Grading - 2028

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					2.6500e-003	0.0000	2.6500e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8800e-003	0.0306	0.0303	6.0000e-005		1.1000e-003	1.1000e-003		1.0100e-003	1.0100e-003	0.0000	5.6443	5.6443	1.8300e-003	0.0000	5.6899
Total	**2.8800e-003**	**0.0306**	**0.0303**	**6.0000e-005**	**2.6500e-003**	**1.1000e-003**	**3.7500e-003**	**2.9000e-004**	**1.0100e-003**	**1.3000e-003**	**0.0000**	**5.6443**	**5.6443**	**1.8300e-003**	**0.0000**	**5.6899**

3.3 Grading - 2028

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	1.0000e-004	6.0000e-005	6.3000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2161	0.2161	0.0000	0.0000	0.2162
Total	**1.0000e-004**	**6.0000e-005**	**6.3000e-004**	**0.0000**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.2161**	**0.2161**	**0.0000**	**0.0000**	**0.2162**

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					1.1900e-003	0.0000	1.1900e-003	1.3000e-004	0.0000	1.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8800e-003	0.0306	0.0303	6.0000e-005		1.1000e-003	1.1000e-003		1.0100e-003	1.0100e-003	0.0000	5.6443	5.6443	1.8300e-003	0.0000	5.6899
Total	**2.8800e-003**	**0.0306**	**0.0303**	**6.0000e-005**	**1.1900e-003**	**1.1000e-003**	**2.2900e-003**	**1.3000e-004**	**1.0100e-003**	**1.1400e-003**	**0.0000**	**5.6443**	**5.6443**	**1.8300e-003**	**0.0000**	**5.6899**

3.3 Grading - 2028

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	1.0000e-004	6.0000e-005	6.3000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2161	0.2161	0.0000	0.0000	0.2162
Total	**1.0000e-004**	**6.0000e-005**	**6.3000e-004**	**0.0000**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.2161**	**0.2161**	**0.0000**	**0.0000**	**0.2162**

3.4 Building Construction - 2028

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	1.7100e-003	0.0159	0.0166	3.0000e-005		6.8000e-004	6.8000e-004		6.5000e-004	6.5000e-004	0.0000	2.9723	2.9723	5.3000e-004	0.0000	2.9856
Total	**1.7100e-003**	**0.0159**	**0.0166**	**3.0000e-005**		**6.8000e-004**	**6.8000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**2.9723**	**2.9723**	**5.3000e-004**	**0.0000**	**2.9856**

3.4 Building Construction - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	7.0000e-004	2.1000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2414	0.2414	2.0000e-005	0.0000	0.2418
Worker	6.0000e-005	4.0000e-005	4.0000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1361	0.1361	0.0000	0.0000	0.1362
Total	**8.0000e-005**	**7.4000e-004**	**6.1000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.3775**	**0.3775**	**2.0000e-005**	**0.0000**	**0.3780**

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	1.7100e-003	0.0159	0.0166	3.0000e-005		6.8000e-004	6.8000e-004		6.5000e-004	6.5000e-004	0.0000	2.9723	2.9723	5.3000e-004	0.0000	2.9856
Total	**1.7100e-003**	**0.0159**	**0.0166**	**3.0000e-005**		**6.8000e-004**	**6.8000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**2.9723**	**2.9723**	**5.3000e-004**	**0.0000**	**2.9856**

3.4 Building Construction - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.0000e-005	7.0000e-004	2.1000e-004	0.0000	7.0000e-005	0.0000	7.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.2414	0.2414	2.0000e-005	0.0000	0.2418
Worker	6.0000e-005	4.0000e-005	4.0000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1361	0.1361	0.0000	0.0000	0.1362
Total	**8.0000e-005**	**7.4000e-004**	**6.1000e-004**	**0.0000**	**2.7000e-004**	**0.0000**	**2.7000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.3775**	**0.3775**	**2.0000e-005**	**0.0000**	**0.3780**

3.5 Paving - 2028

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	7.3200e-003	0.0687	0.1166	1.8000e-004		3.3500e-003	3.3500e-003		3.0800e-003	3.0800e-003	0.0000	16.0154	16.0154	5.1800e-003	0.0000	16.1449
Paving	0.0222					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0295**	**0.0687**	**0.1166**	**1.8000e-004**		**3.3500e-003**	**3.3500e-003**		**3.0800e-003**	**3.0800e-003**	**0.0000**	**16.0154**	**16.0154**	**5.1800e-003**	**0.0000**	**16.1449**

3.5 Paving - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.7000e-004	1.8900e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.6482	0.6482	1.0000e-005	0.0000	0.6485
Total	**3.0000e-004**	**1.7000e-004**	**1.8900e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.6482**	**0.6482**	**1.0000e-005**	**0.0000**	**0.6485**

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	7.3200e-003	0.0687	0.1166	1.8000e-004		3.3500e-003	3.3500e-003		3.0800e-003	3.0800e-003	0.0000	16.0154	16.0154	5.1800e-003	0.0000	16.1449
Paving	0.0222					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0295**	**0.0687**	**0.1166**	**1.8000e-004**		**3.3500e-003**	**3.3500e-003**		**3.0800e-003**	**3.0800e-003**	**0.0000**	**16.0154**	**16.0154**	**5.1800e-003**	**0.0000**	**16.1449**

3.5 Paving - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.7000e-004	1.8900e-003	1.0000e-005	9.6000e-004	1.0000e-005	9.7000e-004	2.6000e-004	0.0000	2.6000e-004	0.0000	0.6482	0.6482	1.0000e-005	0.0000	0.6485
Total	**3.0000e-004**	**1.7000e-004**	**1.8900e-003**	**1.0000e-005**	**9.6000e-004**	**1.0000e-005**	**9.7000e-004**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**0.6482**	**0.6482**	**1.0000e-005**	**0.0000**	**0.6485**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.617626	0.036451	0.176904	0.096837	0.011340	0.005282	0.018425	0.026503	0.001944	0.001632	0.005548	0.000800	0.000709

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

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

5.2 Energy by Land Use - NaturalGas

Mitigated

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive 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	0.0740	6.0000e-005	6.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0140
Unmitigated	0.0740	6.0000e-005	6.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0140

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	0.0257					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0477					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0140
Total	**0.0740**	**6.0000e-005**	**6.7400e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0140**

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	0.0257					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0477					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.2000e-004	6.0000e-005	6.7400e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0132	0.0132	3.0000e-005	0.0000	0.0140
Total	**0.0740**	**6.0000e-005**	**6.7400e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0132**	**0.0132**	**3.0000e-005**	**0.0000**	**0.0140**

7.0 Water Detail

7.1 Mitigation Measures Water

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation