APPENDIX L

AQ-GHG-Energy

To:	Nicholas Ferracone, City of San Diego
From:	Ames Noll, Dudek David Larocca, Dudek
Subject:	Climate Action Plan (CAP) Memo for Mission Bay Park Improvements Program
Date:	July 30, 2025
cc:	Emily Seklecki, Dudek; Matthew Valerio, Dudek

1 Introduction and Purpose

The purpose of this technical memorandum is to assess the potential greenhouse gas (GHG) emissions impacts associated with implementation of the proposed Mission Bay Park Improvements Program (Program), a public infrastructure project focused on water quality and habitat improvements, within the City of San Diego (City). Impacts are evaluated for their significance based on consistency with the City's 2022 Climate Action Plan (CAP), which is a qualified plan for the reduction of GHG emissions for use in cumulative impact analysis pertaining to projects under California Environmental Quality Act (CEQA) Guidelines Section 15183.5. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of the CAP. The CAP includes six strategies developed to reduce citywide GHG emissions and achieve the GHG reduction targets identified in the CAP. The Program's consistency with these strategies is discussed below.

2 Project Description

The proposed project is a Program that is intended to address issues related to water quality and water circulation improvements, habitat improvements, and visitor-serving improvements, in specifically identified areas of Mission Bay. The Program includes the implementation of the following elements: wetland and water quality improvements, shoreline restoration, expansion of habitat preserves, bicycle and pedestrian improvements, restoration of seawall bulkhead, and deferred maintenance activities.

3 Impact Analysis

City of San Diego CAP Consistency

Pursuant to the City of San Diego's Guidance for Assessing CAP Consistency for Plan- and Policy-Level Environmental Documents and Public Infrastructure Projects Memorandum (City of San Diego 2022), the environmental analysis should include a discussion of the overall consistency with each of the six strategies of the CAP, as provided below.

Strategy 1: Decarbonization of the Built Environment

This strategy aims to avoid GHG emissions from buildings across the City and improve indoor air quality. It includes measures to address emissions from existing buildings, municipal facilities, and new development.

The Program involves improvements to existing park areas and would not construct any new buildings or create new emissions from existing buildings or municipal facilities. While Strategy 1 is not directly applicable to the Program, the Program would not conflict with Strategy 1 goals.

Strategy 2: Access to Clean and Renewable Energy

This strategy maintains the City's commitment to 100% renewable energy through San Diego Community Power, sets targets for converting the City's fleet of vehicles to electric, and aims to increase the number of electric vehicles used by our communities.

As an existing parks improvement project, the Program does not include any features related to distributed energy generation, energy storage, or new parking. While Strategy 2 is not directly applicable to the Program, the Program would not conflict with Strategy 2 goals.

Strategy 3: Mobility and Land Use

This strategy focuses on emissions from transportation and includes actions that support mode shift through mobility and land-use actions and policies.

The Program would not conflict with Strategy 3, Mobility and Land Use, because the Program is not anticipated to generate a permanent increase in vehicle trips or vehicle miles traveled compared to the existing baseline conditions. An approved temporary Traffic Control Plan would be implemented during construction to ensure continued and ongoing circulation is available during construction-related activities. Temporary lane closures on roadways would not result in a permanent change to the level of services of the surrounding transportation system and would not impact any public transit facilities. Furthermore, the Bicycle and Pedestrian Improvements Element would support mode shift and improve overall circulation, safety, and enjoyment of bicyclists and pedestrians in Mission Bay Park. Deferred maintenance activities would improve and repair existing facilities that would support mobility throughout the Improvement Zone, including ADA access ramps, parking lot pavement, biofiltration basins, and lighting sustainability enhancements. The signage update would also improve mobility by updating the design of wayfinding and information signs as well as updated locations for placement of new signs for better visibility and provision of information. Therefore, the Program would be consistent with Strategy 3.

Strategy 4: Circular Economy and Clean Communities

This strategy maintains a 90% waste diversion rate, as well as methane capture from landfill and wastewater treatment facilities. It also includes actions to increase healthy food access and food recovery.

The Program includes the requirement for the construction contractor to comply with the latest edition of the City of San Diego Standard Specifications for Public Works Construction (Whitebook). Sections 5-14 of the Whitebook, Construction and Demolition Waste Management, requires a minimum waste management reduction goal and the preparation of a Waste Management Form. The Project would comply with applicable construction and demolition diversion requirements, including the City of San Diego's Construction and Demolition Debris Diversion Ordinance. Construction would include the reuse of excavated soil for certain Program elements. Program operations would involve channel and culvert maintenance and removal of nonnative vegetation; however, the Program would not substantially increase solid waste production above existing conditions. Therefore, the Program would be consistent with Strategy 4.

Strategy 5: Resilient Infrastructure and Healthy Ecosystems

This strategy will help the City thrive in the face of the impacts of climate change through a greater focus on the greening of the City, starting with Communities of Concern. It also includes targets for the restoration of salt marshland for sequestration and increasing local water supply through Pure Water San Diego.

The Program is located at the coastline in the City of San Diego bounded by the communities of Pacific Beach to the north, Ocean Beach to the south, Mission Beach to the west, and Interstate 5 (I-5) to the east. The Improvement Zone is surrounded by Communities of Concern, which are communities identified by the City that have historically had less access to opportunities due to environmental justice and social equity issues. The Program would expand endangered or threatened species preserves and upland habitat areas within Mission Bay Park, which would support greening of the City. The Program would improve Mission Bay Park through wetland expansion, water quality improvements, and the protection and expansion of eelgrass beds. The Program's wetland expansion would create healthier ecosystems by providing water quality treatment and enhancing habitats, while also balancing the need for flood control and resource mitigation. Furthermore, the Program would increase resiliency to climate change, specifically sea level rise, in the Communities of Concern surrounding Mission Bay Park. While there would be impacts to coastal marsh in some areas due to construction, the Program elements would result in restored habitats that would be suitable for mitigation of these impacts to wetland habitat, as well as potentially serve as mitigation for other projects that impact wetlands. Further, implementation of the Program would require compensatory wetlands mitigation for any direct impacts to jurisdictional aquatic resources that would comply with City of San Diego, state, and/or federal authorizations. The Program would target inadequate and failing shorelines within Mission Bay Park, and prioritize shoreline restoration treatments, including restoration of beach sand and stabilization of erosion control features. The Program would restore the seawall, which would replace the existing seawall along Mission Beach Boardwalk and extend the seawall by approximately 375 feet. All the Program's objectives directly support resilient infrastructure and healthy ecosystems, and they demonstrate that the Program would support and be consistent with Strategy 5.

Strategy 6: Emerging Climate Actions

Strategy 6 of the City's 2022 CAP addresses GHG emissions that will remain after all identified measures and actions have been achieved, including implementation of emerging climate actions. Further action, new policies, technological innovation, partnerships, and research are all necessary components of emerging climate actions that are beyond the 2022 CAP ability to quantify and assess.

The Program's improvements to existing park areas, as described herein, would directly support broad climate action goals and strategies as the Mission Bay Parks Improvements Program is beneficial for the function of resilient infrastructure, healthy ecosystems, and the mobility through bicycle and pedestrian infrastructure in Mission Bay Park. The Program's park improvements are short-term construction projects that would not prevent the City from pursuing further actions, new policies, technological innovations, partnerships, and research components of emerging climate actions that are beyond the 2022 CAP. While Strategy 6 is not directly applicable to the Program, the Program does not include any features that would conflict with Strategy 6 goals.

Conclusion

The Program would not conflict with each of the CAP's strategies and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, resulting in a **less than significant** GHG impact.

4 References

City of San Diego. 2022. Climate Action Plan Consistency for Plan- and Policy-Level Environmental Documents and Public Infrastructure Projects. Memorandum. June 17, 2022. Accessed April 2025. https://www.sandiego.gov/sites/default/files/memorandum_cap_consistency_for_plans_policies_and_public_infrastructure_projects.pdf.

Air Quality Technical Report

Mission Bay Park Improvements Program San Diego, California

JULY 2025

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Printed on 30% post-consumer recycled material.

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APPENDICES

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AB	Assembly Bill
ATCM	Airborne Toxic Control Measure
CAA	federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
City	City of San Diego
CNRA	California Natural Resources Agency
CO	carbon monoxide
County	County of San Diego
DPM	diesel particulate matter
EO	Executive Order
EPA	U.S. Environmental Protection Agency
HRA	health risk assessment
LOS	level of service
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
ppm	parts per million
RAQS	Regional Air Quality Strategy
Regional Plan	San Diego Forward: The Regional Plan
RTP	Regional Transportation Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCS	Sustainable Communities Strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego Air Pollution Control District
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_x	sulfur oxides
TAC	toxic air contaminant
VMT	vehicle miles traveled
VOC	volatile organic compound

Executive Summary

The purpose of this technical report is to assess the potential air quality impacts associated with implementation of the Mission Bay Parks Improvements Program (Program). This assessment utilizes the City of San Diego California Environmental Quality Act Significance Determination Thresholds (City of San Diego 2022).

Project Overview

The proposed project is a Program that is intended to address issues related to water quality and water circulation improvements, habitat improvements, and visitor-serving improvements, in specifically identified areas of Mission Bay. The Program includes the implementation of the following elements: wetland and water quality improvements, shoreline restoration, expansion of habitat preserves, bicycle and pedestrian improvements, restoration of seawall bulkhead, and deferred maintenance activities.

Air Quality

The air quality impact analysis evaluated the potential for adverse impacts to air quality due to construction and operational emissions resulting from the Program.

Air Quality Plan Consistency

The air quality impact analysis evaluated the potential for adverse impacts to air quality due to construction and operational emissions resulting from the Program. The Program was deemed to be consistent with the current air quality plan because it is consistent with the current land use and zoning designation, and the anticipated growth associated with the Program does not exceed that projected by the San Diego Association of Governments. While the Program would have the potential to exceed mass daily emission thresholds during concurrent construction of activities, the Program would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations with the incorporation of mitigation (as determined to be necessary). While it is anticipated that during Program implementation construction of individual projects or certain concurrent projects would not exceed mass daily emission thresholds and would result in a less than significant impact without mitigation, because this analysis evaluates a maximum-case scenario, impacts related to the project's potential to conflict with or obstruct implementation of the applicable air quality plan would be potentially significant prior to mitigation but reduced to **less than significant with mitigation**.

Criteria Air Pollutant Emissions

Construction of the Program would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (i.e., on-road haul trucks, vendor trucks, worker vehicle trips, tugboats, and support vessels). After implementation of MM-AQ-1 and MM-AQ-2, estimated maximum daily worst-case construction emissions would not exceed the City construction thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Additionally, a less intensive and more realistic combination of projects would not exceed the City construction thresholds. Thus, impacts would be **less than significant with mitigation** incorporated.

Operations and maintenance activities would be minimal and would be similar to those that occur under existing conditions. In addition, the emissions associated with operation would be much less compared to construction. Because the Program would not result in any new long-term operational activities, there would be no potential air quality impacts associated with operational air pollutant emissions. Impacts would be **less than significant**.

Cumulative Impacts

Regarding short-term construction impacts, the worst-case scenario of concurrent project implementation would not exceed any criteria air pollutant during construction with incorporation of mitigation. The Program involves improvements to existing park areas with no change in park operations compared to the existing conditions. Additionally, the Program would not result in significant regional growth that is not accounted for within the Regional Air Quality Strategy. As a result, the Program would not result in a cumulatively considerable contribution to pollutant emissions. Cumulative impacts would be **less than significant with mitigation** during construction, and **less than significant** during operation.

Exposure of Sensitive Receptors

Because of the programmatic nature of the Program elements, emissions would not be concentrated in any one work area for the entire construction duration but rather spread out over the entire Mission Bay Park Improvement Zone, minimizing potential impacts. Due to this relatively short period of exposure, toxic air contaminant (TAC) emissions generated during construction would not be expected to result in concentrations causing significant health risks. The Program would not include any land uses associated with generation of TAC emissions. Therefore, the Program would not result in substantial exposure of sensitive receptors to TACs in the vicinity of the project site during construction or operation, and impacts would be **less than significant**.

The Program would not meet or exceed the City of San Diego's screening criteria for CO hotspots, and impacts associated with CO hotspots would be **less than significant**.

Other Emissions

Impacts associated with odors during construction would be **less than significant**. The Program would improve existing parks that would not include land uses with sources that have the potential to generate substantial odors, and impacts associated with odors during operation would be **less than significant**.

1 Introduction

1.1 Report Purpose and Scope

The purpose of this technical report is to assess the potential air quality impacts associated with implementation of the Mission Bay Park Improvements Program (Program). This assessment uses the City's CEQA Significance Determination Thresholds (City of San Diego 2022) and is also based on thresholds recommended by the San Diego Air Pollution Control District (SDAPCD) and other applicable thresholds of significance.

This introductory section provides a description of the proposed project (Program) and location. Section 2, Air Quality, describes the air quality-related environmental setting, regulatory setting, existing air quality conditions, thresholds of significance and analysis methodology, and also presents an air quality impact analysis. Section 3, References Cited, includes a list of the references cited. Section 4, List of Preparers, includes a list of those who prepared this technical report.

1.2 Project Description

The proposed project is a Program that is intended to address issues related to water quality and water circulation improvements, habitat improvements, and visitor-serving improvements, in specifically identified areas of Mission Bay. The Program includes the implementation of the following elements: wetland and water quality improvements, shoreline restoration, expansion of habitat preserves, bicycle and pedestrian improvements, restoration of seawall bulkhead, and deferred maintenance activities. Wetland and water quality improvements are focused within several specific areas, including:

- North Fiesta Island
- Tecolote Creek and Fiesta Island Causeway
- Cudahy Creek

Shoreline restoration would occur at several locations including:

- Vacation Island NW
- Vacation Island NE
- Vacation Island SW
- Ventura Cove
- Crown Point
- West Sail Bay
- Bonita Cove
- Bahia Point

Expansion of habitat preserves and upland habitats would occur at Fiesta Island and along the San Diego River. Bicycle and pedestrian improvements would occur at four main locations;

- Rose Creek Bike Path

- Fiesta Island Causeway
- Ocean Beach Bike Path
- Robb Field Gateway Connectivity

Bicycle and pedestrian improvements would include several improvement activities, including completing missing portions or gaps in bicycle and pedestrian paths, signage, sustainable lighting, and parking lot repairs. The restoration of the seawall bulkhead element would occur along the oceanfront at Pacific Beach and Mission Beach. Deferred maintenance would occur bay-wide and include maintenance of the following facilities: playgrounds, comfort stations, furnishings, and parking lot repairs (including stormwater best management practices, called BMPs). A Preliminary Engineering Report (PER) prepared up to 30% complete designs for each of these location-specific elements and is the basis for the construction assumptions of the air quality analysis (Dudek 2020; Moffat & Nichol 2021a, 2021b, 2024a, 2024b; RICK 2024a, 2024b, 2024c).

2 Air Quality

2.1 Environmental Setting

The project site is located within the San Diego Air Basin (SDAB) and is subject to the SDAPCD guidelines and regulations. The SDAB is one of 15 air basins that geographically divide the State of California. The weather of the San Diego region, as in most of Southern California, is influenced by the Pacific Ocean and its semi-permanent high-pressure systems that result in dry, warm summers and mild, occasionally wet winters. The average temperature ranges (in Fahrenheit [°F]) from the mid-40s to the high 90s. Most of the region's precipitation falls from November to April with infrequent (approximately 10%) precipitation during the summer. The average seasonal precipitation along the coast is approximately 10 inches; the amount increases with elevation as moist air is lifted over the mountains to the east (WRCC 2016).

The topography in the San Diego region varies greatly, from beaches on the west to mountains and desert on the east. Along with local meteorology, the topography influences the dispersal and movement of pollutants in the SDAB. The mountains to the east prohibit dispersal of pollutants in that direction and help trap them in inversion layers as described in the next section.

The interaction of ocean, land, and the Pacific High-Pressure Zone maintains clear skies for much of the year and influences the direction of prevailing winds (westerly to northwesterly). Local terrain is often the dominant factor inland, and winds in inland mountainous areas tend to blow through the valleys during the day and down the hills and valleys at night.

2.1.1 Meteorological and Topographical Conditions

The SDAB lies in the southwest corner of California, comprises the entire San Diego region (covering approximately 4,260 square miles), and is an area of high air pollution potential. The SDAB experiences warm summers, mild winters, infrequent rainfalls, light winds, and moderate humidity. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds.

The climate also drives the pollutant levels. The climate of San Diego is classified as Mediterranean, but it is incredibly diverse due to the topography. The climate is dominated by the Pacific High-pressure system that results in mild, dry summers and mild, wet winters. The Pacific High drives the prevailing winds in the SDAB. The winds tend to blow onshore during the daytime and offshore at night. In the fall months, the SDAB is often impacted by Santa Ana winds. These winds are the result of a high-pressure system over the Nevada–Utah region that overcomes the westerly wind pattern and forces hot, dry winds from the east to the Pacific Ocean (SDAPCD 2015). The winds blow the air basin's pollutants out to sea. However, a weak Santa Ana can transport air pollution from the South Coast Air Basin and greatly increase the San Diego ozone (O_3) concentrations. A strong Santa Ana also primes the vegetation for firestorm conditions.

The SDAB experiences frequent temperature inversions. Subsidence inversions occur during the warmer months as descending air associated with the Pacific High-Pressure Zone 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 can also trap pollutants. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur that produce O_3, commonly known as smog.

Light daytime winds, predominantly from the west, further aggravate the condition by driving air pollutants inland, toward the mountains. During the fall and winter, air quality problems are created due to emissions of carbon monoxide (CO) and oxides of nitrogen (NO_x). CO concentrations are generally higher in the morning and late evening. In the morning, CO levels are elevated due to cold temperatures and the large number of motor vehicles traveling. Higher CO levels during the late evenings are a result of stagnant atmospheric conditions trapping CO in the area. Since CO is produced almost entirely from automobiles, the highest CO concentrations in the basin are associated with heavy traffic. Nitrogen dioxide (NO_2) levels are also generally higher during fall and winter days when O_3 concentrations are lower.

Under certain conditions, atmospheric oscillation results in the offshore transport of air from the Los Angeles region to San Diego County (County). This often produces high O_3 concentrations, as measured at air pollutant monitoring stations within the County. The transport of air pollutants from Los Angeles to the County has also occurred within the stable layer of the elevated subsidence inversion, where high levels of O_3 are transported.

2.1.2 Pollutants and Effects

2.1.2.1 Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards (criteria) for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, NO_2, CO, sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and lead. These pollutants, as well as toxic air contaminants (TACs), are discussed in

the following paragraphs.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

Ozone. O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly NO_x and volatile organic compounds (VOCs). The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric ozone) and at the Earth's surface in the troposphere (ozone).[2] The O_3 that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to the ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is, thus, considered "bad" O_3. Stratospheric, or "good," O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Nitrogen Dioxide and Oxides of Nitrogen. NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016).

NO_x plays a major role, together with VOCs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources of NO_x are transportation and stationary fuel combustion sources, such as electric utility and industrial boilers.

Carbon Monoxide. CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at

[1] The following descriptions of health effects for each of the criteria air pollutants based on the U.S. Environmental Protection Agency's "Criteria Air Pollutants" (EPA 2025a) and the California Air Resources Board's "Glossary of Air Pollutant Terms" (CARB 2025a) and CARB's "Common Air Pollutants" (CARB 2025a).

[2] The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about five miles at the poles and about 10 miles at the equator.

dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide. SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter. Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) consists of particulate matter that is 10 microns or less in diameter (about 1/7 the thickness of a human hair). Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) consists of particulate matter that is 2.5 microns or less in diameter (roughly 1/28 the diameter of a human hair). $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides (SO_x), NO_x, and VOCs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the blood stream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM_{10} and $PM_{2.5}$ (EPA 2009).

Lead. Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline

reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Volatile Organic Compounds. Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as VOCs (also referred to as reactive organic gases). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the primary sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of VOCs result from the formation of O_3 and its related health effects. High levels of VOCs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for VOCs as a group.

Sulfates. Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere. Sulfates can result in respiratory impairment and reduced visibility.

Vinyl Chloride. Vinyl chloride is a colorless gas with a mild, sweet odor that has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in the air can cause nervous system effects such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide. Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

Visibility-Reducing Particles. Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$, described above.

2.1.2.2 Non-Criteria Air Pollutants

Toxic Air Contaminants. A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic non-cancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act,

Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over five years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter. Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than one micrometer in diameter (about 1/70th the diameter of a human hair) and, thus, is a subset of $PM_{2.5}$ (CARB 2025b). DPM is typically composed of carbon particles ("soot," also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB 2025b). CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) (17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines, including on-road diesel engines from trucks, buses, and cars; and off-road diesel engines from locomotives, marine vessels, and heavy-duty construction equipment, among others. Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB 2025b). Those most vulnerable to non-cancer health effects are children whose lungs are still developing and the elderly who often have chronic health problems.

Odorous Compounds. Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and, overall, is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

Valley Fever. Coccidioidomycosis, more commonly known as "Valley Fever," is an infection caused by inhalation of the spores of the *Coccidioides immitis* fungus, which grows in the soils of the southwestern United States. The fungus is very prevalent in the soils of California's San Joaquin Valley, particularly in Kern County. Kern County is considered a highly endemic county (i.e., more than 20 cases annually of Valley Fever per 100,000 people) based on the incidence rates reported through 2023 (CDPH 2024). The ecologic factors that appear to be most conducive

to survival and replication of the spores are high summer temperatures, mild winters, sparse rainfall, and alkaline, sandy soils.

The County is not considered a highly endemic region for Valley Fever, as the latest report from the California Department of Public Health indicated the County had 13.6 cases per 100,000 people in 2023 (CDPH 2024).

2.1.3 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution-sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution-sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing and retirement homes, hospitals, residential homes where medical patients reside, and residential communities (sensitive sites or sensitive land uses) (CARB 2005; City of San Diego 2022). The SDAPCD identifies sensitive receptors as those who are especially susceptible to adverse health effects from exposure to TACs, such as children, the elderly, and the ill. Sensitive receptors include schools (grades Kindergarten through 12), day care centers, nursing homes, retirement homes, health clinics, and hospitals within two kilometers of the facility (SDAPCD 2022). As described in Section 1.2, Project Description, the Program involves construction activities at a number of existing sites throughout Mission Bay Park and sensitive receptors include residences adjacent to multiple Program elements.

2.2 Regulatory Setting

2.2.1 Federal Regulations

2.2.1.1 Criteria Air Pollutants

The federal Clean Air Act (CAA), passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the CAA, including the setting of the National Ambient Air Quality Standards (NAAQS) for major air pollutants, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric O_3 protection, and enforcement provisions.

Under the CAA, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The CAA requires the EPA to reassess the NAAQS at least every five years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare a State Implementation Plan (SIP) that demonstrates how those areas will attain the standards within mandated time frames.

2.2.1.2 Hazardous Air Pollutants

The 1977 federal CAA amendments required the EPA to identify national emission standards for hazardous air pollutants to protect public health and welfare. Hazardous air pollutants include certain VOCs, pesticides,

herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 CAA amendments, which expanded the control program for hazardous air pollutants, 189 substances and chemical families were identified as hazardous air pollutants.

2.2.2 State Regulations

2.2.2.1 Criteria Air Pollutants

The federal CAA delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the CAA and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered "in attainment" if pollutant levels are continuously below the CAAQS and violate the standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. The NAAQS and CAAQS are presented in Table 1.

Table 1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
O_3	1 hour	0.09 ppm (180 µg/m³)	—	Same as Primary Standard[f]
	8 hours	0.070 ppm (137 µg/m³)	0.070 ppm (137 µg/m³)[f]	
NO_2[g]	1 hour	0.18 ppm (339 µg/m³)	0.100 ppm (188 µg/m³)	Same as Primary Standard
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)	0.053 ppm (100 µg/m³)	
CO	1 hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	None
	8 hours	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[h]	1 hour	0.25 ppm (655 µg/m³)	0.075 ppm (196 µg/m³)	—
	3 hours	—	—	0.5 ppm (1,300 µg/m³)
	24 hours	0.04 ppm (105 µg/m³)	0.14 ppm (for certain areas)[g]	—
	Annual	—	0.030 ppm (for certain areas)[g]	—
PM_{10}[i]	24 hours	50 µg/m³	150 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 µg/m³	—	

Table 1. Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
		Concentration[c]	Primary[c,d]	Secondary[c,e]
$PM_{2.5}$[i]	24 hours	—	35 µg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 µg/m³	9.0 µg/m³	15.0 µg/m³
Lead[j,k]	30-day Average	1.5 µg/m³	—	—
	Calendar Quarter	—	1.5 µg/m³ (for certain areas)[k]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 µg/m³	
Hydrogen sulfide	1 hour	0.03 ppm (42 µg/m³)	—	—
Vinyl chloride[j]	24 hours	0.01 ppm (26 µg/m³)	—	—
Sulfates	24 hours	25 µg/m³	—	—
Visibility reducing particles[l]	8 hour	See footnote l	—	—

Source: CARB 2024.

Notes: O_3 = ozone; ppm = parts per million by volume; µg/m³ = micrograms per cubic meter; NO_2 = nitrogen dioxide; CO = carbon monoxide; mg/m³= milligrams per cubic meter; SO_2 = sulfur dioxide; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns.

a California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California Ambient Air Quality Standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b National standards (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-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/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

d National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

e National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

f On October 1, 2015, the national 8-hour O_3 primary and secondary standards were lowered from 0.075 to 0.070 ppm.

g To attain the national 1-hour standard, the three-year average of the annual 98th percentile of the one-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb). Note that the national 1-hour standard is in units of ppb. California standards are in units of ppm. To directly compare the national 1-hour standard to the California standards, the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

h On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the national 1-hour standard, the three-year average of the annual 99th percentile of the one-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment of the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

i On February 7, 2024, the national annual $PM_{2.5}$ primary standard was lowered from 12 µg/m³ to 9 µg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 µg/m³, as was the annual secondary standard of 15 µg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 µg/m³ were also retained. The form of the annual primary and secondary standards is the annual mean averaged over three years..

[j] California Air Resources Board 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.

[k] The national standard for lead was revised on October 15, 2008, to a rolling three-month average. The 1978 lead standard (1.5 µg/m^3 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.

[l] 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.

2.2.2.2 Toxic Air Contaminants

A TAC is defined by California law as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. Federal laws use the hazardous air pollutants to refer to the same types of compounds that are referred to as TACs under state law. California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588).

AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. Pursuant to AB 2588, existing facilities that emit air pollutants above specified levels were required to (1) prepare a TAC emission inventory plan and report; (2) prepare a risk assessment if TAC emissions were significant; (3) notify the public of significant risk levels; and (4) if health impacts were above specified levels, prepare and implement risk reduction measures.

The following regulatory measures pertain to the reduction of DPM and criteria pollutant emissions from off-road equipment and diesel-fueled vehicles.

Idling of Commercial Heavy-Duty Trucks (13 CCR 2485)

In July 2004, CARB adopted an Airborne Toxic Control Measure (ATCM) to control emissions from idling trucks. The ATCM prohibits idling for more than five minutes for all commercial trucks with a gross vehicle weight rating over 10,000 pounds. The ATCM contains an exception that allows trucks to idle while queuing or involved in operational activities.

In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.)

In July 2007, CARB adopted an ATCM for in-use off-road diesel vehicles. This regulation requires that specific fleet average requirements are met for NO_x emissions and for particulate matter emissions. Where average requirements cannot be met, best available control technology requirements apply. The regulation also includes several recordkeeping and reporting requirements.

In response to AB 8 2X, the regulations were revised in July 2009 (effective December 3, 2009) to allow a partial postponement of the compliance schedule in 2011 and 2012 for existing fleets. On December 17, 2010, CARB adopted additional revisions to further delay the deadlines reflecting reductions in diesel emissions due to the poor economy and overestimates of diesel emissions in California. The revisions delayed the first compliance date until no earlier than January 1, 2014, for large fleets, with final compliance by January 1, 2023. The compliance dates for medium fleets were delayed until an initial date of January 1, 2017, and final compliance date of January 1,

2023. The compliance dates for small fleets were delayed until an initial date of January 1, 2019, and final compliance date of January 1, 2028. Correspondingly, the fleet average targets were made more stringent in future compliance years. The revisions also accelerated the phaseout of older equipment with newer equipment added to existing large and medium fleets over time, requiring the addition of Tier 2 or higher engines starting on March 1, 2011, with some exceptions: Tier 2 or higher engines on January 1, 2013, without exception; and Tier 3 or higher engines on January 1, 2018 (January 1, 2023, for small fleets).

On October 28, 2011 (effective December 14, 2011), the Executive Officer approved amendments to the regulation. The amendments included revisions to the applicability section and additions and revisions to the definition. The initial date for requiring the addition of Tier 2 or higher engines for large and medium fleets, with some exceptions, was revised to January 1, 2012. New provisions also allow for the removal of emission control devices for safety or visibility purposes. The regulation also was amended to combine the particulate matter and NO_x fleet average targets under one, instead of two, sections. The amended fleet average targets are based on the fleet's NO_x fleet average, and the previous section regarding particulate matter performance requirements was deleted completely. The best available control technology requirements, if a fleet cannot comply with the fleet average requirements, were restructured and clarified. Other amendments to the regulations included minor administrative changes to the regulatory text.

On November 17, 2022, CARB approved amendments to the regulation aimed at further reducing emissions from the off-road sector. Other amendments to the regulations included minor administrative changes to the regulatory text.

In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025)

On December 12, 2008, CARB adopted an ATCM to reduce NO_x and particulate matter emissions from most in-use on-road diesel trucks and buses with a gross vehicle weight rating greater than 14,000 pounds. The original ATCM regulation required fleets of on-road trucks to limit their NO_x and particulate matter emissions through a combination of exhaust retrofit equipment and new vehicles. The regulation limited particulate matter emissions for most fleets by 2011, and limited NO_x emissions for most fleets by 2013. The regulation did not require any vehicle to be replaced before 2012 and never required all vehicles in a fleet be replaced.

In December 2009, the CARB Governing Board directed staff to evaluate amendments that would provide additional flexibility for fleets adversely affected by the struggling California economy. On December 17, 2010, CARB revised this ATCM to delay its implementation along with limited relaxation of its requirements. Starting on January 1, 2015, lighter trucks with a gross vehicle weight rating of 14,001 to 26,000 pounds with 20-year-old or older engines need to be replaced with newer trucks (2010 model year emissions equivalent as defined in the regulation). Trucks with a gross vehicle weight rating greater than 26,000 pounds with 1995 model year or older engines needed to be replaced as of January 1, 2015. Trucks with 1996 to 2006 model year engines must install a Level 3 (85% control) diesel particulate filter starting on January 1, 2012, to January 1, 2014, depending on the model year, and then must be replaced after eight years. Trucks with 2007 to 2009 model year engines have no requirements until 2023, at which time they must be replaced with 2010 model year emissions-equivalent engines, as defined in the regulation. Trucks with 2010 model year engines would meet the final compliance requirements. The ATCM provides a phase-in option under which a fleet operator would equip a percentage of trucks in the fleet with diesel particulate filters, starting at 30% as of January 1, 2012, with 100% by January 1, 2016. Under each option, delayed compliance is granted to fleet operators who have or will comply with requirements before the required deadlines.

On September 19, 2011 (effective December 14, 2011), the Executive Officer approved amendments to the regulations, including revisions to the compliance schedule for vehicles with a gross vehicle weight rating of 26,000 pounds or less to clarify that *all* vehicles must be equipped with 2010 model year emissions equivalent engines by 2023. The amendments included revised and additional credits for fleets that have downsized; implement early particulate matter retrofits; incorporate hybrid vehicles, alternative-fueled vehicles, and vehicles with heavy-duty pilot ignition engines; and implement early addition of newer vehicles. The amendments included provisions for additional flexibility, such as for low-usage construction trucks, and revisions to previous exemptions, delays, and extensions. Other amendments to the regulations included minor administrative changes to the regulatory text, such as recordkeeping and reporting requirements related to other revisions.

California Health and Safety Code Section 41700

Section 41700 of the California Health and Safety Code states that a person shall not discharge from any source whatsoever quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any of those persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. This section also applies to sources of objectionable odors.

2.2.3 Local Regulations

2.2.3.1 San Diego Air Pollution Control District

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management districts and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The proposed project area is located within the SDAB and is subject to the guidelines and regulations of the SDAPCD.

In the County, O_3 and particulate matter are the pollutants of main concern, since exceedances of state ambient air quality standards for those pollutants have been observed in most years. For this reason, the SDAB has been designated as a nonattainment area for the state PM_{10}, $PM_{2.5}$, and O_3 standards. The SDAB is also a federal O_3 attainment (maintenance) area for 1997 8-hour O_3 standard, an O_3 nonattainment area for the 2008 8-hour O_3 standard, and a CO maintenance area (western and central part of the SDAB only, including the proposed project area).

Federal Attainment Plans

SDAPCD has prepared the 2020 Plan for Attaining the National Ambient Air Quality Standards for Ozone in San Diego County (2020 Attainment Plan) that demonstrates how the region will further reduce air pollutant emissions to attain the current NAAQS for ozone. The 2020 Attainment Plan was approved by the SDAPCD on October 14, 2020. On November 19, 2020, CARB adopted the 2020 Attainment Plan for attaining the Federal 8-hour 75 ppb and 70 ppb Ozone standards and projects attainment for the standards by 2026 and 2032, respectively (SDAPCD 2020a).

In December 2016, the SDAPCD adopted an update to the Eight-Hour Ozone Attainment Plan for San Diego County (2008 O_3 NAAQS), which indicated that local controls and state programs would allow the region to reach attainment of the federal 8-hour O_3 standard (1997 O_3 NAAQS) by 2018 (SDAPCD 2016a). In this plan, SDAPCD relies on the RAQS to demonstrate how the region will comply with the federal O_3 standard. The RAQS details how the region will

manage and reduce O_3 precursors (NO_x and VOCs) by identifying measures and regulations intended to reduce these pollutants. The control measures identified in the RAQS generally focus on stationary sources; however, the emissions inventories and projections in the RAQS address all potential sources, including those under the authority of CARB and the EPA. Incentive programs for reduction of emissions from heavy-duty diesel vehicles, off-road equipment, and school buses are also established in the RAQS.

Currently, the County is designated as moderate nonattainment for the 2008 NAAQS and maintenance for the 1997 NAAQS. As documented in the 2016 8-Hour Ozone Attainment Plan for San Diego County, the County has a likely chance of obtaining attainment due to the transition to low-emission cars, stricter new source review rules, and continuing the requirement of general conformity for military growth and the San Diego International Airport. The County will also continue emission control measures, including ongoing implementation of existing regulations in O_3 precursor reduction to stationary and area-wide sources, subsequent inspections of facilities and sources, and the adoption of laws requiring best available retrofit control technology for control of emissions (SDAPCD 2016a).

State Attainment Plans

The SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The RAQS for the SDAB was initially adopted in 1991 and is updated on a triennial basis, most recently in 2022 (SDAPCD 2023). The RAQS outlines SDAPCD's plans, and control measures designed to attain the state air quality standards for O_3. The RAQS relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County and the cities in the County, to forecast future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the County and the cities in the County as part of the development of their general plans (SANDAG 2017a, 2017b).

On March 9, 2023, SDAPCD adopted the revised 2022 RAQS for the County. The RAQS demonstrates how the San Diego region will further reduce air pollution emissions to meet state health-based standards for ground-level 03. The 2022 RAQS guides SDAPCD in deploying tools, strategies, and resources to continue reducing pollutants that are precursors to ground-level O_3, including NO_x and VOC. The 2022 RAQS emphasizes O_3 control measures but also identifies complementary measures and strategies that can reduce emissions of GHGs and particulate matter. It also includes new analyses exploring O_3 and its relationship to public health, mobile sources, under-resourced communities, and GHGs and climate change. Further, the 2022 RAQS identifies strategies to expand SDAPCD regional partnerships, identify more opportunities to engage the public and Communities Of Concern, and integrate environmental justice and equity across all proposed measures and strategies.

In regard to particulate matter emissions-reduction efforts, in December 2005, the SDAPCD prepared a report titled "Measures to Reduce Particulate Matter in San Diego County" to address implementation of Senate Bill (SB) 656 in the County (SB 656 required additional controls to reduce ambient concentrations of PM_{10} and $PM_{2.5}$) (SDAPCD 2005). In the report, SDAPCD evaluated implementation of source-control measures that would reduce particulate matter emissions associated with residential wood combustion; various construction activities including earthmoving, demolition, and grading; bulk material storage and handling; carry-out and track-out removal and cleanup methods; inactive disturbed land; disturbed open areas; unpaved parking lots/staging areas; unpaved roads; and windblown dust (SDAPCD 2005).

SDAPCD Rules and Regulations

As stated above, the SDAPCD is responsible for planning, implementing, and enforcing federal and state ambient standards in the SDAB. The following rules and regulations apply to all sources in the jurisdiction of SDAPCD and would apply to the proposed project.

SDAPCD Regulation IV: Prohibitions; Rule 50: Visible Emissions

This rule prohibits discharge into the atmosphere from any single source of emissions whatsoever any air contaminant for a period or periods aggregating more than three minutes in any period of 60 consecutive minutes, which is darker in shade than that designated as Number 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or of such opacity as to obscure an observer's view to a degree greater than does smoke of a shade designated as Number 1 on the Ringelmann Chart (SDAPCD 1997).

Construction of the proposed project may result in visible emissions, primarily during earth-disturbing activities, which would be subject to SDAPCD Rule 50. Although visible emissions are less likely to occur during operation of the proposed project, compliance with SDAPCD Rule 50 would be required during both construction and operational phases.

SDAPCD Regulation IV: Prohibitions; Rule 51: Nuisance

This rule prohibits the discharge, from any source, of such quantities of air contaminants or other materials that cause or have a tendency to cause injury, detriment, nuisance, annoyance to people and/or the public, or damage to any business or property (SDAPCD 1969).

Any criteria air pollutant emissions, TAC emissions, or odors that would be generated during construction or operation of the proposed project would be subject to SDAPCD Rule 51. Violations can be reported to the SDAPCD in the form of an air quality complaint by telephone, email, and online form. Complaints are investigated by the SDAPCD as soon as possible.

SDAPCD Regulation IV: Prohibitions; Rule 55: Fugitive Dust

This rule regulates fugitive dust emissions from any commercial construction or demolition activity capable of generating fugitive dust emissions, including active operations, open storage piles, and inactive disturbed areas, as well as track-out and carry-out onto paved roads beyond a project area (SDAPCD 2009).

Construction of the proposed project, primarily during earth-disturbing activities, may result in fugitive dust emissions that would be subject to SDAPCD Rule 55. Fugitive dust emissions are not anticipated during operation of the proposed project.

SDAPCD Regulation IV: Prohibitions; Rule 67.0.1: Architectural Coatings

Requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories (SDAPCD 2021).

2.2.3.2 San Diego Association of Governments

SANDAG is the regional planning agency for the County and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SANDAG serves as the federally designated metropolitan planning organization for the County. With respect to air quality planning and other regional issues, SANDAG has prepared San Diego Forward: The Regional Plan (Regional Plan) for the San Diego region (SANDAG 2015). The Regional Plan combines the big-picture vision for how the region will grow over the next 35 years with an implementation program to help make that vision a reality. The Regional Plan, including its Sustainable Communities Strategy (SCS), is built on an integrated set of public policies, strategies, and investments to maintain, manage, and improve the transportation system so that it meets the diverse needs of the San Diego region through 2050.

In regards to air quality, the Regional Plan sets the policy context in which SANDAG participates in and responds to the air district's air quality plans and builds off the air district's air quality plan processes that are designed to meet health-based criteria pollutant standards in several ways (SANDAG 2015). First, it complements air quality plans by providing guidance and incentives for public agencies to consider best practices that support the technology-based control measures in air quality plans. Second, the Regional Plan emphasizes the need for better coordination of land use and transportation planning, which heavily influences the emissions inventory from the transportation sectors of the economy. This also minimizes land use conflicts, such as residential development near freeways, industrial areas, or other sources of air pollution.

On September 23, 2016, SANDAG's Board of Directors adopted the final 2016 Regional Transportation Improvement Program (RTIP), which is a multibillion-dollar, multiyear program of proposed major transportation projects in the San Diego region. Transportation projects funded with federal, state, and TransNet (the San Diego transportation sales tax program) must be included in an approved RTIP. The programming of locally funded projects also may be programmed at the discretion of the agency. The 2016 RTIP covers five fiscal years and incrementally implements the Regional Plan (SANDAG 2016). The 2021 Regional Plan was released in May 2021 and at its meeting on February 26, 2021, the SANDAG Board of Directors adopted the final 2021 RTIP. The 2021 RTIP and its conformity determination were approved by FHWA and FTA on April 16, 2021. The 2021 Regional Plan provides a long-term blueprint for the San Diego region that seeks to meet regulatory requirements, address traffic congestion, and create equal access to jobs, education, healthcare, and other community resources (SANDAG 2021). The plan is the result of years of planning, data analysis, and community engagement to reimagine the San Diego region with a transformative transportation system, a sustainable pattern of growth and development, and innovative demand and management strategies.

The 2021 Regional Plan includes a Sustainable Communities Strategy (SCS), as required by California Senate Bill 375 (SB 375), for the San Diego region. This SCS describes coordinated transportation and land use planning that exceeds the state's target for reducing per capita GHG emissions set by the California Air Resources Board. The state-mandated target is a 19% reduction—compared with 2005—in per capita GHG emissions from cars and light-duty trucks by 2035. The 2021 Regional Plan achieves a 20% reduction by 2035.The 2021 Regional Plan also puts forth a forecasted development pattern that is driven by regional goals for sustainability, mobility, housing affordability, and economic prosperity. The 2025 Regional Plan is currently in development and SANDAG expects the detailed draft regional plan will be ready for public feedback in spring 2025. At the time of this project analysis, the draft plan had not been released.

2.2.3.3 City of San Diego

General Plan

The City of San Diego General Plan was adopted in March 2008 and amended in 2024. The City's General Plan includes various goals and policies in its Conservation Element related to directly and indirectly improving air quality (City of San Diego 2024c). Policies applicable to the Program include the following:

CE-F.1 Develop fuel efficiency, municipal and citywide building electrification, and vehicle replacement and electrification measures to reduce fossil fuel use, consistent with the Climate Action Plan.

CE-F.4 Preserve and plant trees, and plants that are consistent with habitat and water conservation policies and that absorb carbon dioxide and pollutants.

CE-F.5 Promote technological innovations to help reduce automobile, truck, and other motorized equipment emissions.

CE-F.9 Prohibit the idling of motive equipment (vehicles and equipment using fossil fuels) that is owned or leased by the City and operated by City employees unless mission necessary.

City of San Diego Mission Bay Park Master Plan

The project area is located within Mission Bay Park, which is a Community Planning Area in the City of San Diego. The Mission Bay Park Master Plan (MBPMP) was adopted by the City of San Diego City Council in August 1994 and most recently amended in November 2021 with the Fiesta Island Amendment and May 2024 with the De Anza Natural Amendment. The MBPMP serves as the guiding planning policy document for all of Mission Bay Park and its fundamental goal is to identify new recreation demands and plan for the continuing development of the Park that will sustain the diversity and quality of recreation and protect and enhance the Bay's environment resources for future generations. The MBPMP outlines goals and objectives to support a balanced management of the Park's land and water resources with public recreation and the operation of economically successful commercial leisure businesses. Goals and objectives of the MBPMP cover land and water use, environment, access and circulation, economics, and aesthetics and design (City of San Diego 2021).

Municipal Code

Construction and Demolition Debris Diversion Deposit Program

The City of San Diego's Municipal Code Sections 66.0601–66.0610 outline the Construction and Demolition (C&D) Debris Diversion Deposit Program. This program is designed to encourage the recycling and reuse of materials generated during construction and demolition projects. The program sets specific diversion goals, requiring a significant portion of the debris to be recycled or reused instead of being disposed of in landfills.

Land Development Manual: Landscape Standards

Municipal Code Section 142.0402, Land Development Manual: Landscape Standards establish the minimum plant material, irrigation, brush management, and landscape related standards for work done in accordance with

requirements of Land Development Code. Additionally, the Landscape Standards provide the technical standards to create and maintain landscapes that conserve and efficiently use water.

Air Contaminant Regulations

The San Diego Municipal Code addresses air quality and odor impacts at Chapter 14, Article 2, Division 7 paragraph 142.0710, "Air Contaminant Regulations," which states that air contaminants including smoke, charred paper, dust, soot, grime, carbon, noxious acids, toxic fumes, gases, odors, and particulate matter, or any emissions that endanger human health, cause damage to vegetation or property, or cause soiling shall not be permitted to emanate beyond the boundaries of the premises upon which the use emitting the contaminants is located (Added 12-9-1997 by O-18451 N.S.; effective 1-1-2000) (City of San Diego 2010).

The WHITEBOOK

Standard Specifications for Public Works Construction (the WHITEBOOK) has been used to establish the uniformity of plans and specifications accepted and used by those involved in public works construction. The WHITEBOOK provides general provisions on construction materials and construction methods for public works projects.

Zero Emissions Municipal Buildings & Operations Policy

In December 2024, the San Diego City Council adopted an update to Council Policy No. 900-03, the Zero Emissions Municipal Buildings & Operations Policy (ZEMBOP), which establishes an implementing framework to ensure the City leads by example in decarbonizing the municipal building sector and transitioning to a zero-emissions fleet by 2035. ZEMBOP applies to all municipal facilities and parking lots and is included in all new leases of City-owned property. With the adoption of ZEMBOP, new construction projects will be required to be all-electric, 10% more efficient than the state code, and designed to include a solar or other renewable energy system plus a battery energy storage system large enough to cover the facility's electricity load. All new construction projects shall be designed and operated with exclusively electric systems or appliances for space conditioning, water heating, cooking, and lighting, and without using any fossil fuel energy source for non-emergency electricity generation or any other non-emergency functions. All fleet parking spaces in associated parking lots must be EV Ready (i.e. wiring to the spaces), and staff and public spaces must meet CALGreen Tier 1 requirements for EV charging infrastructure.

2.3 Regional and Local Air Quality Conditions

2.3.1 San Diego Air Basin Attainment Designation

Pursuant to the 1990 federal CAA amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "nonattainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to be meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards. The California Clean Air Act, like its federal counterpart, called for the

designation of areas as "attainment" or "nonattainment," but based on CAAQS rather than the NAAQS. Table 2 depicts the current attainment status of the SDAB with respect to the NAAQS and CAAQS.

Table 2. San Diego Air Basin Attainment Classification

Pollutant	Designation/Classification	
	Federal Standards	State Standards
Ozone (O_3) – 1 hour	Attainment[a]	**Nonattainment**
O_3 – (8 hour)	**Nonattainment (moderate)**	**Nonattainment**
Nitrogen Dioxide (NO_2)	Unclassifiable/attainment	Attainment
Carbon Monoxide (CO)	Attainment (maintenance)	Attainment
Sulfur Dioxide (SO_2)	Unclassifiable/attainment	Attainment
Coarse Particulate Matter (PM_{10})	Unclassifiable/attainment[b]	**Nonattainment**
Fine Particulate Matter ($PM_{2.5}$)	Unclassifiable/attainment	**Nonattainment[c]**
Lead	Unclassifiable/attainment	Attainment
Hydrogen Sulfide	No federal standard	Attainment
Sulfates	No federal standard	Unclassified
Visibility-Reducing Particles	No federal standard	Unclassified
Vinyl Chloride	No federal standard	No designation

Sources: CARB 2022; SDAPCD 2024.
Notes: Attainment = meets the standards; Attainment/maintenance = achieve the standards after a nonattainment designation; Nonattainment = does not meet the standards; Unclassified or Unclassifiable = insufficient data to classify; Unclassifiable/ attainment = meets the standard or is expected to be meet the standard despite a lack of monitoring data.
O_3 = ozone; CO = carbon monoxide; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide.

[a] The federal 1-hour standard of 0.12 parts per million (ppm) was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.

[b] At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

[c] The California Air Resources Board (CARB) has not reclassified the region to attainment yet due to (1) incomplete data, and (2) the use of non-California Approved Samplers (CAS). While data collected does meet the requirements for designation of attainment with federal $PM_{2.5}$ standards, the data completeness requirements for state $PM_{2.5}$ standards substantially exceed federal requirements and mandates and have historically not been feasible for most air districts to adhere to given local resources. SDAPCD has begun replacing most regional filter-based $PM_{2.5}$ monitors as they reach the end of their useful life with continuous $PM_{2.5}$ air monitors to ensure collected data meets stringent completeness requirements in the future. SDAPCD anticipates these new monitors will be approved as CAS monitors once CARB reviews the list of approved monitors, which has not been updated since 2013.

In summary, the SDAB is designated as an attainment area for the 1997 8-hour O_3 NAAQS and as a nonattainment area for the 2008 8-hour O_3 NAAQS. The SDAB is designated as a nonattainment area for O_3, PM_{10}, and $PM_{2.5}$ CAAQS. The portion of the SDAB where the proposed project would be located is designated as attainment or unclassifiable/unclassified for all other criteria pollutants under the NAAQS and CAAQS.

2.3.2 Local Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. Local ambient air quality is monitored by the SDAPCD. The SDAPCD operates a network of ambient air monitoring stations throughout the County that measure ambient concentrations of pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. The nearest SDAPCD-operated monitoring station to the proposed project is the Sherman Elementary School monitoring station, which is located approximately 5.5 miles

southeast of the project site. This monitoring station was used to show the background ambient air quality for O_3, $PM_{2.5}$, and NO_2 for the project site. The monitoring station located in Chula Vista was the closest to the proposed project that monitored PM_{10} (13 miles southeast of the project site). The monitoring station located in El Cajon was the closest to the proposed project that monitored CO and SO_2 (15 miles east of the project site). Table 3 presents the most recent background ambient air quality data and number of days exceeding the ambient air quality standards from 2021 to 2023.

Table 3. Local Ambient Air Quality Data

Averaging Time	Unit	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
				2021	2022	2023	2021	2022	2023
Ozone (O3) – Sherman Elementary									
Maximum 1-hour Concentration	ppm	State	0.09	0.076	0.087	0.081	0	0	0
Maximum 8-hour Concentration	ppm	State	0.070	0.064	0.063	0.071	0	0	1
		Federal	0.070	0.063	0.063	0.070	0	0	0
Nitrogen Dioxide (NO2) – Sherman Elementary									
Maximum 1-hour Concentration	ppm	State	0.18	0.054	0.054	0.054	0	0	0
		Federal	0.100	0.054	0.053	0.054	0	0	0
Annual Concentration	ppm	State	0.030	0.009	0.010	0.009	--	--	--
		Federal	0.053	0.009	0.011	0.010	--	--	--
Carbon Monoxide (CO) – First Street									
Maximum 1-hour Concentration	ppm	State	20	1.2	1.4	1.1	0	0	0
		Federal	35	1.2	1.4	1.1	0	0	0
Maximum 8-hour Concentration	ppm	State	9.0	1.1	1.1	0.9	0	0	0
		Federal	9	1.1	1.1	0.9	0	0	0
Sulfur Dioxide (SO2) – First Street									
Maximum 1-hour Concentration	ppm	Federal	0.075	0.002	0.001	0.001	0	0	0
Maximum 24-hour Concentration	ppm	State	0.04	--	--	--	--	--	--
	ppm	Federal	0.140	0.0003	0.0003	0.0003	0	0	0
Annual Concentration	ppm	Federal	0.030	0.0001	0.0001	0.0001	--	--	--
Coarse Particulate Matter (PM10)[a] – Chula Vista									
Maximum 24-hour Concentration	µg/m³	State	50	--	--	--	--	--	--
		Federal	150	46	38	51	0	0	0
Annual Concentration	µg/m³	State	20	--	--	--	--	--	--
Fine Particulate Matter (PM2.5)[a] – Sherman Elementary									
Maximum 24-hour Concentration	µg/m³	Federal	35	25.6	18.9	27.8	0.0 (0)	0.0 (0)	0.0 (0)
Annual Concentration	µg/m³	State	12	26.3	20.8	—	--	--	--
		Federal	9.0	9.7	8.8	8.9	--	--	--

Sources: CARB 2025c; EPA 2025b.
Notes: ppm = parts per million; μg/m3 = micrograms per cubic meter; — = not available.
Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and Environmental Protection Agency AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.
Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour O_3, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every six days and every one to three days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

2.4 Significance Criteria and Methodology

2.4.1 Thresholds of Significance

The significance criteria used to evaluate the proposed project's impacts to air quality is based on the City's CEQA Significance Determination Thresholds (City of San Diego 2022). Per the City's CEQA Significance Thresholds, a project would result in significant impacts to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including release emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentration including air toxics such as diesel particulates[3]
- Create objectionable odors affecting a substantial number of people; or
- Release substantial quantities of air contaminants beyond the boundaries of the premises upon which the stationary source emitting the contaminants is located.

In addition to the City's CEQA Significance Determination Thresholds (City of San Diego 2022) general threshold questions, the potential for the proposed project to release substantial quantities of air contaminants that could result in health affects is addressed in the criteria air pollutant emissions, TAC emissions, and odors analysis in accordance with the San Diego Municipal Code. San Diego Municipal Code, Chapter 14, Article 2, Division 7, Off-Site Development Impact Regulations paragraph 142.0710, Air Contaminant Regulations, states: "Air contaminants including smoke, charred paper, dust, soot, grime, carbon, noxious acids, toxic fumes, gases, odors, and particulate matter, or any emissions that endanger human health, cause damage to vegetation or property, or cause soiling shall not be permitted to emanate beyond the boundaries of the premises upon which the use emitting the contaminants is located." (Added 12-9-1997 by O-18451 N.S.; effective 1-1-2000.)

The City's Air Quality Significance Thresholds shown in Table 4 were used to determine significance of proposed project-generated construction and operational criteria air pollutants; specifically, the proposed project's potential

[3] As adopted by the South Coast Air Quality Management District in their CEQA Air Quality Handbook (Chapter 4) (SCAQMD 1993), a sensitive receptor is a person in the population who is more susceptible to health effects due to exposure to an air contaminant than is the population at large. Sensitive receptors (and the facilities that house them) in proximity to localized carbon monoxide sources, toxic air contaminants, or odors are of particular concern. Examples include long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, child care centers, and athletic facilities.

to violate any air quality standard or contribute substantially to an existing or projected air quality violation (as assessed under the threshold criterion 2). In regard to the analysis of potential impacts to sensitive receptors, the City specifically recommends consideration of sensitive receptors in locations such as day care centers, schools, retirement homes, and hospitals, or medical patients in residential homes close to major roadways or stationary sources, which could be impacted by air pollutants. The City also states that the significance of potential odor impacts should be determined based on what is known about the quantity of the odor compound(s) that would result from the project's proposed use(s), the types of neighboring uses potentially affected, the distance(s) between the project's point source(s) and the neighboring uses such as sensitive receptors, and the resultant concentration(s) at the receptors.

The air quality section of the CEQA Significance Determination Thresholds recognizes attainment status designations for the SDAB and its nonattainment status for both ozone and particulate matter. As such, the document recognizes that all new projects should include measures, pursuant to CEQA, to reduce project-related emissions of ozone precursors and particulate matter to ensure new development does not contribute to San Diego's nonattainment status for these pollutants. As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 requiring the preparation of Air Quality Impact Assessments for permitted stationary sources (SDAPCD 2016b). The SDAPCD sets forth quantitative emissions thresholds below which a stationary source would not have a significant impact on ambient air quality. Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 4 are exceeded.

Table 4. Air Quality Significance Thresholds

Pollutant	Emission Rate		
	Pounds per Hour	Pounds per Day	Tons per Year
Coarse particulate matter (PM_{10})	N/A	100	15
Fine particulate matter ($PM_{2.5}$)[a]	N/A	67	10
Oxides of nitrogen (NO_x)	25	250	40
Sulfur oxides (SO_x)	25	250	40
Carbon monoxide (CO)	100	550	100
Lead and lead compounds	N/A	3.2	0.6
Volatile organic compounds (VOCs)	N/A	137[b]	15

Sources: City of San Diego 2022; SDAPCD 2020b.
Note: N/A = not applicable.

[a] $PM_{2.5}$ thresholds consistent with SDAPCD AQIA Trigger levels (Regulation II, Rule 20.2, Table 20.2-1).

[b] VOC threshold based on the threshold of significance for VOCs from the South Coast Air Quality Management District and the Monterey Bay Air Pollution Control District as stated in the City of San Diego's California Environmental Quality Act Significance Determination Thresholds (City of San Diego 2022).

The thresholds listed in Table 4 represent screening-level thresholds that can be used to evaluate whether project-related emissions could cause a significant impact on air quality. Emissions below the screening-level thresholds would not cause a significant impact. For nonattainment pollutants, if emissions exceed the thresholds shown in Table 4, the proposed project could have the potential to result in a cumulatively considerable net increase in these pollutants and, thus, could have a significant impact on the ambient air quality.

The SDAPCD document, Supplemental Guidelines for Submission of Air Toxics "Hot Spots" Program Health Risk Assessments, provides guidance with which to perform health risk assessments (HRAs) within the SDAB. The

current SDAPCD thresholds of significance for TAC emissions from the operations of both permitted and non-permitted sources are combined and are less than 10 in 1 million for cancer and less than 1.0 for the chronic hazard index (SDAPCD 2022).

With respect to odors, SDAPCD Rule 51 (Public Nuisance) prohibits emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of any person. A project that proposes a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of off-site receptors.

2.4.2 Approach and Methodology

2.4.2.1 Construction

As described in Section 1.2, Project Description, the Program would implement wetland and water quality improvements, shoreline restoration, expansion of habitat preserves, bicycle and pedestrian improvements, restoration of seawall bulkhead, deferred maintenance activities, and signage updates. Construction emissions were quantified for 20 different projects or components within the Wetland and Water Quality Improvements Element, Restoration of Shoreline Element, Upland Habitat and Preserve Expansion Element, Bicycle and Pedestrian Improvements Element, and Restoration of the Seawall Bulkhead Element. Construction emissions associated with Deferred Maintenance activities and the Signage Update Element were not quantified because these activities are part of routine maintenance that should already be occurring. As such, they are expected to have minimal additional emissions compared to the ongoing maintenance activities.

The Program includes approximately 20 separate construction project areas and would not engage construction at all sites simultaneously. While unlikely due to conflicts in staging areas and beach access, but in an effort to envelope the worst-case emissions scenario of concurrent projects, it was assumed that one project or component within each Program element (i.e., Wetland and Water Quality Improvements, Restoration of Shoreline, Upland Habitat and Preserve Expansion, Bicycle and Pedestrian Improvements, Restoration of the Seawall Bulkhead) could have concurrent construction activities. For the purposes of this analysis, the project or component with the highest daily emissions within each Program element was selected to overlap and compared to thresholds, which would be conservative.[4]

In addition, as a realistic-case scenario, it was assumed that one project or component within each Program element (i.e., Wetland and Water Quality Improvements, Restoration of Shoreline, Bicycle and Pedestrian Improvements, Restoration of the Seawall Bulkhead) could have overlapping construction activities. Upland Habitat and Preserve Expansion Element components are not anticipated to overlap with Wetland and Water Quality Improvements Element components because of their proximity and coordination of staging area access, haul road access, and the City Annual Beach Area Construction Restriction which limits construction work during summer months (from Memorial Day to Labor Day) at public beach areas, and thus this element is not included in this

[4] The worst-case scenario of concurrent individual projects includes the following components: North Fiesta Island Wetland Restoration; Vacation Island NW Restoration of Shoreline; Fiesta Island Sites Upland Habitat and Preserve Expansion; Ocean Beach Bike Path; and Access Improvements as part of the Restoration of the Seawall Bulkhead Element.

scenario.[5] For the purposes of this analysis, the project or component with the highest daily emissions within each Program element was selected to overlap and compare to thresholds, which would still be conservative.

Emissions from the construction phase of the 20 separate construction project areas of the Program were estimated using the California Emissions Estimator Model (CalEEMod) Version 2022.1 (CAPCOA 2022). In addition, a spreadsheet model was used to calculate emissions associated with tugboats and support vessels for waterside construction for certain projects within the Wetland and Water Quality Improvements Element and the Restoration of Shoreline Element.

A detailed depiction of the construction schedules—including information regarding phases and equipment used during each phase—is included in Appendix A, Construction Scenario Assumptions Summary Tables, of this report. Project-specific information was assumed in CalEEMod based on information provided in the Preliminary Engineering Reports (PERs) prepared for the Program. Default values provided by CalEEMod were used where detailed Program and project information was not available. The information contained in Appendix A was used as CalEEMod model inputs. The CalEEMod outputs with detailed construction emissions are provided in Appendix B, CalEEMod Output Files and Emissions Calculations, of this report.

For waterside construction, barge operations are proposed for the Cudahy Creek Wetland Restoration, Ventura Cove Park Shoreline Restoration, Bahia Point Shoreline Restoration, Vacation Island SW Shoreline Restoration and Vacation Island NE West of Ingraham Shoreline Restoration. Construction dredge operations are proposed for North Fiesta Island Wetland Restoration. As such, barge and dredge tugboat and support vessel emissions were estimated based on material and equipment transport needs for each area of construction and assumes the tugboat origination from the Port of San Diego. Engine tier, horsepower, hours per day per trip, and other inputs necessary for the emissions calculations associated with tugboats and support vessels, as well as the emissions outputs, are provided in Appendix B, CalEEMod Output Files and Emissions Calculations.

As a conservative emissions modeling approach, construction activities for all projects within each Program element were assumed to commence January 1, 2026 in CalEEMod.[6] In addition, the modeling conservatively assumed that construction phases would occur sequentially for any given project, but construction may need to be put on hold during the busy summer months to avoid restricting pedestrian access to amenities, with completion deferred to the following year.

Construction activities must adhere to SDAPCD Rule 50 (Visible Emissions), Rule 51 (Nuisance), and Rule 55 (Fugitive Dust). Construction of proposed Program elements would be subject to SDAPCD Rule 55, Fugitive Dust Control, which requires that proposed construction include steps to restrict visible emissions of fugitive dust beyond the property line (SDAPCD 2009). Compliance with Rule 55 would limit fugitive dust (PM_{10} and $PM_{2.5}$) that may be generated during proposed grading and construction activities.

For the analysis, it was assumed that heavy construction equipment would be operating five days per week (22 days per month) during construction. Construction worker and vendor trips were based on CalEEMod default assumptions

[5] The realistic-case scenario of concurrent individual projects includes the following components: North Fiesta Island Wetland Restoration; Vacation Island NW Restoration of Shoreline; Ocean Beach Bike Path; and Access Improvements as part of the Restoration of the Seawall Bulkhead Element.

[6] The analysis assumes a construction start date of January 2026, which represents the earliest date construction would initiate. Assuming the earliest start date for construction represents the worst-case scenario for criteria air pollutant emissions because equipment and vehicle emission factors for later years would be slightly less due to more stringent standards for in-use off-road equipment and heavy-duty trucks, as well as fleet turnover replacing older equipment and vehicles in later years.

and rounded up to the nearest whole number to account for whole round trips. Haul truck trips were based on the amount of import and export materials in CalEEMod.

2.4.2.2 Operation

Operations and maintenance activities for the Program include trash removal, weed removal from transitional habitat areas, channel and culvert maintenance, perimeter fence repair, and Sea Level Rise (SLR) adaptive management. Additional activities involve shoreline restoration re-nourishment, beach grooming, control of non-native exotic species, maintenance of bicycle and pedestrian paths, routine maintenance of the seawall bulkhead, and deferred maintenance, and signage maintenance. Maintenance activities could consist of the use of existing equipment that the City's Parks and Recreation Department already owns and operates, including a barge.

Maintenance activities would be minimal and would be similar to those that occur under existing conditions.

2.5 Impact Analysis

Issue AQ-1. Would the proposed project conflict with or obstruct implementation of the applicable air quality plan?

To determine the significance of the project's emissions on the environment, the City's CEQA Significance Determination Thresholds (City of San Diego 2022) were used. Per the City's thresholds, the project would have a significant impact on air quality if the project would conflict with or obstruct implementation of the applicable air quality plan.

As mentioned in Section 2.2.3, Local Regulations, SDAPCD and SANDAG are responsible for developing and implementing the clean air plans for attainment and maintenance of the NAAQS and CAAQS in the SDAB—specifically, the SIP and RAQS.[7] The federal O_3 maintenance plan, which is part of the SIP, was adopted in 2020. The SIP includes a demonstration that current strategies and tactics will maintain acceptable air quality in the SDAB based on the NAAQS. The RAQS was initially adopted in 1991 and is updated every 3 years (most recently in 2022). The RAQS outlines SDAPCD's plans and control measures designed to attain the CAAQS for O_3. The SIP and RAQS rely on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County and the cities in the County, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population, vehicle trends, and land use plans developed by the County and the cities in the County as part of the development of their General Plans. The 2022 RAQS continues to build upon previous progress to reduce ground-level O_3 and also complements regional actions addressing GHG and climate change.

If a project involves development that is greater than that anticipated in the local plan and SANDAG's growth projections, or if a project involves development that has the potential to exceed numeric thresholds established, the project might be in conflict with the SIP and RAQS and may contribute to a potentially significant cumulative impact on air quality.

The Mission Bay Park Improvement Zone is designated as Park, Open Space, & Recreation in the City's General Plan (City of San Diego 2008). The Program area is located within the boundaries of the MBPMP (City of San Diego

[7] For the purpose of this discussion, the relevant federal air quality plan is the O_3 maintenance plan (SDAPCD 2020a). The RAQS is the applicable plan for purposes of state air quality planning. Both plans reflect growth projections in the SDAB.

2021), which is a Community Planning Area in the City of San Diego. Implementation of the Program would align with the proposed land uses of the Mission Bay Parks Master Plan except for a portion of the area identified as South Shores for which the MBPMP proposes a public amphitheater and promenade. However, the Program proposes these areas to be upland habitat preservation, which is consistent with the existing condition and underlying land use designation of parkland, and which would result in a lower emissions impact than the use of amphitheater and promenade as designated in the MBPMP. The Program is consistent with the current General Plan land use designations and intended uses. Therefore, the Program was anticipated and would not result in an inconsistency or conflict with the General Plan or Community Plan.

SANDAG produces a Regional Growth Forecast, which is important for developing regional plans and strategies mandated by federal and state governments, such as the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), the Program Environmental Impact Report for the RTP/SCS, the Air Quality Management Plan, the Federal Transportation Improvement Program, and the Regional Housing Needs Assessment. The most recent RTP/SCS was adopted in December 2021 (2021 Regional Plan) with a planning horizon of 2016 through 2050 (SANDAG 2021a). The growth forecasts are appended to the RTP/SCS. Appendix F of the 2021 Regional Plan describes the trends in population, housing, and employment. SANDAG's Series 14 Regional Growth Forecast estimated that the City would have a 27.8% increase in jobs from 2016 to 2050, which is an additional 247,848 jobs or approximately 7,289 jobs per year (SANDAG 2021b). The Program involves improvements to existing park areas, and the implementation of the Program would not result in a growth of population or housing, nor would it increase employment above existing conditions. Thus, the Program would be within SANDAG's growth projections.

The project would also comply with all existing and new rules and regulations as they are implemented by SDAPCD, CARB, and/or EPA related to emissions generated during construction and operation.

However, as detailed in Issue AQ-2 below, the Program would have the potential to exceed mass daily emission thresholds during concurrent construction of activities assuming the worst-case emissions scenario prior to mitigation; and therefore, the Program would potentially result in higher emissions than what was anticipated in the SIP and RAQS. While it is anticipated that during Program implementation construction of individual projects or certain concurrent projects would not exceed mass daily emission thresholds and would result in a less than significant impact without mitigation, because this analysis evaluates a worst-case scenario, impacts related to the project's potential to conflict with or obstruct implementation of the applicable air quality plan would be **potentially significant** prior to mitigation.

However, the Program would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations with the incorporation of MM-AQ-1 and MM-AQ-2 (as determined to be necessary). Therefore, this impact is **less than significant with mitigation**.

Issue AQ-2. Would the proposed project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Issue AQ-3. Would the project exceed 100 pounds per day of Particulate Matter (PM) dust?

Air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development, and the SDAPCD develops and implements plans for future attainment of ambient air quality standards. Based on these considerations, project-level thresholds of significance for criteria pollutants are relevant in the

determination of whether a project's individual emissions violate any air quality standard or contribute substantially to an existing or projected air quality violation or have a cumulatively significant impact on air quality.

Construction Emissions

Construction of the proposed Program would result in the temporary addition of pollutants to the local airshed caused by on-site sources (i.e., off-road construction equipment, soil disturbance, and VOC off-gassing) and off-site sources (haul trucks, vendor trucks, worker vehicles, tugboats, and support vessels). Construction emissions can vary substantially day to day, depending on the level of activity, the specific type of operation, and for dust, the prevailing weather conditions. Therefore, such emission levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

As discussed in Section 2.4.2.1, Construction, criteria air pollutant emissions associated with construction activities were quantified using CalEEMod and a spreadsheet model. Default values provided by CalEEMod were used where detailed Program and project information was not available. A detailed depiction of the construction schedule—including information regarding phasing, equipment used during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Appendix A. The CalEEMod outputs with detailed construction emissions, as well as the emissions associated with tugboats and support vessels, are provided in Appendix B, CalEEMod Output Files and Emissions Calculations.

Development of the proposed Program and its components would generate air pollutant emissions from entrained dust, off-road equipment, vehicles, tugboats and vessels, asphalt pavement application, and architectural coatings. Entrained dust results from the exposure of earth surfaces to wind from the direct disturbance and movement of soil, resulting in PM_{10} and $PM_{2.5}$ emissions. As described previously, fugitive dust would be limited through compliance with SDAPCD Rule 55, which requires the restriction of visible emissions of fugitive dust beyond the property line.

Table 5 shows the estimated maximum daily unmitigated construction emissions generated during implementation of all projects within each Program element. Emissions represent the maximum for summer and winter. Complete details of the emissions calculations are provided in Appendix B.

Table 5. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions by Project - Unmitigated

Program Element Projects	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Wetland and Water Quality Improvements Element[a]						
North Fiesta Island	12.84	131.24	126.94	0.71	43.87	21.82
Tecolote Creek and Fiesta Island Causeway	6.25	56.85	59.41	0.11	35.89	19.16
Cudahy Creek	12.61	124.83	123.14	0.69	43.34	21.68
Maximum	**12.84**	**131.24**	**126.94**	**0.71**	**43.87**	**21.82**
Restoration of Shoreline Element						
Vacation Island NW	1.97	62.97	30.03	0.28	18.46	7.16
Vacation Island NE – Ski Beach	1.04	24.93	11.79	0.12	0.37	3.75

Table 5. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions by Project - Unmitigated

Program Element Projects	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Vacation Island NE – W of Ingraham	4.88	60.38	58.24	0.69	8.09	4.82
Vacation Island SW	4.88	60.38	58.24	0.70	8.09	4.82
Ventura Cove Park	4.88	62.13	58.27	0.72	8.10	4.83
Crown Point	2.11	18.65	19.31	0.04	7.55	4.16
West Sail Bay	2.34	29.50	22.41	0.08	16.22	8.16
Bonita Cove	1.44	12.88	13.50	0.05	7.11	3.80
Bahia Point	3.92	50.55	46.10	0.56	7.96	4.59
Maximum	**4.88**	**62.97**	**58.27**	**0.72**	**18.46**	**8.16**
Upland Habitat and Preserve Expansion Element						
Fiesta Island Sites[b]	3.07	63.35	35.15	0.28	19.74	7.81
Sea World Drive/San Diego River Sites[c]	1.96	23.06	16.82	0.06	15.28	7.83
Maximum	**3.07**	**63.35**	**35.15**	**0.28**	**19.74**	**7.83**
Bicycle and Pedestrian Improvements Element						
Rose Creek Bike Path	1.38	15.91	12.96	0.04	7.01	3.75
Fiesta Island Causeway Path	1.04	9.39	9.23	0.02	7.01	3.75
Ocean Beach Bike Path	1.48	21.73	15.14	0.07	12.00	3.75
Fiesta Island Causeway Path	1.33	12.19	13.19	0.02	7.01	3.75
Maximum	**1.48**	**21.73**	**15.14**	**0.07**	**12.00**	**3.75**
Restoration of Seawall Bulkhead Element						
Seawall Construction (Replacement Segments A and B; New Segment C)	1.36	14.28	12.35	0.03	7.03	3.76
Access Improvements (Stairs; ADA Ramps; Driveway)	2.43	21.76	20.59	0.04	7.03	3.76
Maximum	**2.43**	**21.76**	**20.59**	**0.04**	**7.03**	**3.76**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; CalEEMod = California Emissions Estimator Model.
See Appendix B for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod.

[a] Of the Wetland and Water Quality Element components, it is assumed that the North Fiesta Island component would be implemented before the other two wetland components and would not be constructed concurrently with the Tecolote Creek or Cudahy Creek components. The material from North Fiesta Island's stockpiles would be necessary for restoring the two other proposed wetland sites, Tecolote Creek and Cudahy component wetlands, when implementation of restoration projects is initiated.

[b] The Fiesta Island Sites include Site 1 (South), Site 3 (Near Youth Camping Facility), Site 4 (North Central), and Site 5 (Least Tern Preserve). The modeling assumes these sites would not have overlapping construction because of their proximity and coordination of staging area access, haul road access, and the City Annual Beach Area Construction Restriction. The emissions shown depict the maximum daily construction emissions for any individual one of these sites.

[c] The Sea World Drive/San Diego River Sites include Site 1a (Cloverfield Least Tern Preserve), Site 3c (Triangle Restoration Area), and Site 4d (South Shores). The modeling assumes these sites would not have overlapping construction because of their proximity and coordination of staging area access, haul road access, and the City Annual Beach Area Construction Restriction. The emissions shown depict the maximum daily construction emissions for any individual one of these sites.

As shown in Table 5, the maximum daily construction emissions for any individual project within any Element would not exceed the City's daily thresholds of 137 pounds of VOC, 250 pounds of NO_x, 550 pounds of CO, 250 pounds of SO_x, 100 pounds of PM_{10}, and 67 pounds of $PM_{2.5}$.

As discussed in Section 2.4.2.1, Construction, as a worst-case scenario, it is anticipated that the maximum number of project construction activities that would be implemented concurrently (i.e., within the same day) is one project from each Program Element (i.e., 5 projects). For this conservative scenario, the projects with the highest NO_x and PM_{10} emissions were chosen from each Program Element. Table 6 presents the estimated maximum unmitigated daily construction emissions generated during implementation of the 5 most intensive[8] concurrent projects and compares estimated total daily emissions to the City thresholds.

Table 6. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Worst-Case Scenario from Concurrent Project Implementation - Unmitigated

Program Element Projects	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Wetland and Water Quality Improvements Element						
North Fiesta Island	12.84	131.24	126.94	0.71	43.87	21.82
Restoration of Shoreline Element						
Vacation Island NW	1.97	62.97	30.03	0.28	18.46	7.16
Upland Habitat and Preserve Expansion Element						
Fiesta Island Sites	3.07	63.35	35.15	0.28	19.74	7.81
Bicycle and Pedestrian Improvements Element						
Ocean Beach Bike Path	1.48	21.73	15.14	0.07	12.00	3.75
Restoration of Seawall Bulkhead Element						
Access Improvements	2.43	21.76	20.59	0.04	7.03	3.76
Maximum Daily Emissions	**21.79**	**301.05**	**227.85**	**1.38**	**101.10**	**44.30**
City Threshold	*137*	*250*	*550*	*250*	*100*	*67*
Threshold Exceeded?	**No**	**Yes**	**No**	**No**	**Yes**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; CalEEMod = California Emissions Estimator Model.
See Appendix B for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod.

As shown in Table 6, estimated maximum daily emissions from the worst-case scenario from concurrent project implementation would not exceed the City construction thresholds for VOCs, CO, SO_x, or $PM_{2.5}$. However, maximum daily emissions would exceed the City construction thresholds for NO_x and PM_{10}.

8 For the purpose of this analysis, the projects considered the "most intensive" are the projects with the highest NO_X and PM_{10} emissions because these pollutants are closest to the SDAPCD threshold.

As discussed in Section 2.4.2.1, Construction, as a realistic-case and conservative scenario, it is anticipated that the number of project construction activities that would be implemented concurrently (i.e., within the same day) is one project from each Program element, except for the Upland Habitat and Preserve Expansion Element (i.e., 4 projects). Upland Habitat and Preserve Expansion Element Fiesta Island Sites components would not overlap with the Wetland and Water Quality Improvements Element North Fiesta Island component because of their proximity and coordination of staging area access, haul road access, and the City Annual Beach Area Construction Restriction, this element is not included in this scenario. For this scenario, the projects with the highest NO_x and PM_{10} emissions were chosen from each Program element.

Table 7 presents the estimated maximum unmitigated daily construction emissions generated during implementation of the 4 most-intensive concurrent projects (realistic-case scenario) and compares estimated total daily emissions to the City screening-level thresholds.

Table 7. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Realistic-Case Scenario from Concurrent Project Implementation - Unmitigated

Program Element Projects	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Wetland and Water Quality Improvements Element						
North Fiesta Island	12.84	131.24	126.94	0.71	43.87	21.82
Restoration of Shoreline Element						
Vacation Island NW	1.97	62.97	30.03	0.28	18.46	7.16
Bicycle and Pedestrian Improvements Element						
Ocean Beach Bike Path	1.48	21.73	15.14	0.07	12.00	3.75
Restoration of Seawall Bulkhead Element						
Access Improvements	2.43	21.76	20.59	0.04	7.03	3.76
Maximum Daily Emissions	**18.72**	**237.70**	**192.70**	**1.10**	**81.36**	**37.49**
City Threshold	*137*	*250*	*550*	*250*	*100*	*67*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; CalEEMod = California Emissions Estimator Model.
See Appendix B for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod.

As shown in Table 7, estimated maximum daily emissions from the realistic-case scenario from concurrent project implementation would not exceed the City construction thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$ and would not require mitigation.

However, as discussed previously, assuming the worst-case scenario from concurrent project implementation, emissions of NO_x and PM_{10} would be above City thresholds prior to mitigation.

Program construction activities could take place at multiple locations concurrently. Air pollutant emissions would vary day-to-day as a result of how many construction activities are occurring at once. While the realistic-case scenario demonstrates that a certain combination of projects or components may result in emissions below City

thresholds for all criteria air pollutants, other combinations of projects, including the worst-case scenario, could result in emissions that exceed the City thresholds without mitigation. Construction of an individual project or component would not exceed any thresholds and would be **less than significant**. As shown in Table 6, maximum daily air pollutant emissions would exceed the City's NO_x and PM_{10} thresholds if the most-intensive project of each Program element occurred concurrently.[9] The combined emissions of the 5 concurrent projects, which represent the maximum daily construction scenario, exceed the City significance thresholds for NO_x and PM_{10} prior to implementation of mitigation. Should this scenario occur, or should other projects occur concurrently, significant impacts related to NO_x and PM_{10} emissions could be further intensified; therefore, this impact would be **potentially significant** absent mitigation.

Mitigation Measures

To reduce the potential for criteria air pollutants, specifically NO_x and PM_{10} emissions as a result of construction of multiple Program elements concurrently, the applicant shall implement the following mitigation measures (MMs):

MM-AQ-1: Construction Off-road Equipment Exhaust Minimization. Prior to the issuance of any construction or development permits or any construction contracts, the City of San Diego (City) Engineering & Capital Projects Department (ECP) or its designee shall ensure that all 50-horsepower or greater diesel-powered off-road construction equipment are powered with California Air Resources Board (CARB)-certified Tier 4 Final engines or better.

An exemption from this requirement may be granted by the City ECP if (1) the City ECP documents equipment with Tier 4 Final engines are not reasonably available, and (2) the required corresponding reductions in criteria air pollutant emissions can be achieved for the project from other combinations of construction equipment. Before an exemption may be granted, the City ECP shall (1) demonstrate that at least three construction fleet owners/operators in San Diego County were contacted and that those owners/operators confirmed Tier 4 Final equipment could not be located within San Diego County during the desired construction schedule, and (2) the City ECP shall provide evidence to Mitigation Monitoring Coordination (MMC) that the proposed replacement equipment has been evaluated using California Emissions Estimator Model (CalEEMod) or other industry standard emission estimation method, and documentation has been provided to MMC to confirm that necessary project-generated emissions reductions are achieved.

MM-AQ-2: Construction Dust Control. The City of San Diego Engineering & Capital Projects Department (ECP) or its designee shall provide evidence to Mitigation Monitoring Coordination (MMC) that construction dust control practices beyond the requirements of San Diego Air Pollution Control District (SDAPCD) Rule 55, Fugitive Dust Control, would be employed to reduce fugitive dust emissions, including watering of the active sites three (3) times per day depending on weather conditions.

Level of Significance After Mitigation

Table 8 presents the estimated maximum mitigated daily construction emissions generated during construction of the worst-case scenario of concurrent projects determined to represent the maximum daily capacity. Estimated mitigated emissions presented in Table 8 assume implementation of MM-AQ-1 and MM-AQ-2, which assumes that

[9] This reflects a conservative estimate based on the largest projects from each Program element.

all off-road equipment with engines rated at 50 horsepower or greater will meet Tier 4 Final emission standards, and construction dust control practices would be employed to reduce fugitive dust emissions, including watering of the active sites 3 times per day.

Table 8. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions – Worst-Case Scenario from Concurrent Project Implementation - Mitigated

Program Element Projects	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Wetland and Water Quality Improvements Element						
North Fiesta Island	5.53	60.96	146.24	0.71	17.49	8.42
Restoration of Shoreline Element						
Vacation Island NW	1.11	54.41	29.82	0.28	13.93	4.74
Upland Habitat and Preserve Expansion Element						
Fiesta Island Sites	1.30	46.36	42.72	0.28	13.59	4.52
Bicycle and Pedestrian Improvements Element						
Ocean Beach Bike Path	0.75	13.73	14.72	0.07	11.63	2.15
Restoration of Seawall Bulkhead Element						
Access Improvements	0.90	7.91	19.94	0.04	2.66	1.37
Maximum Daily Emissions	**9.59**	**183.37**	**253.44**	**1.38**	**59.29**	**21.19**
City Threshold	*137*	*250*	*550*	*250*	*100*	*67*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; CalEEMod = California Emissions Estimator Model.
See Appendix B for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod.
The values shown include the reduced emissions with incorporation of MM-AQ-1 and MM-AQ-2.

As shown in Table 8, after implementation of MM-AQ-1 and MM-AQ-2, estimated maximum daily worst-case construction emissions would not exceed the City construction thresholds for VOCs, NO_x, CO, SO_x, PM_{10}, or $PM_{2.5}$. Thus, impacts would be **less than significant with mitigation** incorporated.

Additionally, a less intensive and more realistic combination of projects would normally represent NO_x and PM_{10} emissions far below the City screening thresholds, as shown in the realistic-case scenario above in Table 6. The Program would also include projects in various locations around the Mission Bay Park Improvement Zone and would not represent a localized source of significant emissions. As such, the incorporation of MM-AQ-1 and MM-AQ-2 would ensure that any combination of concurrent construction projects would be below the City's thresholds of significance.

Table 9 presents the criteria air pollutant emissions of all Program projects with incorporation of MM-AQ-1 and MM-AQ-2.

Table 9. Estimated Maximum Daily Construction Criteria Air Pollutant Emissions by Project - Mitigated

Program Element Projects	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
	Pounds per day					
Wetland and Water Quality Improvements Element						
North Fiesta Island	5.53	60.96	146.24	0.71	17.48	8.41
Tecolote Creek and Fiesta Island Causeway	1.56	13.08	59.72	0.11	13.84	7.04
Cudahy Creek	5.30	54.54	142.24	0.69	12.08	6.02
Restoration of Shoreline Element						
Vacation Island NW	1.11	54.41	29.82	0.28	13.93	4.74
Vacation Island NE – Ski Beach	0.53	24.04	11.91	0.12	5.00	1.51
Vacation Island NE – W of Ingraham	4.36	55.60	58.03	0.69	3.72	2.43
Vacation Island SW	4.61	56.64	58.03	0.70	3.72	2.43
Ventura Cove Park	4.49	62.56	58.06	0.72	3.73	2.44
Crown Point	0.74	4.82	24.26	0.04	2.95	1.56
West Sail Bay	0.70	13.27	21.88	0.08	7.49	3.40
Bonita Cove	0.65	9.68	13.29	0.05	2.75	1.40
Bahia Point	3.36	49.66	45.89	0.56	3.59	2.20
Upland Habitat and Preserve Expansion Element						
Fiesta Island Sites	1.30	46.36	42.72	0.28	13.59	4.52
Sea World Drive/San Diego River Sites	0.40	7.46	16.17	0.06	6.58	3.10
Bicycle and Pedestrian Improvements Element						
Rose Creek Bike Path	0.83	8.23	12.63	0.04	5.01	1.36
Fiesta Island Causeway Path	0.60	4.42	13.10	0.02	2.64	1.36
Ocean Beach Bike Path	0.75	13.73	14.72	0.07	11.63	2.15
Fiesta Island Causeway Path	0.60	4.42	13.10	0.02	2.64	1.36
Restoration of Seawall Bulkhead Element						
Seawall Construction (Replacement Segments A and B; New Segment C)	0.75	6.61	12.03	0.03	3.18	1.37
Access Improvements (Stairs, ADA Ramps, Driveway)	0.90	7.91	19.94	0.04	2.66	1.37

Notes: VOC = volatile organic compound; NO_x = oxides of nitrogen; CO = carbon monoxide; SO_x = sulfur oxides; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; CalEEMod = California Emissions Estimator Model.
See Appendix B for complete results.
The values shown are the maximum summer or winter daily emissions results from CalEEMod.
The values shown include the reduced emissions with incorporation of MM-AQ-1 and MM-AQ-2.

Operational Emissions

The Program involves improvements to existing park areas, and as described in Section 2.4.2.2, Operation, operations and maintenance activities would be minimal and would be similar to those that occur under existing conditions. In addition, the emissions associated with operation would be much less compared to construction. Because the Program would not result in any new long-term operational activities, there would be no potential air quality impacts associated with operational air pollutant emissions. Impacts would be **less than significant**.

Cumulative Analysis

The SDAB has been designated as a federal nonattainment area for O_3 and a state nonattainment area for O_3, PM_{10}, and $PM_{2.5}$. The poor air quality in the SDAB is the result of cumulative emissions from motor vehicles, off-road equipment, commercial and industrial facilities, and other emission sources. Projects that emit these pollutants or their precursors (i.e., VOCs and NO_x for O_3) potentially contribute to poor air quality. In analyzing cumulative impacts from a project, the analysis must specifically evaluate the project's contribution to the cumulative increase in pollutants for which the SDAB is designated as nonattainment for the CAAQS and NAAQS. If the project does not exceed thresholds and is determined to have less-than-significant project-specific impacts, it may still contribute to a significant cumulative impact on air quality if the emissions from the project, in combination with the emissions from other proposed or reasonably foreseeable future projects, are in excess of established thresholds. However, a project would only be considered to have a significant cumulative impact if the project's contribution accounts for a significant proportion of the cumulative total emissions (i.e., it represents a "cumulatively considerable contribution" to the cumulative air quality impact).

Regarding short-term construction impacts, the City thresholds of significance are used to determine whether the project may have a short-term cumulative impact. While it is anticipated that during Program implementation construction of individual projects or certain concurrent projects would not exceed mass daily emission thresholds and would result in a less than significant impact without mitigation, because this analysis evaluates a worst-case scenario, impacts related to the project's potential to result in a short-term cumulatively considerable contribution to pollutant emissions during construction would be potentially significant prior to mitigation. As shown in Table 8, the worst-case scenario of concurrent project implementation would not exceed any City threshold during construction with incorporation of MM-AQ-1 and MM-AQ-2.

Additionally, for the SDAB, the RAQS serves as the long-term regional air quality planning document for the purpose of assessing cumulative operational emissions in the basin to ensure the SDAB continues to make progress toward NAAQS- and CAAQS-attainment status. As such, cumulative projects located in the San Diego region would have the potential to result in a cumulative impact to air quality if, in combination, they would conflict with or obstruct implementation of the RAQS. Similarly, individual projects that are inconsistent with the regional planning documents upon which the RAQS is based would have the potential to result in cumulative operational impacts if they represent development and population increases beyond regional projections.

The SIP and RAQS rely on SANDAG growth projections based on population, vehicle trends, and land use plans developed by the cities and the County as part of the development of their general plans. Therefore, projects that propose development that is consistent with the growth anticipated by local plans would be consistent with the SIP and RAQS and would not be considered to result in cumulatively considerable impacts from operational emissions. The Program involves improvements to existing park areas, and the implementation of the Program would not result in a growth of population or housing, nor would it increase employment above existing conditions. As stated

previously, the Program would not result in significant regional growth that is not accounted for within the RAQS. As a result, the Program would not result in a cumulatively considerable contribution to pollutant emissions.

Therefore, cumulative impacts would be **less than significant with mitigation** during construction, and **less than significant** during operation.

Health Impacts of Other Criteria Air Pollutants

The following discussion is provided to connect the project's potential air quality impacts to potential health consequences. The potential health effects associated with project-generated criteria air pollutant emissions are included as additional information and do not require a separate significance conclusion.

Construction and operation of the Program would not result in emissions that exceed the SDAPCD's emission thresholds for any criteria air pollutants with incorporation of MM-AQ-1 and MM-AQ-2. Regarding VOCs, some VOCs are associated with motor vehicles and construction equipment, while others are associated with architectural coatings, the emissions of which would not result in the exceedances of the SDAPCD's thresholds. Generally, the VOCs in architectural coatings are of relatively low toxicity. Additionally, SDAPCD Rule 67.0.1 restricts the VOC content of coatings for construction applications.

In addition, VOCs and NO_x are precursors to O_3, for which the SDAB is designated as nonattainment with respect to the NAAQS and CAAQS (the SDAB is designated by the EPA as an attainment area for the 1-hour O_3 NAAQS standard and 1997 8-hour NAAQS standard). The health effects associated with O_3, as discussed in Section 2.1.2, Pollutants and Effects, are generally associated with reduced lung function. The contribution of VOCs and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SDAB due to O_3 precursor emissions tend to be found downwind from the source location to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the VOC emissions would occur, because exceedances of the O_3 ambient air quality standards tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative because of the lack of quantitative methods to assess this impact. Because construction of the Program would not result in O_3 precursor emissions (i.e., VOCs or NO_x) that would exceed the SCAQMD thresholds with incorporation of MM-AQ-1 for the worst-case scenario of concurrent project implementation, as shown in Table 8, the Program is not anticipated to substantially contribute to regional O_3 concentrations and their associated health impacts.

Regarding NO_2, according to the construction emissions analysis, construction of the proposed project would not contribute to exceedances of the NAAQS and CAAQS for NO_2 with incorporation of MM-AQ-1. As described in Section 2.1.2, health impacts from exposure to NO_2 and NO_x are associated with respiratory irritation, which may be experienced by nearby receptors during the periods of heaviest use of off-road construction equipment. However, these operations would be relatively short-term. Additionally, off-road construction equipment would operate at various portions of the Improvement Zone and would not be concentrated in one portion of the Improvement Zone at any one time. Construction of the Program would not require any stationary emission sources that would create substantial, localized NO_x impacts. As shown in Table 3, the existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards. Thus, it is not expected that the Program's operational NO_x emissions would result in exceedances of the NO_2 standards or contribute to the associated health effects.

Health effects associated with CO include chest pain in patients with heart disease, headache, light-headedness, and reduced mental alertness (CARB 2025a). CO tends to be a localized impact associated with congested intersections. CO hotspots as discussed in Issue AQ-4 below has a less-than-significant impact. Thus, the Program's CO emissions would not contribute to the health effects associated with this pollutant.

Health effects associated with PM_{10} and $PM_{2.5}$ include premature death and hospitalization, primarily for worsening of respiratory disease. As with O_3 and NO_x, and as shown in Table 8, the project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed SCAQMD's thresholds with incorporation of MM-AQ-2. Accordingly, the Program's PM_{10} and $PM_{2.5}$ emissions are not expected to cause an increase in related health effects for these pollutants.

Issue AQ-4. Would the proposed project expose sensitive receptors to substantial pollutant concentrations?

Air quality varies as a direct function of the amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Air quality problems arise when the rate of pollutant emissions exceeds the rate of dispersion. Reduced visibility, eye irritation, and adverse health impacts upon those persons termed "sensitive receptors" are the most serious hazards of existing air quality conditions in the area. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution, as identified by the City (City of San Diego 2022), include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. As such, sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term healthcare facilities, rehabilitation centers, convalescent centers, and retirement homes. The Program involves construction activities at a number of existing sites throughout Mission Bay Park, and sensitive receptors include residences adjacent to multiple Program elements.

Toxic Air Contaminants

As described in Section 1.2, Project Description, the Program involves construction activities at a number of existing sites throughout Mission Bay Park and sensitive receptors include residences adjacent to multiple Program elements.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. SDAPCD recommends an incremental cancer risk threshold of 10 in 1 million. "Incremental cancer risk" is the net increased likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 9-, 30-, and 70-year exposure period will contract cancer based on the use of standard Office of Environmental Health Hazard Assessment risk-assessment methodology (OEHHA 2015). In addition, some TACs have noncarcinogenic effects. SDAPCD recommends a Hazard Index of 1 or more for acute (short-term) and chronic (long-term) noncarcinogenic effects. The greatest potential for TAC emissions during construction would be diesel particulate matter (DPM) emissions from heavy equipment operations and use of heavy-duty trucks. DPM emissions may cause carcinogenic and/or chronic health effects.

State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and is aimed at TACs that are a problem in California. The state has formally identified more than 200 substances as TACs, including the federal hazardous air pollutants (HAPs), and has adopted appropriate control measures for sources of these TACs. The following measures are required by state law to reduce DPM emissions:

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-Use Off-Road Diesel Vehicles (13 CCR 2449), the purpose of which is to reduce DPM and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13, Section 2485 of the California Code of Regulations (CCR), limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to 5 minutes; electric auxiliary power units should be used whenever possible.

According to the Office of Environmental Health Hazard Assessment, health risk assessments (which determine the exposure of sensitive receptors to toxic emissions) should be based on a 30-year exposure period for the maximally exposed individual resident; however, such assessments should also be limited to the period/duration of activities associated with the project. The duration of the proposed construction activities would constitute a small percentage of the total 30-year exposure period. The total construction period for the Program is unknown at this time, but the estimated construction durations of each Program element are provided in Appendix A, and of relatively short duration. After construction, all construction-related TAC emissions would cease. In addition, because of the programmatic nature of the Program elements, emissions would not be concentrated in any one work area for the entire construction duration, but rather spread out over the entire Mission Bay Park Improvement Zone, minimizing potential impacts. Due to this relatively short period of exposure and minimal particulate emissions on site, TACs generated during construction would not be expected to result in concentrations causing significant health risks.

The Program involves improvements to existing park areas with no change in park operations compared to the existing conditions. No residual TAC emissions and corresponding cancer health risk are anticipated after construction, and no long-term sources of TAC emissions are anticipated during operation of the project. CARB has published the Air Quality and Land Use Handbook: A Community Health Perspective, which identifies certain types of facilities or sources that may emit substantial quantities of TACs and therefore could conflict with sensitive land uses, such as “schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities” (CARB 2005). The Air Quality and Land Use Handbook is a guide for siting of new sensitive land uses, and CARB recommends that sensitive receptors not be located downwind of or close to such sources to avoid potential health hazards. The enumerated facilities or sources include the following: high-traffic freeways and roads, distribution centers, railyards, ports, refineries, chrome plating facilities, dry cleaners, and large gas-dispensing facilities. The Program would not include any of the above-listed land uses associated with generation of TAC emissions.

Furthermore, Division 7, Off-Site Development Impact Regulations, Section 142.0710, states the following: “Air contaminants including smoke, charred paper, dust, soot, grime, carbon, noxious acids, toxic fumes, gases, odors, and particulate matter, or any emissions that endanger human health, cause damage to vegetation or property, or cause soiling shall not be permitted to emanate beyond the boundaries of the premises upon which the use emitting the contaminants is located. The Program would not result in the generation of smoke, charred paper, soot, grime, carbon, noxious acids, or toxic fumes. As demonstrated in Table 8, criteria air pollutants, including particulate matter, during construction of the project would be below City thresholds of significance with incorporation of MM-AQ-1 and MM-AQ-2 for the worst-case scenario of concurrent project implementation, and therefore would not represent a release of substantial quantities of air contaminants beyond the project boundaries.

For the reasons previously described, the Program would not result in substantial exposure of sensitive receptors to TACs in the vicinity of the project site during construction or operation, and impacts would be **less than significant**.

Health Impacts of Carbon Monoxide

Mobile-source impacts occur on two basic scales of motion. Regionally, project-related travel would add to regional trip generation and increase the VMT within the local airshed and the SDAB. Locally, project-related traffic would be added to the City's roadway system. If such traffic occurs during periods of poor atmospheric ventilation, consists of a large number of vehicles "cold-started" and operating at pollution-inefficient speeds, and operates on roadways already crowded with non-project traffic, there is a potential for the formation of microscale CO "hotspots" in the area immediately around points of congested traffic. Because of continued improvement in mobile emissions at a rate faster than the rate of vehicle growth and/or congestion, the potential for CO hotspots in the SDAB is steadily decreasing.

During construction, the project would result in CO emissions from construction worker vehicles, haul trucks, and off-road equipment. CCR Title 40, Section 93.123(c)(5), Procedures for Determining Localized CO, PM_{10}, and $PM_{2.5}$ Concentrations (hotspot analysis), states that "CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities, which cause temporary increases in emissions. Temporary increases are defined as those that occur only during the construction phase and last 5 years or less at any individual site." Since construction activities would be temporary, a project-level construction hotspot analysis would not be required.

The City's CO hotspots screening guidance was followed to determine whether the project would require a site-specific hotspot analysis (City of San Diego 2022). CO hotspot screening guidance was followed to determine if the project would require a site-specific hotspot analysis. The City recommends that a quantitative analysis of CO hotspots be performed if a proposed development causes a six-lane or four-lane roadway to deteriorate to a LOS E or worse, causes a six-lane roadway to drop to LOS F, or if a proposed development is within 400 feet of a sensitive receptor and the LOS is D or worse. The Program involves improvements to existing park areas with no change in park operations compared to the existing conditions. During operations, maintenance activities would be minimal and would be similar to those that occur under existing conditions. Therefore, the Program operations would not exceed the City's screening guidance for CO hotspots. Therefore, a CO hotspot analysis is not needed, and the Program would have a **less than significant impact**.

Issue AQ-5. Would the proposed project create objectionable odors affecting a substantial number of people?

Section 41700 of the California Health and Safety Code and SDAPCD Rule 51 (Public Nuisance), prohibit emissions from any source whatsoever in such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to the public health or damage to property. Projects required to obtain permits from SDAPCD are evaluated by SDAPCD staff for potential odor nuisance, and conditions may be applied (or control equipment required) where necessary to prevent occurrence of public nuisance.

SDAPCD Rule 51 (Public Nuisance) also prohibits emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of any person. A project that proposes a use that would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of off-site receptors. Odor issues are very subjective by the nature of odors themselves and due to the fact that their measurements are difficult to quantify. As a result, this guideline is qualitative and will focus on the existing and potential surrounding uses and location of sensitive receptors.

The occurrence and severity of potential odor impacts depends on numerous factors: the nature, frequency, and intensity of the source; the wind speeds and direction; and the sensitivity of receiving location each contribute to

the intensity of the impact. Although offensive odors seldom cause physical harm, they can be annoying, cause distress among the public, and generate citizen complaints.

Construction

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the Program elements. Potential odors produced during proposed construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment, architectural coatings, and asphalt pavement application. Such odors would disperse rapidly from the project site and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, impacts associated with odors during construction would be **less than significant.**

Operation

Land uses and industrial operations associated with odor complaints include agricultural uses, wastewater treatment plants, food-processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding (SCAQMD 1993). The Program does not propose any uses associated with odor complaints. Therefore, Program operations would result in an odor impact that would be **less than significant**.

Issue AQ-6. Would the project result in substantial alteration of air movement in the area of the project?

The Mission Bay Park Improvement Zone encompasses the 4,235-acre Mission Bay Park along with additional areas in all directions. The Improvement Zone is surrounded by existing residential developments, open space, parkland, and the ocean. Given the project's location within an already developed area, the improvements associated with the Program, improvements to existing park areas that would not substantially change topography, would not substantially alter air movement in the area as discussed below.

This issue of alteration of air movement is usually associated with placement of tall structures in proximity that can result in tunneling of air movement in an area that was previously unobstructed. This typically occurs in developed urban areas with tall buildings that create a wind tunnel effect. In the case of the Program, the improvements would not include tall structures in proximity resulting in tunneling of air movement. The nearby open space, parkland, and ocean, along with the surrounding residential developments, help to maintain natural airflow patterns.

In summary, the Program would not significantly affect air movement in the area, as it does not propose any buildings or structures that would contribute to the natural air circulation in the region. Therefore, the Program would result in an impact that would be **less than significant**.

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Appendix A

Construction Scenario Assumptions Summary Tables

Wetland and Water Quality Improvements Element

North Fiesta Island Component

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 14 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization: 12 days
- Earthwork: 90 days
- Irrigation: 23 days
- Planting: 25 days
- Bridge Construction: 125 days
- Demobilization: 12 days

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed earthwork would include approximately 315,000 cubic yards (cy) of excavated material. The North Fiesta Island excavated material would be stockpiled in three different areas on the Island. The haul truck trip length was assumed to be 2 miles during the Earthwork phase, and CalEEMod default values were used for all other trip characteristics.

The construction equipment mix used for estimating the construction emissions of the North Fiesta Island Component is shown in Table 1.

Table 1. North Fiesta Island Component Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization	6	2	0	Rubber Tired Dozers	1	8
				Tractor/Loader/Backhoe	1	8
Earthwork	48	4	438	Excavators	4	8
				Rubber Tired Loaders	5	8
				Rubber Tired Dozers	5	8
				Scrapers	5	8
Irrigation	4	2	0	N/A	N/A	N/A
Planting	6	2	0	Tractor/Loader/Backhoe	1	8
				Amphibious Excavator	1	8
Bridge Construction	14	4	4	Crane	1	8
				Bore/Drill Rigs	1	8
				Dredge	1	11
				Tug	1	11
				Support Vessel	1	2.75
				Pumps	1	8
				Excavators	1	8
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Tecolote Creek and Fiesta Island Causeway Component

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 2 years. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization: 12 days
- Earthwork: 100 days
- Irrigation: 24 days
- Planting: 24 days
- Bridge Construction: 365 days
- Demobilization: 12 days

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed earthwork would include approximately 169,220 cy of imported material from the North Fiesta Island stockpiles. The haul truck trip length was assumed to be 2 miles during the Earthwork phase, and CalEEMod default values were used for all other trip lengths.

The construction equipment mix used for estimating the construction emissions of the Tecolote Creek and Fiesta Island Component is shown in Table 2.

Table 2. Tecolote Creek and Fiesta Island Component Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization	6	2	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Earthwork	36	4	212	Excavators	4	8
				Rubber Tired Loaders	5	8
				Rubber Tired Dozers	5	8
Irrigation	4	2	0	N/A	N/A	N/A
Plantings	6	2	0	Tractor/Loader/Backhoe	1	8
				Amphibious Excavator	1	8
Bridge Construction	10	4	4	Crane	1	8
				Bore/drill rigs	1	8
				Concrete Pumps	1	8

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Excavators	1	8
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Cudahy Creek Component

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 6 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization: 2 weeks
- Import and Rough Grading: 60 days
- Fine Grading: 10 days
- Planting: 20 days
- Demobilization: 2 weeks

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed earthwork would include approximately 169,220 cy of imported material from the North Fiesta Island stockpiles. The haul truck trip length was assumed to be 4 miles during the Import and Rough Grading phase, and CalEEMod default values were used for all other trip lengths.

The construction equipment mix used for estimating the construction emissions of the Cudahy Creek Component is shown in Table 3.

Table 3. Cudahy Creek Component Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization	8	2	0	Rubber Tired Dozers	1	8
				Tractor/Loader/Backhoe	1	8
Import and Rough Grading	48	4	122	Scrapers	5	8
				Excavators	4	8
				Barge	1	11

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Tug	1	11
				Support Vessel	1	2.75
				Front End Loaders	5	8
				Bulldozers	5	8
Fine Grading	14	2		Front End Loaders	2	8
				Graders	1	8
				Bulldozers	2	8
Plantings	4	2	0	Tractor/Loader/Backhoe	1	8
Demobilization	6	0	0	Rubber Tired Dozers	1	8
				Tractor/Loader/Backhoe	1	8

Restoration of Shoreline Element

Vacation Island Northwest (NW)

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 4 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks
- Beach Nourishment: 8 weeks
- Construct Groins: 4 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed beach nourishment would include approximately 197,040 cy of imported sand. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Vacation Island NW project is shown in Table 4.

Table 4. Vacation Island Northwest Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	6	2	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Beach Nourishment	8	4	560	Tractor/Loader/Backhoe	1	8
				Rubber Tired Dozer	1	8
				Excavator	1	8
Construct Groins	4	2	0	Tractor/Loader/Backhoe	1	8
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Vacation Island Northeast (NE)

Ski Beach

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 4 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks
- Cobble Berm: 4 weeks
- Beach Nourishment: 8 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed beach nourishment would include approximately 85,200 cy of imported sand. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Vacation Island SW Ski Beach project is shown in Table 5.

Table 5. Vacation Island Northeast – Ski Beach - Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	6	2	0	Rubber Tired Dozer Tractor/Loader/Backhoe	1 1	8 8
Cobble Berm	6	4	0	Tractor/Loader/Backhoe Long Reach Excavator	1 1	8 8
Beach Nourishment	6	4	244	Tractor/Loader/Backhoe Excavator	1 1	8 8
Demobilization	6	0	0	Rubber Tired Dozer Tractor/Loader/Backhoe	1 1	8 8

West of Ingraham

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 5 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks
- Recover Existing Rip Rap: 4 weeks
- Construction New Revetment: 8 weeks
- Install Oyster Habitat: 2 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed revetment construction would include approximately 374 cy of imported sand. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Vacation Island SW West of Ingraham project is shown in Table 6.

Table 6. Vacation Island Northeast – West of Ingraham - Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	6	2	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Recover Existing Rip Rap	4	2	0	Tractor/Loader/Backhoe	1	8
Construction New Revetment	8	4	4	Skid steer loader	1	8
				Excavator	1	8
				Long Reach Excavator	1	8
Install Oyster Habitat	14	4	0	Tractor/Loader/Backhoe	1	8
				Long Reach Excavator	1	8
				Barge	1	11
				Tug	1	11
				Support Vessel	1	2.75
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Vacation Island Southwest (SW)

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 5 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks
- Recover Existing Rip Rap: 6 weeks
- Construction New Revetment: 12 weeks
- Install Oyster Habitat: 3 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed revetment construction would include approximately 1,260 cy of imported sand. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Vacation Island SW project is shown in Table 7.

Table 7. Vacation Island Southwest Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	6	2	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Recover Existing Rip Rap	6	2	0	Tractor/Loader/Backhoe	1	8
				Long Reach Excavator	1	8
Construction New Revetment	8	4	2	Skid Steer Loader	1	8
				Excavator	1	8
				Long Reach Excavator	1	8
Install Oyster Habitat	14	4	0	Tractor/Loader/Backhoe	1	8
				Barge	1	11
				Tug	1	11
				Support Vessel	1	2.75
				Long Reach Excavator	1	8
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Ventura Cove Park

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 5 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks
- Recover Existing Rip Rap: 4 weeks
- Construction New Revetment: 8 weeks
- Install Oyster Habitat: 2 weeks
- Construct Sidewalk: 3 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

It was assumed that up to 100 truck trips per day would be needed in the Construction New Revetment phase. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Ventura Cove Park project is shown in Table 8.

Table 8. Ventura Cove Park Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	6	4	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Recover Existing Rip Rap	4	2	0	Tractor/Loader/Backhoe	1	8
Construction New Revetment	6	4	100	Skid steer loader	1	8
				Excavator	1	8
Install Oyster Habitat	14	4	0	Tractor/Loader/Backhoe	1	8
				Long Reach Excavator	1	8
				Barge	1	11
				Tug	1	11
				Support Vessel	1	2.75
Construct Sidewalk	18	4	0	Skid steer loader	2	8
				Excavator	2	8
				Cement and Mortar Mixers	1	1
				Concrete/Industrial Saws	1	1
				Pump	1	1
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Crown Point

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 4 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 3 weeks
- Excavation: 2 weeks
- Shoreline Stabilization Construction: 8 weeks
- Backfill: 2 weeks

- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed excavation would result in approximately 1,260 cy of exported material. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Crown Point project is shown in Table 9.

Table 9. Crown Point Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	18	4	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
				Pile Driver	1	8
				Vibratory Hammer	1	8
				Jetting Equipment	1	8
				Cement and Mortar Mixers	1	8
				Pump	1	8
Excavation	4	4	4	Excavator	1	8
Shoreline Stabilization Construction	16	4	4	Tractor/Loader/Backhoe	1	8
				Pile Driver	1	8
				Vibratory Hammer	1	8
				Jetting Equipment	1	8
				Cement and Mortar Mixers	1	8
				Pump	1	8
Backfill	6	4	4	Tractor/Loader/Backhoe	1	8
				Excavator	1	8
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

West Sail Bay

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 9 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks
- Beach Nourishment: 30 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed beach nourishment would include approximately 136,680 cy of imported sand. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the West Sail Bay project is shown in Table 10.

Table 10. West Sail Bay Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	14	4	0	Rubber Tired Dozer	2	8
				Tractor/Loader/Backhoe	1	8
				Excavator	2	8
Beach Nourishment	14	4	106	Tractor/Loader/Backhoe	1	8
				Rubber Tired Dozer	2	8
				Excavator	2	8
Demobilization	14	0	0	Rubber Tired Dozer	2	8
				Tractor/Loader/Backhoe	1	8
				Excavator	2	8

Bonita Cove

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 5 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks
- Demolish Existing Sidewalk: 1 week
- Construct New Sidewalk: 2 weeks
- Cobble Berm: 4 weeks
- Beach Nourishment: 8 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed beach nourishment would include approximately 18,120 cy of imported sand. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Bonita Cove project is shown in Table 11.

Table 11. Bonita Cove Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	8	4	2	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
				Pumps	1	8
Demolish Existing Sidewalk	14	4	2	Concrete/Industrial Saws	1	8
				Rubber Tired Dozer	1	8
				Excavator	2	8
				Tractor/Loader/Backhoe	1	8
Construct New Sidewalk	18	4	0	Skid steer loader	2	8
				Excavator	2	8
				Cement and Mortar Mixers	1	1
				Concrete/Industrial Saws	1	1
				Pump	1	1
Cobble Berm	6	4	0	Tractor/Loader/Backhoe	1	8
				Long Reach Excavator	1	8
Beach Nourishment	4	4	100	Tractor/Loader/Backhoe	1	8
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Bahia Point

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 6 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization/SWPPP/Site Preparation: 2 weeks

- Storm Drain Improvements/Install Pilot Groins: 3 week
- Excavation: 1 weeks
- Cobble Berm: 4 weeks
- Beach Nourishment: 8 weeks
- Construct Vehicle Access Ways: 3 weeks
- Demobilization: 1 week

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed beach nourishment would include approximately 42,335 cy of imported sand. In addition, proposed excavation would result in approximately 4,214 cy of exported material. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Bahia Point project is shown in Table 12.

Table 12. Bahia Point Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization/SWPPP/ Site Preparation	10	6	4	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
				Barge	1	11
				Tug	1	11
				Support Vessel	1	2.75
Storm Drain Improvements / Install Pilot Groins	8	4	10	Tractor/Loader/Backhoe	2	8
				Long Reach Excavator	1	8
Excavation	4	4	106	Excavator	1	8
Cobble Berm	6	4	0	Tractor/Loader/Backhoe	1	8
				Long Reach Excavator	1	8
Beach Nourishment	4	4	122	Tractor/Loader/Backhoe	1	8
Construct Vehicle Access Ways	14	4	0	Skid Steer Loader	1	8
				Excavator	1	8
				Cement and Mortar Mixers	1	1
				Concrete/Industrial Saws	1	1

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Pump	1	1
Demobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Upland Habitat and Preserve Expansion Element

Fiesta Island Sites

For the purposes of modeling, it was assumed that construction of all Fiesta Island Sites would last approximately 2.5 years if done sequentially. It is not assumed that construction would happen concurrently for any of the sites. In addition, the phases listed below within each Site would occur sequentially and are based on the following assumptions (durations are approximate):

Site 1: 6 months

- Clearing and Grubbing/Non-native Eradication: 15 days
- Plantings: 15 days
- Seeding: 6 days
- Watering: 4 months

Site 3: 5 months

- Clearing and Grubbing/Non-native Eradication: 5 days
- Site Grading and Sand Import/Placement: 12 days
- Plantings: 7 days
- Seeding: 3 days
- Watering: 4 months

Site 4: 5 months

- Clearing and Grubbing/Non-native Eradication: 6 days
- Plantings: 15 days
- Seeding: 3 days
- Watering: 4 months

Site 5: 13 months

- Clearing and Grubbing/Non-native Eradication: 11 days

- Site Grading: 44 days
- Concrete and Asphalt Demolition and Disposal: 50 days
- Sand Import/Placement: 96 days
- Plantings: 4 days
- Watering: 4 months

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed sand placement at Site 3 would include approximately 5,760 cy of imported sand. In addition, proposed site grading at Site 5 would result in approximately 175,000 cy of exported material. Proposed sand placement at Site 5 would also include approximately 46,141 cy of imported sand. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Upland Habitat and Preserve Expansion Element Fiesta Island Sites project is shown in Table 13.

Table 13. Fiesta Island Sites Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment Per Day		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Site 1: South						
Clearing and Grubbing/Non-native Eradication	8	8	4	Skid Steer Loader	2	8
				Chipper	1	8
Plantings	4	8	0	Pick-up trucks	4	8
				Mini Excavator	1	8
Seeding	4	8	0	Skid Steer Loader	1	8
Watering	0	6	0	N/A	N/A	N/A
Site 3: Near Youth Camping Facility						
Clearing and Grubbing/Non-native Eradication	8	8	4	Skid Steer Loader	2	8
				Chipper	1	8
Site Grading and Sand Import/Placement	6	10	60	Rubber Tired Dozers	2	8
Plantings	4	8	0	Excavator	1	8
Seeding	4	8	0	Skid Steer Loader	4	8
Watering	0	6	0	N/A	N/A	N/A

Construction Phase	One way Vehicle Trips			Equipment Per Day		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Site 4: North Central						
Clearing and Grubbing/Non-native Eradication	8	8	4	Skid Steer Loader	2	8
				Chipper	1	8
Planting	4	8	0	Excavator	1	8
Seeding	4	8	0	Skid Steer Loader	1	8
Watering	0	6	0	N/A	N/A	N/A
Site 5: Least Tern Preserve						
Clearing and Grubbing/Non-native Eradication	8	8	4	Skid Steer Loader	2	8
				Chipper	1	8
Site Grading	8	10	498	Scraper	2	8
				Rubber Tired Dozers	1	8
Concrete and Asphalt Demo and disposal	6	8	4	Rubber Tired Loader	1	8
			0	Excavator	1	8
Sand Import/Placement	6	10	62	Rubber Tired Dozers	2	8
Plantings	4	8	0	Excavator	1	8
Watering	0	6	0	N/A	N/A	N/A

Sea World Drive/San Diego River Sites

For the purposes of modeling, it was assumed that construction of all Sea World Drive/San Diego River Sites would last approximately 22 months if done sequentially. It is not assumed that construction would happen concurrently for any of the sites. In addition, the phases listed below within each Site would occur sequentially and are based on the following assumptions (durations are approximate):

Site 1a: 7 months

- Clearing and Grubbing/Non-native Eradication: 4 days
- Site Grading and Sand Import/Placement: 24 days
- Plantings: 10 days
- Seeding: 2 days
- Watering: 4 months

Site 3c: 4 months

- Clearing and Grubbing/Non-native Eradication: 4 days
- Seeding: 2 days
- Watering: 4 months

Site 4d: 13 months

- Clearing and Grubbing/Non-native Eradication: 20 days
- Site Grading: 96 days
- Plantings: 30 days
- Seeding: 8 days
- Watering: 4 months

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed sand placement at Site 1a would include approximately 10,212 cy of imported sand. In addition, proposed site grading at Site 4d would result in approximately 47,739 cy of exported material. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Upland Habitat and Preserve Expansion Element Sea World Drive/San Diego River Sites project is shown in Table 14.

Table 14. Sea World Drive/San Diego River Sites Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment Per Day		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Site 1a: Cloverleaf Least Tern Preserve Area						
Clearing and Grubbing/Non-native Eradication	8	8	4	Skid Steer Loader	2	8
				Chipper	1	8
Site Grading - Sand Import/Placement	6	10	54	Rubber Tired Dozers	2	8
Plantings	4	8	0	Excavator	1	8
Seeding	4	8	0	N/A	N/A	N/A
Watering	0	6	0	N/A	N/A	N/A
Site 3c: Triangle Restoration Area						
Clearing and Grubbing/Non-native Eradication	6	8	4	Rubber Tired Dozers	2	8
Seeding	4	4	0	N/A	N/A	N/A

Construction Phase	One way Vehicle Trips			Equipment Per Day		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Watering	0	6	0	N/A	N/A	N/A
Site 4d: South Shores						
Clearing and Grubbing/Non-native Eradication	8	8	4	Skid Steer Loader	2	8
			0	Chipper	1	8
Site Grading	6	10	64	Rubber Tired Dozers	2	8
Planting	4	8	0	Excavator	1	8
Seeding	4	8	0	Skid Steer Loader	4	8
Watering	0	6	0	N/A	N/A	N/A

Bicycle and Pedestrian Improvements Element

Rose Creek Bike Path

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 6 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization: 5 days
- Clearing and Grubbing, Remove Existing Trees, Chain Link Fence, Pedestrian Railing & Concrete Bike: 15 days
- Place Chain Link Fence/Pedestrian Railing: 15 days
- Demolition of AC Paving: 5 days
- Proposed Grading: 15 days
- BMP Installation Including Storm Drain Design: 15 days
- Place AC Pavement: 15 days
- Form & Pour Concrete: 3 days
- Remove Existing Striping & Place New Striping and Signage: 2 days
- Demobilization/Project Closeout: 2 weeks

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed demolition would be approximately 19,570 square feet. Proposed grading would include approximately 1,560 cy of imported soils. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Rose Creek Bike Path project is shown in Table 15.

Table 15. Rose Creek Bike Path Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Clearing and Grubbing, Remove Existing Trees, Chain Link Fence, Pedestrian Railing & Concrete Bike	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Place Chain Link Fence/Pedestrian Railing	4	0	0	Skid Steer Loader	1	8
Demolition of AC Paving	10	2	46	Concrete/Industrial Saws	1	8
				Rubber Tired Dozer	1	8
				Excavator	2	8
Proposed Grading	6	2	14	Rubber Tired Loader	1	8
				Excavator	1	8
BMP Installation Including Storm Drain Design	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Place AC Pavement	14	8	0	Concrete/Industrial Saws	1	8
				Pavers	1	8
				Paving Equipment	1	8
				Rollers	2	8
Form & Pour Concrete	8	2	0	Cement and Mortar Mixers	1	8
				Concrete/Industrial Saws	1	8
				Pump	1	8
Remove Existing Striping & Place New Striping and Signage	4	0	0	Air Compressor	1	8

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Demobilization/ Project Closeout	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Fiesta Island Causeway Path

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 4 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization: 5 days
- Clearing and Grubbing: 1 day
- Demolition of AC Paving: 4 days
- Excavation for Retaining Wall: 15 days
- Retaining Wall Foundation Construction: 15 days
- Grading & Backfilling of Retaining Wall: 5 days
- Sawcut Existing Roadway, Pave Asphalt Concrete & Place K-Rail: 5 days
- Form & Pour Concrete Bicycle Paths and Multi-Use Trail: 10 days
- Remove Existing Striping & Place New Striping and Signage: 1 day
- Demobilization/Project Closeout: 2 weeks

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed demolition would be approximately 300 square feet. Proposed grading would include approximately 200 cy of imported soils. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Fiesta Island Causeway Path project is shown in Table 16.

Table 16. Fiesta Island Causeway Path Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Clearing and Grubbing	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Demolition of AC Paving	10	2	2	Concrete/Industrial Saws	1	8
				Rubber Tired Dozer	1	8
				Excavator	2	8
Excavation for Retaining Wall	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Retaining Wall Foundation Construction	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Retaining Wall Construction	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Grading & Backfilling of Retaining Wall	6	2	6	Rubber Tired Loader	1	8
				Excavator	1	8
Sawcut Existing Roadway, Pave Asphalt Concrete & Place K-Rail	14	6	0	Concrete/Industrial Saws	1	8
				Pavers	1	8
				Paving Equipment	1	8
				Rollers	2	8
Form & Pour Concrete Bicycle Paths and Multi-Use Trail	8	6	0	Cement and Mortar Mixers	1	8
				Concrete/Industrial Saws	1	8
				Pump	1	8
Remove Existing Striping & Place New Striping and Signage	4	0	0	Air Compressor	1	8
Demobilization/ Project Closeout	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Ocean Beach Bike Path

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 4 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization: 5 days
- Clearing and Grubbing, Remove Existing Trees: 5 days
- Remove and Relocate/Salvage Existing Bollards & Benches: 1 day
- Demolition of AC Paving: 5 days
- Proposed Grading: 15 days
- BMP Installation Including Storm Drain Design: 15 days
- Place AC Pavement: 15 days
- Form & Pour Concrete: 3 days
- Remove Existing Striping & Place New Striping and Signage: 2 days
- Demobilization/Project Closeout: 2 weeks

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed demolition would be approximately 46,550 square feet. Proposed grading would include approximately 360 cy of imported soils. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Ocean Beach Bike Path project is shown in Table 17.

Table 17. Ocean Beach Bike Path Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization	6	0	0	Rubber Tired Dozer Tractor/Loader/Backhoe	1 1	8 8
Clearing and Grubbing, Remove Existing Trees	6	0	0	Rubber Tired Dozer Tractor/Loader/Backhoe	1 1	8 8
Remove and Relocate/Salvage Existing Bollards & Benches	4	0	0	Skid Steer Loader	1	8
Demolition of AC Paving	10	2	108	Concrete/Industrial Saws	1	8

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Rubber Tired Dozer	1	8
				Excavator	2	8
Proposed Grading	6	2	4	Rubber Tired Loader	1	8
				Excavator	1	8
BMP Installation Including Storm Drain Design	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Place AC Pavement	14	8	0	Concrete/Industrial Saws	1	8
				Pavers	1	8
				Paving Equipment	1	8
				Rollers	2	8
Form & Pour Concrete	8	8	0	Cement and Mortar Mixers	1	8
				Concrete/Industrial Saws	1	8
				Pump	1	8
Remove Existing Striping & Place New Striping and Signage	4	0	0	Air Compressor	1	8
Demobilization/ Project Closeout	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Robb Field/Gateway Connectivity Path

For the purposes of modeling, it was assumed that construction of the proposed component would last approximately 2 months. The phases listed below would occur sequentially and are based on the following assumptions (durations are approximate):

- Mobilization: 5 days
- Clearing and Grubbing: 1 day
- Excavation for Retaining Wall: 2 days
- Retaining Wall Foundation Construction: 5 days
- Retaining Wall Construction: 7 days
- Grading & Backfilling of Retaining Wall: 5 days
- Form & Pour Concrete Bicycle Paths and Multi-Use Trail: 10 days
- Remove Existing Striping & Place New Striping and Signage: 1 day

- Demobilization/Project Closeout: 2 weeks

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed demolition would be approximately 400 square feet. Proposed grading would include approximately 460 cy of imported soils. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Robb Field/Gateway Connectivity Path project is shown in Table 18.

Table 18. Robb Field/Gateway Connectivity Path Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Mobilization	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Clearing and Grubbing	6	0	6	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Excavation for Retaining Wall	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Retaining Wall Foundation Construction	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Retaining Wall Construction	10	2	0	Skid Steer Loader	2	8
				Excavator	2	8
Grading & Backfilling of Retaining Wall	6	6	12	Rubber Tired Loader	1	8
				Excavator	1	8
Form & Pour Concrete Bicycle Paths and Multi-Use Trail	8	6	0	Cement and Mortar Mixers	1	8
				Concrete/Industrial Saws	1	8
				Pump	1	8
Place New Striping and Signage	4	0	0	Air Compressor	1	8
Demobilization/ Project Closeout	6	0	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8

Restoration of the Seawall Bulkhead Element

Replacement Segments A and B; New Segment C

For the purposes of modeling, it was assumed that the replacement of Segments A and B and the construction of new Segment C would last approximately 2 years if done sequentially. It is not assumed that construction would happen concurrently for any of the segments. In addition, the phases listed below within each Segment would occur sequentially and are based on the following assumptions (durations are approximate):

Segment A: 1.5 years

- Clearing and Grubbing: 2 weeks
- Demolition: 1.5 months
- Parapet Replacement: 11 months
- Void Repairs: 3 months

Segment B: 5 months

- Clearing and Grubbing: 1 week
- Demolition: 2 weeks
- Parapet Replacement: 7 weeks
- Void Repairs: 3 months

Segment C: 3 months

- Construct Seawall: 3 months

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed demolition of Segment A would be approximately 3,545 tons of debris. Proposed demolition of Segment B would be approximately 392 tons of debris. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Restoration of the Seawall Bulkhead is shown in Table 19.

Table 19. Replacement Segments A and B; New Segment C Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Segment A: Replace Parapet						
Clearing and Grubbing	6	4	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Demolition	10	4	28	Concrete/Industrial Saws	1	8
				Rubber Tired Dozer	1	8
				Excavator	2	8
Parapet Replacement	18	6	0	Crane	1	8
				Excavator	1	8
				Cement and Mortar Mixers	1	8
				Concrete/Industrial Saws	1	8
				Forklift	1	8
				Pump	1	8
				Air Compressor	1	8
Segment A: Void Repairs						
Void Repairs	10	6	0	Concrete/Industrial Saws	1	8
				Excavator	1	8
				Cement and Mortar Mixers	1	8
				Pump	1	8
Segment B: Replace Parapet						
Clearing and Grubbing	6	4	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Demolition	10	4	10	Concrete/Industrial Saws	1	8
				Rubber Tired Dozer	1	8
				Excavator	2	8
Parapet Replacement	18	6	0	Crane	1	8
				Excavator	1	8
				Cement and Mortar Mixers	1	8

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Concrete/Industrial Saws	1	8
				Forklift	1	8
				Pump	1	8
				Air Compressor	1	8
Segment B: Void Repairs						
Void Repairs	10	6	0	Concrete/Industrial Saws	1	8
				Excavator	1	8
				Cement and Mortar Mixers	1	8
				Pump	1	8
Segment C: Decorative Seawall						
Construct Seawall	16	6	0	Crane	1	8
				Excavator	1	8
				Cement and Mortar Mixers	1	8
				Concrete/Industrial Saws	1	8
				Pump	1	8
				Air Compressor	1	8

Access Improvements

For the purposes of modeling, it was assumed that the Access Improvements would last approximately 2 weeks per stairway, 3 weeks per pedestrian ramp, and 2 months for the beach access driveway. It was assumed that a maximum of 2 stairways could be constructed concurrently and were modeled as such. It was assumed that a maximum of 2 ramps could be constructed concurrently and were modeled as such. However, is not assumed that construction of stairways, ramps, or the driveway would happen concurrently. In addition, the phases listed below within each access improvement would occur sequentially and are based on the following assumptions (durations are approximate):

Stairs

- Demolition: 2 days
- Stairway Construction: 12 days

ADA Ramps

- Demolition: 5 days

- Ramp Construction: 15 days

New Vehicular Access (Driveway)

- Clearing and Grubbing: 2 days
- Demolition of AC Paving: 1.5 months
- Proposed Grading: 5 days
- Place AC Pavement: 5 days
- Form & Pour Concrete: 3 days
- Striping & Signage: 2 days

The estimated construction duration and equipment were provided in the Preliminary Engineering Report for the Element. Detailed construction equipment modeling assumptions are provided in Appendix B, CalEEMod Outputs and Calculations.

Proposed stairway demolition would be approximately 50 square feet per 2 stairways. Proposed demolition for the driveway would be approximately 127 tons of debris. Proposed grading for the driveway would include approximately 200 cy of exported soils. CalEEMod default values were used for all trip characteristics.

The construction equipment mix used for estimating the construction emissions of the Restoration of the Seawall Bulkhead is shown in Table 20.

Table 20. Restoration of the Seawall Bulkhead Element – Access Improvements - Construction Scenario Assumptions

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Stairs (per 2 stairways)						
Demolition	16	6	2	Concrete/Industrial Saws	2	8
				Rubber Tired Dozer	2	8
				Excavator	2	8
Stairway Construction	20	6	10	Excavator	2	8
				Cement and Mortar Mixers	2	8
				Concrete/Industrial Saws	2	8
				Pump	2	8
ADA Ramps (per 2 ramps)						
Demolition	16	6	2	Concrete/Industrial Saws	2	8
				Rubber Tired Dozer	2	8

Construction Phase	One way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Average Daily Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Excavator	2	8
Ramp Construction	20	6	10	Excavator	2	8
				Cement and Mortar Mixers	2	8
				Concrete/Industrial Saws	2	8
				Pump	2	8
Beach Access Driveway						
Clearing and Grubbing	6	4	0	Rubber Tired Dozer	1	8
				Tractor/Loader/Backhoe	1	8
Demolition of AC Paving	10	4	12	Concrete/Industrial Saws	1	8
				Rubber Tired Dozer	1	8
				Excavator	2	8
Proposed Grading	6	4	6	Rubber Tired Loader	1	8
				Excavator	1	8
Place AC Pavement	14	4	0	Concrete/Industrial Saws	1	8
				Pavers	1	8
				Paving Equipment	1	8
				Rollers	2	8
Form & Pour Concrete	8	4	0	Cement and Mortar Mixers	1	8
				Concrete/Industrial Saws	1	8
				Pump	1	8
Striping and Signage	4	0	0	Air Compressor	1	8

Deferred Maintenance

The Deferred Maintenance Updated element would involve various improvements to existing facilities throughout the bay including: ADA access ramps repair; parking lot pavement including stormwater improvements; benches repair/replacement; picnic table repair/replacement; lighting sustainability enhancements; fire pit and hot coal disposal replacement; playground equipment repair/maintenance; and comfort station repair/replacement. Opportunities for improvements to storm water quality treatment, such as biofiltration basins, is included as part of considerations for all suitable deferred maintenance activities.

These improvement and maintenance activities would involve a variety of activities requiring special planning and special equipment, the latter of which would vary greatly depending on the type of asset being constructed.

Signage Update Element

Signage Update Element construction activities would require equipment to remove existing signs and install new signs, such as a pick-up truck, dozer, hand tools, and/or crane. These activities are generally exempt from CEQA under CEQA Guidelines Section 15301, Section 15302, Section 15303, and/or Section 15304 as a replacement of existing signages; however, this element is disclosed herein as part of the Program.