HELIX Environmental Planning

County of San Diego Integrated Vector Management Program

Air Quality Technical Report

November 2021 | 00187.00124.001 (CSD-05.24)

Prepared for:

County of San Diego
Department of Environmental Health
Vector Control Program
5570 Overland Avenue, Suite 102
San Diego, CA 92123

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AQIA	Air Quality Impact Analysis
BMPs	best management practices
CAA	Clean Air Act (Federal)
CAAQS	California Ambient Air Quality Standard
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CO	carbon monoxide
County	County of San Diego
CPA	Community Planning Area
DEH	Department of Environmental Health
DPM	diesel particulate matter
°F	degrees Fahrenheit
H_2S	hydrogen sulfide
IVMP	Integrated Vector Management Program
lbs	pounds
LOS	level of service
NAAQS	National Ambient Air Quality Standard
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
Pb	lead
PM	particulate matter
PM_{10}	coarse particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	fine particulate matter equal to or less than 2.5 microns in diameter

ACRONYMS AND ABBREVIATIONS (cont.)

ROG	reactive organic gas
SANDAG	San Diego Association of Governments
SCAQMD	South Coast Air Quality Management District
SDAB	San Diego Air Basin
SDAPCD	San Diego County Air Pollution Control District
SIP	State Implementation Plan
SLT	screening-level threshold
SO_2	sulfur dioxide
TACs	toxic air contaminants
USEPA	U.S. Environmental Protection Agency
VCP	Vector Control Program
VOC	volatile organic compound
WRCC	Western Regional Climate Center

EXECUTIVE SUMMARY

This report presents an assessment of potential air quality impacts associated with the proposed County of San Diego (County) Department of Environmental Health (DEH), Vector Control Program's (VCP) Integrated Vector Management Program (IVMP; Proposed Project). The evaluation addresses the potential for air pollutant emissions during implementation of the Proposed Project. The IVMP carries out a full range of vector control activities, practices, and procedures to protect the public from vector-borne diseases and public nuisances while simultaneously protecting the environment. For the purposes of this analysis, the Proposed Project is the ongoing implementation of the IVMP, which would continue to comprehensively approach vector control through various techniques, including surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics. The IVMP is managed by County staff, governed by the County Board of Supervisors, and implemented within a service area that includes all unincorporated areas within the county, as well as the 18 incorporated cities.

The Proposed Project would result in emissions of air pollutants during the ongoing implementation of the IVMP. Implementation of the IVMP does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Therefore, for the purpose of this report, the Proposed Project would not result in construction activities or associated impacts. Grading and vegetation clearing are herein analyzed as operational emissions since they are considered ongoing activities under the IVMP. In addition, operation of on-road fleet vehicles, watercraft, aircraft, portable equipment, and small equipment associated with surveillance and monitoring, source reduction, and source treatment activities would result in emissions of criteria pollutants from engine exhaust during IVMP implementation. Emission estimates found all criteria pollutants would be below the daily thresholds and impacts would be less than significant.

Implementation of the Proposed Project would be consistent with the San Diego Air Pollution Control District (SDAPCD) Ozone Attainment Plan and would not result in cumulatively considerable emissions of nonattainment air pollutants that would exceed the screening level thresholds.

The Proposed Project would not result in the exposure of sensitive receptors to substantial emissions of pollutants, toxic air contaminants, or odors. The Proposed Project would not result in the degradation of roadway intersections such that emissions of carbon monoxide (CO) would exceed state or federal standards that would result in a CO hotspot. Impacts would be less than significant; therefore, no mitigation measures or design considerations would be required.

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1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

The County of San Diego (County) Department of Environmental Health (DEH), Vector Control Program (VCP) is a public health program that was established to monitor and control vectors that transmit diseases and create public nuisances within San Diego County. For the purposes of the Proposed Project, a vector is defined as any animal capable of spreading disease or producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and rodents and other vertebrates (California Health and Safety Code Section 2002[k]).The VCP is managed by County staff, governed by the County Board of Supervisors, and implemented within a service area that includes all 18 incorporated cities and unincorporated areas of San Diego County. The VCP serves to reduce exposure to vectors and vector-borne diseases in a manner that minimizes risks to people, property and the environment through a coordinated set of activities collectively known as the Integrated Vector Management Program (IVMP). The IVMP carries out a full range of vector control activities, practices, and procedures to protect the public from vector-borne diseases and public nuisances while allowing for the inclusion of progressive and emerging vector control techniques, tools and materials. For the purposes of this analysis, the Proposed Project consists of the ongoing implementation of the IVMP.

This report analyzes potential air quality impacts associated with implementation of the IVMP, which includes an evaluation of existing conditions in the Proposed Project vicinity and an assessment of associated potential impacts.

1.2 PROJECT LOCATION AND DESCRIPTION

1.2.1 Project Location

The IVMP service area is defined by the boundaries of San Diego County (Figure 1, *Regional Map*; Figure 2, *Integrated Vector Management Program Service Area*). The county is bordered by Orange and Riverside counties to the north, Imperial County to the east, the Pacific Ocean to the west, and the U.S./Mexico International Border to the south. The service area encompasses approximately 4,261 square miles, and includes all unincorporated areas within the county, as well as the 18 incorporated cities (Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, and Vista). The unincorporated portion of the county is divided into 23 planning areas. Fourteen of the planning areas are referred to as Community Planning Areas (CPAs) and nine areas are called Subregional Planning Areas (Subregions). The CPAs are Alpine, Bonsall, County Islands, Fallbrook, Julian, Lakeside, Pendleton/De Luz, Rainbow, Ramona, San Dieguito, Spring Valley, Sweetwater, Valle de Oro, and Valley Center. The nine Subregions are Central Mountain, Crest/Dehesa/Harbison Canyon/Granite Hills, Desert, Jamul/Dulzura, Mountain Empire, North County Metropolitan (Metro), North Mountain, Otay, and Pala/Pauma Valley. The location and extent of specific activities implemented under the IVMP are evaluated based on the site-specific situation and dictated by the targeted vector, regulatory requirements, and applicable management approaches.

1.2.2 Project Description

Under the Proposed Project, the IVMP would continue to comprehensively implement vector control through various techniques, including surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics. Each of these techniques would be applied to the applicable vectors under the IVMP, including disease-transmitting mosquitoes (i.e., *Culex* spp., *Aedes* spp., and *Anopheles* spp.); nuisance mosquitoes (i.e., not disease-transmitting); vectors associated with mammalian disease reservoirs (i.e., ticks and rodents); and other nuisance species (e.g., eye gnats not on commercial organic farms) deemed necessary for control as approved by the VCP. The five core services of the IVMP include: (1) early detection of public health risks through comprehensive vector surveillance and testing; (2) control and reduction of vectors that transmit diseases to humans or create public nuisance; (3) dissemination of information regarding tools for prevention, protection, and reporting of vectors that transmit diseases; (4) appropriate and timely response to vector-related customer complaints; and (5) detection of vector-borne pathogens. The objectives of the IVMP are to:

1. Protect public health, well-being, and economic effects from vectors throughout San Diego County by applying integrated vector management practices.

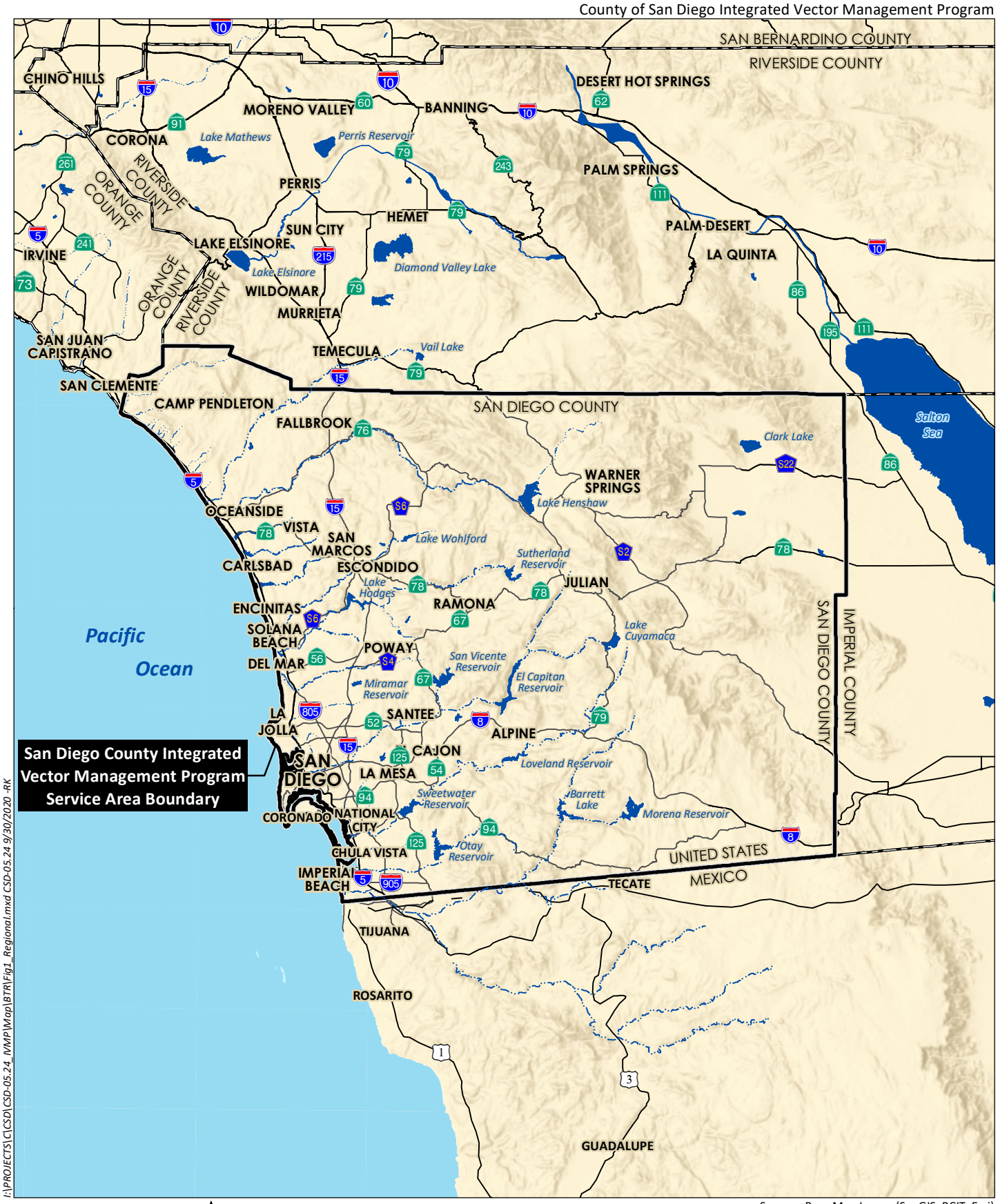
2. Implement effective and efficient integrated vector management practices in a manner that balances environmental impacts with the need to protect the public from vector-borne diseases and nuisances.

3. Coordinate with other regional vector control districts throughout California as well as State and federal public health and environmental protection agencies to allow for the inclusion of progressive and emerging vector control activities and technologies.

Vector control and surveillance activities are conducted by VCP staff under standard operating procedures and use a risk-based approach to determine appropriate levels of response to each vector of concern. The IVMP incorporates various vector management principles and techniques from guidance documents that are regularly updated, such as the VCP's annual *Mosquito, Vector and Disease Control Assessment Engineer's Report* (hereafter referred to as Engineer's Report); *West Nile Virus Strategic Response Plan*; and *Aedes Transmitted Disease Strategic Response Plan* (County 2020a, 2018a and 2018b, respectively), as well as procedural documents such as the *Mosquito Breeding Site Access Standard Operating Procedure* (County 2014). A general discussion of the key IVMP activities is discussed below.

Surveillance and Monitoring

Vector surveillance, monitoring, and diagnostics are needed to assess location and abundance of vector populations and species so that data-informed decisions can be made. Vector surveillance involves monitoring vector populations and habitat, their disease pathogens, and human/vector interactions. Vector surveillance provides the VCP with valuable information about which vector species are present or likely to occur, locations in which they may occur, abundance, and if they are carrying disease(s). The information obtained from surveillance is evaluated against treatment and risk-based response criteria to decide when and where to implement vector control measures, and to help form action plans that can also assist in reducing the risk of contracting disease or causing nuisance. Vector surveillance can



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Regional Location

Figure 1

County of San Diego Integrated Vector Management Program

ORANGE COUNTY

RIVERSIDE COUNTY

IMPERIAL COUNTY

MEXICO

Pacific Ocean

CAMP PENDLETON MARINE CORPS BASE

MCAS MIRAMAR

OCEANSIDE

VISTA

SAN MARCOS

CARLSBAD

ESCONDIDO

ENCINITAS

SOLANA BEACH

DEL MAR

POWAY

SANTEE

EL CAJON

SAN DIEGO

LA MESA

LEMON GROVE

NATIONAL CITY

CORONADO

CHULA VISTA

IMPERIAL BEACH

5 78 15 52 8 125 94 805

San Diego County Integrated Vector Management Program Service Area Boundary

Incorporated Cities

Freeways

Excluded Areas

Federal Lands

Tribal Lands

0 8 Miles

N

Source: Base Map Layers (SanGIS and Esri)

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Integrated Vector Management Program Service Area

Figure 2

help minimize the area to which control techniques may be applied by directing activities to the areas where they are needed.

The VCP monitors disease-carrying animals such as mosquitoes, ticks, and rodents, as well as other pests including flies on commercial poultry ranches, within the IVMP service area. Monitoring includes such techniques as setting traps to determine abundance and species of mosquitoes; testing mosquitoes for presence of disease; collecting and testing dead birds for West Nile virus; and conducting surveys via ground vehicles, aircraft (including piloted and unmanned), watercraft, and remote sensing equipment to evaluate mosquito-breeding sources. Surveillance is also conducted for ticks and rodents.

The VCP operates the Vector Disease and Diagnostic Laboratory that provides diagnostic testing to support the VCP, which helps in the evaluation of public health risk and appropriate responses and or treatments. The VCP tests vector specimens from the field for numerous diseases that could be a risk to public health.

Source Reduction

Source reduction (i.e., environmental modification) techniques are used to reduce vector-breeding sources such as habitat and other areas of harborage. Source reduction primarily involves physical control techniques that eliminate or reduce standing water including, but not limited to, ground disturbance (e.g., grading), vegetation management (including physical removal and/or herbicide application), water control, and other maintenance activities. Trapping and removal of vectors is also a form of source reduction.

Source Treatment

Source treatment includes biological and chemical controls of vectors. Specifically, this includes the use of mosquito fish (*Gambusia affinis*) and application of pesticides, such as larvicides and adulticides to reduce larval and adult mosquito populations, respectively. The type and location of biological and chemical control vary based on different factors, including, but not limited to, the vector species and growth stage, environment, disease presence, and risk level to public health. Any pesticides applied within waterbodies defined by federal and state regulations as waters of the U.S. and/or State are conducted in accordance with the Statewide National Pollutant Discharge Elimination System (NPDES) Permit for Biological and Residual Pesticide Discharges to Waters of the U.S. from Vector Control Applications (Order No. 2016-0039-DWQ, General Permit No. CA990004). Methods of application include, but are not limited to, backpack applicators, truck-mounted equipment, or other motorized vehicles (e.g., piloted and unmanned aircraft, watercraft). Source treatment of non-mosquito vectors can include, but are not limited to, chemical controls applied to mammal vectors such as rodents and mammal-related disease carriers such as ticks, fleas, and other arthropods. When pesticides are applied, label requirements are followed by VCP staff.

Public Education and Outreach

VCP staff conduct public education and outreach activities to increase public awareness of steps to prevent and protect against disease-carrying vectors. VCP staff distribute educational materials, provide informational displays and presentations, use social media and informational emails, and conduct media campaigns to provide the public with this knowledge.

Emerging Vector Control Strategies

Vector management strategies are updated as new information becomes available and are adapted and applied to new or emerging vectors as they arise. All vector control methods are based on empirical data, scientific evidence, published research, current state and federal guidelines, expert guidance, and the VCP's experience conducting vector control activities. The IVMP integrates progressive and emerging vector control activities and materials established in coordination with other regional vector control districts and research institutions throughout California, as well as state and federal agencies such as the California Department of Public Health, California Environmental Protection Agency (CalEPA), the U.S. Environmental Protection Agency (USEPA), and the Centers for Disease Control and Prevention (CDC). Emerging vector control strategies that may be implemented to address future public health risks and public nuisances could include, but not be limited to, increased or advanced/early source prevention and/or reduction, surveillance, or physical/biological/chemical controls, depending on the assessment.

1.3 BEST MANAGEMENT PRACTICES

The IVMP follows the best management practices (BMPs) described in State guidance documents, such as the *Best Management Practices for Mosquito Control in California* (California Department of Public Health [CDPH]; 2012), *Best Management Practices for Mosquito Control on California State Properties* (CDPH 2008), and *California Mosquito-Borne Virus Surveillance and Response Plan* (CDPH 2020), which detail vector control and pesticide application procedures. In addition, the County integrates BMPs into the IVMP serving as a comprehensive management framework for implementation of individual activities. BMPs implemented as part of the IVMP demonstrate the County's commitment to avoid or minimize impacts to the maximum extent feasible. The following BMPs will be implemented to reduce air pollutant emissions:

- Vehicles will only be driven on existing roadways, access roads, and existing unpaved access paths. Vehicles driven on levees to travel near aquatic areas (such as tidal marshes, sloughs, or channels) for surveillance or treatment activities will travel at speeds slow enough to avoid or minimize noise and the production of dust, typically 15 miles per hour or less.

- Engine idling times will be minimized by shutting off equipment and vehicles when not in use to the extent feasible.

- Vehicles and equipment will be maintained in accordance with manufacturer's specifications, including mufflers, engine operation, and tire inflation pressure to minimize rolling resistance.

- Vegetation trimming or removal, when necessary to provide access to vector habitat for surveillance and control activities, will be conducted by hand using handheld tools rather than gas-powered equipment or heavy machinery to minimize negative environmental effects.

- Where heavy equipment or machinery are necessary, measures will be taken, such as reducing turns by track-type vehicles, taking a minimum number of passes with equipment, identifying multiple points of entry, driving vehicles at low speed, and avoiding or minimizing operating on open mud and other soft areas.

In addition to the aforementioned BMPs, the County also engages in other environmental-friendly practices that further reduce potential air quality emissions, such as:

- The VCP assigns geographic locations, defined by continuous census tracts, to individual Certified Vector Control Technicians. Each geographic location is referred to as a 'district'. Work is assigned to each district, which defines the routine work area for Certified Vector Control Technicians within a specific geographic area, thereby reducing mileage driven, which reduces fuel consumption and vehicle emissions.

- Certified Vector Control Technicians use mobile phones to call customers and to access the County-produced Vector Mobile App. Real-time access to new work requests while in the field allows Certified Vector Control Technicians to conduct and complete additional work while remaining in the geographic area. When they are able to complete new work assignments while remaining in the current area, this eliminates the need to return at a later time, thereby reducing mileage driven, which reduces fuel consumption and vehicle emissions.

2.0 EXISTING CONDITIONS

2.1 EXISTING SETTING

San Diego County supports a wide range of climates, land uses, and habitat types. The SDAPCD identifies five distinct climate zones as occurring within the county: Maritime, Coastal, Transitional, Interior, and Desert. These climatic zones run nearly parallel to the coast, with each having its own specific characteristics.

- The Maritime zone consists of the area from the coastline to 5 miles east. This climate zone is dominated by the influence of the Pacific Ocean. The humidity is high and temperatures are mild. Low clouds, fog, and dampness are common.

- The Coastal zone encompasses the area approximately 5 miles from the coast to 15 miles inland. The ocean's influence is diminished but is still significant. The prevailing climate is semi-arid to arid. The climate in this region experiences frequent summer morning fog, clouds, and moderate humidity.

- The Transitional zone is located approximately 20 to 25 miles inland from the coast. The conditions can include brief Coastal-zone climate conditions, but normally consist of a warm, dry climate. Daytime humidity is low. Summer temperatures may reach 100 degrees Fahrenheit (°F), while winter days average approximately 70°F with frosty mornings.

- The Interior zone is located approximately 25 to 60 miles inland. This zone consists of topographical terrain that rises from 2,000 to 6,500 feet, produces dramatic contrasts in climate ranging from the 70s to the 90s.

- The Desert zone is located approximately 60 miles inland and extends to the eastern border of the state. Temperatures in the desert can reach 80°F in the winter and 120°F in the summer. (County 2008)

Land uses within San Diego County vary between the urban areas along the coast and the more rural areas in the eastern regions. Urban uses tend to consist of large-scale residential and commercial uses, as well as small-scale agricultural and industrial uses. Other land uses that occur throughout the county are environmentally constrained uses, such as floodplains, lagoons, lands that contain mineral resources, agricultural preserves, and areas containing rare and endangered plant and animal species, as well as national forest and state park lands. San Diego County also supports a wide range of habitat types including vegetated wetlands, oak woodlands, riparian scrub, wet meadows, freshwater marsh, tidal marshes, sloughs, lakes, ponds, sage scrub, chaparral, grassland habitats, and a variety of other upland and wetland habitats.

2.1.1 Sensitive Receptors

The California Air Resources Board (CARB) and the California Office of Environmental Health Hazard Assessment (OEHHA) have identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, infants (including in utero in the third trimester of pregnancy), and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis (CARB 2005; OEHHA 2015). Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved and are referred to as sensitive receptors. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. Due to the nature of the countywide VCP, sensitive receptors are located throughout the entirety of the IVMP service area. Due to the wide geographic dispersion of the IVMP activities and their short-term temporary nature at any particular location, no quantifiable risk to sensitive receptors or the general public would be posed by program-related emissions.

2.2 CLIMATE AND METEOROLOGY

The climate in southern California, including the San Diego Air Basin (SDAB; defined as "All of San Diego County"),[1] is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. Areas within 30 miles of the coast experience moderate temperatures and comfortable humidity. The general region possesses a mild climate tempered by cool sea breezes with light average wind speeds. This basin experiences warm summers, mild winters, infrequent rainfall, 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. Precipitation occurs mostly during the winter and relatively infrequently during the summer (Western Regional Climate Center [WRCC] 2020).

Due to its climate, the SDAB experiences frequent temperature inversions (temperature increases as altitude increases, which is the opposite of general patterns). Temperature inversions prevent air close to the ground from mixing with the air above it. As a result, air pollutants are trapped near the ground. During the summer, air quality problems are created due to the interaction between the ocean surface and the lower layer of the atmosphere, creating a moist marine layer. An upper layer of warm air mass forms over the cool marine layer, preventing air pollutants from dispersing upward. Additionally, hydrocarbons and nitrogen dioxide (NO_2) react under strong sunlight, creating smog. Light, daytime winds, predominantly from the west, further aggravate the condition by driving the air pollutants inland,

[1] The San Diego Air Basin is defined in the California Code of Regulations, Title 17, §60110 (17 CCR 60110) as "All of San Diego County."

toward the foothills. During the fall and winter, air quality problems are created due to CO and NO_2 emissions. High NO_2 levels usually occur during autumn or winter, on days with summer-like conditions.

2.3 AIR POLLUTANTS OF CONCERN

2.3.1 Criteria Air Pollutants

Six air pollutants have been identified by the USEPA and CARB as being of concern both on a nationwide and statewide level: ground-level ozone (O_3), CO, NO_2, sulfur dioxide (SO_2), lead (Pb), and particulate matter (PM), which is subdivided into two classes based on particle size: coarse PM equal to or less than 10 microns in diameter (PM_{10}) and fine PM equal to or less than 2.5 microns in diameter ($PM_{2.5}$). These air pollutants are commonly referred to as "criteria air pollutants" because air quality standards are regulated using human health and environmentally based criteria. Criteria pollutants can be emitted directly from sources (primary pollutants; e.g., CO, SO_2, PM_{10}, $PM_{2.5}$, and lead), or they may be formed through chemical and photochemical reactions of precursor pollutants (secondary pollutants; e.g., ozone and NO_2) in the atmosphere. The principal precursor pollutants of concern are reactive organic gasses ([ROGs])[2] also known as volatile organic compounds [VOCs])[2] and nitrogen oxides (NO_X).

The descriptions of sources and general health effects for each of the criteria air pollutants are shown in Table 1, *Summary of Common Sources and Human Health Effects of Criteria Air Pollutants,* based on information provided by the California Air Pollution Control Officers Association (CAPCOA 2018). Specific adverse health effects to individuals or population groups induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, and the number and character of exposed individuals [e.g., age, gender]). Criteria pollutant precursors (ROG and NO_X) affect air quality on a regional scale, typically after significant delay and distance from the pollutant source emissions. Health effects related to ozone and NO_2 are therefore, the product of emissions generated by numerous sources throughout a region. As such, specific health effects from these criteria pollutant emissions cannot be directly correlated to the incremental contribution from a single project.

[2] CARB defines and uses the term ROGs while the USEPA defines and uses the term VOCs. The compounds included in the lists of ROGs and VOCs and the methods of calculation are slightly different. However, for the purposes of estimating criteria pollutant precursor emissions, the two terms are often used interchangeably.

Table 1
SUMMARY OF COMMON SOURCES AND HUMAN HEALTH EFFECTS OF CRITERIA AIR POLLUTANTS

Pollutant	Major Human Sources	Human Health Effects
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely; a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to climate change and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Ozone (O_3)	Formed by a chemical reaction between reactive organic gases (ROGs) and nitrogen oxides (NO_X) in the presence of sunlight. Common sources of these precursor pollutants include motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing, and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles and dyes.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Produced by power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles, and other sources.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Sulfur Dioxide (SO_2)	A colorless, nonflammable gas formed when fuel containing sulfur is burned, when gasoline is extracted from oil, or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid which can damage marble, iron and steel. Damages crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CAPCOA 2018

2.3.2 Toxic Air Contaminants

Toxic air contaminants (TACs) are a diverse group of air pollutants that may cause or contribute to an increase in deaths or in serious illness or that may pose a present or potential hazard to human health. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute effects such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For carcinogenic TACs, there is no level of exposure that is considered safe and impacts are evaluated in

terms of overall relative risk expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

The Health and Safety Code (§39655, subdivision (a)) defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant, pursuant to subsection (b) of Section 112 of the Federal Clean Air Act (CAA) (42 U.S.C. Section 7412[b]) is a TAC. Under State law, CalEPA, acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health.

Diesel engines emit a complex mixture of air pollutants, including both gaseous and solid material. The solid material in diesel exhaust is known as diesel particulate matter (DPM). Almost all DPM is 10 microns or less in diameter, and 90 percent of DPM is less than 2.5 microns in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung. In 1998, the CARB identified DPM as a toxic air contaminant based on published evidence of a relationship between diesel exhaust exposure and lung cancer and other adverse health effects. DPM has a significant impact on California's population—it is estimated that about 70 percent of total known cancer risk related to air toxics in California is attributable to DPM (CARB 2018).

2.4 REGULATORY SETTING

Air quality is defined by ambient air concentrations of specific pollutants identified by the USEPA to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the Federal CAA of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for criteria pollutants. Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. CARB has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988 (CCAA), and has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide (H_2S), vinyl chloride and visibility-reducing particles. Table 2, *California and National Ambient Air Quality Standards,* shows the federal and state ambient air quality standards.

Table 2
CALIFORNIA AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	Federal Standards	
			Primary[a]	Secondary[b]
O_3	1 Hour	0.09 ppm (180 µg/m^3)	–	–
	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm (147 µg/m^3)	Same as Primary
PM_{10}	24 Hour	50 µg/m^3	150 µg/m^3	Same as Primary
	AAM	20 µg/m^3	–	–
$PM_{2.5}$	24 Hour	–	35 µg/m^3	Same as Primary
	AAM	12 µg/m^3	12.0 µg/m^3	Same as Primary
CO	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	–
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)	–	–
NO_2	AAM	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary
	1 Hour	0.18 ppm (339 µg/m^3)	0.100 ppm (188 µg/m^3)	–
SO_2	24 Hour	0.04 ppm (105 µg/m^3)	–	–
	3 Hour	–	–	0.5 ppm (1,300 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)	–
Lead	30-day Avg.	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-month Avg.	–	0.15 µg/m^3	
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per km – visibility ≥ 10 miles (0.07 per km – ≥30 miles for Lake Tahoe)	**No Federal Standards**	
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)		
Vinyl Chloride	24 Hour	0.01 ppm (26 µg/m^3)		

Source: CARB 2016
Note: More detailed information in the data presented in this table can be found at the CARB website (www.arb.ca.gov).
[a] National Primary Standards: The levels of air quality necessary, within an adequate margin of safety, to protect the public health.
[b] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
O_3 = ozone; ppm: parts per million; µg/m^3 = micrograms per cubic meter; PM_{10} = large particulate matter; AAM: Annual Arithmetic Mean; $PM_{2.5}$ = fine particulate matter; CO = carbon monoxide; mg/m^3 = milligrams per cubic meter; NO_2 = nitrogen dioxide; SO_2 = sulfur dioxide; km= kilometer; – = No Standard.

Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be "nonattainment areas" for that pollutant. As of August 3, 2018, the SDAB has been classified as a nonattainment area for the 2015 8-hour NAAQS for ozone. The SDAB is also currently classified as a nonattainment area under the CAAQS for ozone, PM_{10}, and $PM_{2.5}$. The SDAB is an attainment area for the NAAQS and CAAQS for all other criteria pollutants (SDAPCD 2020b).

CARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The local air district has the primary responsibility for the development and

implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The SDAPCD is the local agency responsible for the administration and enforcement of air quality regulations in San Diego County.

The SDAPCD and 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. SDAPCD has prepared an Attainment Plan for San Diego County (SDAPCD 2020a) demonstrating how the SDAB will further reduce air pollutant emissions to attain the current NAAQS for ozone. The Attainment Plan, in combination with those from all other California nonattainment areas with serious (or worse) air quality problems, is submitted to the CARB, which develops the California State Implementation Plan (SIP). The Attainment Plan was approved by the SDAPCD Board on October 14, 2020 and by CARB on November 19, 2020.

The Attainment Plan relies on information from CARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the county, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. CARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the development of the County's General Plan (County 2011).

The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin.

The current federal and state attainment status for SDAB is shown in Table 3, *Federal and State Air Quality Designation.*

Table 3
FEDERAL AND STATE AIR QUALITY DESIGNATION

Criteria Pollutant	Federal Designation	State Designation
Ozone (1-hour)	(No federal standard)	Nonattainment
Ozone (8-hour)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
PM_{10}	Unclassified	Nonattainment
$PM_{2.5}$	Attainment	Nonattainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No federal standard)	Attainment
Hydrogen Sulfide	(No federal standard)	Unclassifiable
Visibility	(No federal standard)	Unclassifiable

Source: SDAPCD 2020b

2.5 BACKGROUND AIR QUALITY

The SDAPCD operates a network of ambient air monitoring stations throughout the county. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine

whether the ambient air quality meets the CAAQS and the NAAQS. The monitoring stations collectively measure the ambient concentrations of six criteria air pollutants: ozone, NO_2, SO_2, CO, PM_{10}, and $PM_{2.5}$.

Air quality is affected by a variety of existing sources in the IVMP service area. Light motor vehicles, diesel powered construction equipment, and commercial trucks are a source of NO_X and ROGs, along with PM_{10} and $PM_{2.5}$ pollutants. Noncombustion sources of PM_{10} and $PM_{2.5}$ include fugitive dust from roads, construction, demolition, and earthmoving. Commercial and general aviation aircraft also generate emissions that affect air quality. Ozone is a secondary pollutant that is not emitted directly by sources, but rather is formed by a reaction between NO_X and ROGs in the presence of sunlight. Reductions in ozone concentrations are dependent upon reducing emissions of these precursors. Major sources of ozone precursors are motor vehicles and other mobile equipment, solvent use, and electric utilities operation.

3.0 SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGY

3.1 SIGNIFICANCE CRITERIA

The significance thresholds for air quality are based specifically on criteria provided in the County's Guidelines for Determining Significance (2007), which are based on Appendix G, Section III of the State California Environmental Quality Act (CEQA) Guidelines. Accordingly, County Guidelines state that a project would have a significant environmental impact if it would:

1. Conflict with or obstruct the implementation of the San Diego Regional Air Quality Strategy or applicable portions of the SIP;

2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation;

3. Result in a cumulatively considerable net increase for which the SDAB is in non-attainment of NAAQS or CAAQS;

4. Expose sensitive receptors (including, but not limited to, residences, schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations; and/or

5. Create objectionable odors affecting a substantial number of people.

To determine whether a project would (a) result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, or (b) result in a cumulatively considerable net increase of PM_{10} or exceed quantitative thresholds for ozone precursors, NO_X and ROGs, project emissions may be evaluated based on the quantitative emission thresholds established by the SDAPCD. County Guidelines identify as screening-level thresholds (SLTs) the Air Quality Impact Analysis (AQIA) trigger levels for new or modified stationary sources from the SDAPCD Rules 20.2 and 20.3. County Guidelines also use the screening threshold of 55 pounds (lbs) per day or 10 tons per year as a significance threshold for $PM_{2.5}$.

For CEQA purposes, these screening criteria can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality. The screening thresholds are included in Table 4, *Screening-Level Thresholds for Air Quality Impact Analysis*.

Table 4
SCREENING-LEVEL THRESHOLDS FOR AIR QUALITY IMPACT ANALYSIS

Pollutant	Total Emissions		
Construction Emissions (pounds per day)			
Respirable Particulate Matter (PM_{10})	100		
Fine Particulate Matter ($PM_{2.5}$)	55		
Oxides of Nitrogen (NO_X)	250		
Oxides of Sulfur (SO_X)	250		
Carbon Monoxide (CO)	550		
Volatile Organic Compounds (VOCs)	75		
Operational Emissions			
	Pounds per Hour	**Pounds per Day**	**Tons per Year**
Respirable Particulate Matter (PM_{10})	---	100	15
Fine Particulate Matter ($PM_{2.5}$)	---	55	10
Oxides of Nitrogen (NO_X)	25	250	40
Oxides of Sulfur (SO_X)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	---	3.2	0.6
Volatile Organic Compounds (VOCs)	---	75	13.7
Toxic Air Contaminant Emissions			
Excess Cancer Risk	1 in 1 million 10 in 1 million with T-BACT		
Non-Cancer Hazard	1.0		

Source: County 2007; SDAPCD Rules 20.2 and 20.3.
T-BACT = Toxics-Best Available Control Technology

3.2 METHODOLOGY AND ASSUMPTIONS

3.2.1 Air Pollutant-generating Activities

Under the Proposed Project, the IVMP would continue the use of the following vector control techniques: surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics. Emerging vector control strategies that may be implemented to address future public health risks and public nuisances could include, but not be limited to, increased or advanced/early source prevention and/or reduction, surveillance, or physical/biological/chemical controls. Of these, surveillance and monitoring, source reduction, and source treatment are the only vector control techniques evaluated in this analysis, as the other techniques (i.e., public education and outreach and disease diagnostics) would be unlikely to result in air pollutant emissions.

Surveillance and monitoring activities include evaluation of mosquito-breeding areas by conducting surveys via ground vehicles, aircraft (including piloted and unmanned), watercraft, and remote sensing equipment; trapping of mosquitoes and rodents; and testing of collected samples for vector-borne diseases. The reduction of vector-breeding sources primarily involves physical control techniques that

eliminate or reduce standing water that functions as mosquito breeding habitat. These techniques include, but are not limited to, vegetation management including trimming and removal of vegetation and application of herbicides; removal of sediment; water control; and other maintenance activities.

Source treatment, which includes biological and chemical controls used to manage and reduce vectors, can include the use of natural predators, parasites, or pathogens to reduce immature mosquito numbers (biological controls) and application of pesticides that target larvae (larvicides) or adult mosquitos (adulticides). The primary technique employed by the VCP for biological controls is the application of mosquito fish in artificial mosquito breeding sources such as ornamental ponds, rain barrels, horse troughs, neglected swimming pools, and spas to reduce the abundance of mosquitoes. Pesticides are applied through on-ground techniques such as by foot with backpack applicators, vehicle-mounted equipment, or watercraft by qualified certified technicians, or by aircraft (including piloted and unmanned) when land-based methods are not practicable due to the size of the area to be treated or impediments to access. As described in Section 1.3, the IVMP follows the BMPs described in State guidance documents, such as the *Best Management Practices for Mosquito Control in California* (CDPH 2012), *Best Management Practices for Mosquito Control on California State Properties* (CDPH 2008), and in the *California Mosquito-Borne Virus Surveillance and Response Plan* (CDPH 2020), which detail vector control and pesticide application procedures.

3.2.2 Analysis Methodology

The air quality impact analysis contained in this report was prepared in accordance with the methodologies provided by the County as included in the *Guidelines for Determining Significance and Report Format and Content Requirements for Air Quality* (County 2007). Implementation of the IVMP does not propose new development; operations would be evaluated at a programmatic level based on the types of equipment that may be used during surveillance and monitoring, source reduction, and source treatment activities, as described below. Due to the programmatic nature of this document, the exact locations and extent of all activities to be conducted under the IVMP are not known at this time. As such, site-specific evaluation of air pollutant emissions sources and potential impacts is beyond the scope of this programmatic evaluation.

Operation of on-road fleet vehicles, watercraft, aircraft, portable equipment, and small equipment would result in emissions of criteria pollutants from engine exhaust. Equipment lists and annual activity schedules were provided by DEH (County 2020b). Some equipment would not generate criteria pollutant emissions and were therefore excluded from this analysis. Excluded equipment includes hand operated tools, attachments, and other equipment such as battery-powered traps. The list of equipment to be used in the IVMP air pollutant emissions analysis is provided in Appendix A. Emission calculations were performed using the most recent and applicable emission factors published by CARB and the USEPA. A list of emissions generating equipment, assumed usage, and emission factor source is provided in Table 5, *IVMP Equipment Usage*.

Table 5
IVMP EQUIPMENT USAGE

Equipment Name	Equipment Type	Peak Daily Usage per Unit (hours)	Emission Factor Source
Land Surveillance and Application/Management			
Dump Truck[1]	Dump Truck	6	CARB's OFFROAD
Caterpillar 320[1]	Excavator	4	CARB's OFFROAD
Polaris Sportsman[1]	ATV Quad with Plow	4	CARB's OFFROAD
John Deere 6420[1]	Tractor	4	CARB's OFFROAD
Caterpillar D3[1]	Tracked Dozer	4	CARB's OFFROAD
Woodchipper[1]	Processing Equipment	4	CARB's OFFROAD
Arrow ULV (gas)	Hand Sprayer/Fogger	4	CARB's OFFROAD
Colt ULV (gas)	Hand Sprayer/Fogger	4	CARB's OFFROAD
Maruyama	Granular applicator	2	CARB's OFFROAD
Buffalo turbine	Vehicle-mounted sprayer	2	CARB's OFFROAD
Skid Sprayer	Vehicle-mounted sprayer	2	CARB's OFFROAD
Fleet Vehicle	Medium Duty Truck	79 miles	CARB's EMFAC
Fleet Vehicle	Light Duty Truck	113 miles	CARB's EMFAC
Water Surveillance and Application/Management			
Marshmaster MM-1LX[1]	Aquatic Weed Harvester	1	CARB's OFFROAD
Pond Pump – WB15	Pond Pump	2	CARB's OFFROAD
Boat motor – 5 horsepower four stroke engine	Outboard Motor	3	CARB's PC2014
Boat motor – 9.9 horsepower four stroke engine	Outboard Motor	3	CARB's PC2014
Aerial Surveillance and Application/Management			
Bell 206B	Aircraft	8.5	USEPA AP-42
Robinson R44 Raven II	Aircraft	8.5	USEPA AP-42
Piper Chieftain	Aircraft	6	USEPA AP-42

Source: County 2020b

[1] Equipment/vehicle is not listed in County's existing inventory (2020b), but could potentially be used, if needed.

Note: this table only includes equipment that is gas-powered. Equipment that is battery-operated is excluded since no air quality emissions would occur.

4.0 PROJECT IMPACT ANALYSIS

4.1 CONFORMANCE TO THE REGIONAL AIR QUALITY STRATEGY

4.1.1 Guideline for the Determination of Significance

Would the project conflict with or obstruct the implementation of the San Diego Regional Air Quality Strategy or applicable portions of the SIP?

The Attainment Plan outlines SDAPCD's plans and control measures designed to attain the CAAQS for ozone. In addition, the SDAPCD relies on the SIP, which includes the SDAPCD's plans and control measures for attaining the ozone NAAQS. These plans accommodate emissions from all sources, including natural sources, through the implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the USEPA and the CARB,

and the emissions and reduction strategies related to mobile sources are considered in the Attainment Plan and SIP.

The Attainment Plan relies on information from the CARB and SANDAG, including projected growth in the county, mobile source, area source, and all other source emissions in order to project future emissions and determine the strategies necessary for the reduction of stationary source emissions through regulatory controls. The CARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and the county. As such, projects that propose development that is consistent with the growth anticipated by the local jurisdictions' general plans would be consistent with the Attainment Plan. In the event that a project proposes development that is less dense than anticipated within the General Plan, the project would likewise be consistent with the Attainment Plan. If a project proposes development that is greater than that anticipated in the County General Plan and SANDAG's growth projections upon which the Attainment Plan is based, the Project would be in conflict with the Attainment Plan and SIP and might have a potentially significant impact on air quality. This situation would warrant further analysis to determine whether the Project and the surrounding projects exceed the growth projections used in the Attainment Plan for the specific subregional area.

4.1.2 Significance of Impacts Prior to Mitigation

The proposed IVMP would continue to comprehensively approach vector control through various techniques, including surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics. The IVMP would not generate growth, increase population or associated vehicle usage, or require the alteration of an existing land use designation through amendments to general plans or changes to zoning.

In addition to the policies in the General Plan, the Proposed Project would be required to comply with the SDAPCD Rules and Regulations. The Attainment Plan also assess the impact of all emission sources and all control measures, including those under the jurisdiction of the CARB (e.g., on-road motor vehicles, off-road vehicles and equipment, and consumer products). Therefore, the Proposed Project would not conflict with or obstruct the implementation of the Attainment Plan or applicable portions of the SIP. Impacts would be less than significant.

4.1.3 Mitigation Measures and Design Considerations

Impacts would be less than significant; therefore, no mitigation measures would be required.

4.1.4 Conclusions

The Proposed Project would not conflict with or obstruct the implementation of the applicable portions of the SIP and the impact would be less than significant.

4.2 CONFORMANCE TO FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

4.2.1 Construction Impacts

Under the Proposed Project, the IVMP would continue to comprehensively approach vector control through various techniques. The IVMP does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Therefore, for the purpose of this report, the Proposed Project would not result in construction activities or associated impacts.

Grading and vegetation clearing are analyzed further below in Section 4.2.2, *Operational Impacts* since they are considered ongoing activities under the IVMP.

4.2.1.1 Guideline for the Determination of Significance

Would the project construction result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

To determine whether a project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, project emissions may be evaluated based on the quantitative emission thresholds established by the SDAPCD (as shown in Table 4).

4.2.1.2 Significance of Impacts Prior to Mitigation

Implementation of the IVMP does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Grading and vegetation clearing are analyzed as operational emissions since they are considered ongoing activities under the IVMP. Therefore, the Proposed Project would result in no construction-related impacts.

4.2.1.3 Mitigation Measures and Design Considerations

Impacts would be less than significant; therefore, no mitigation measures would be required.

4.2.1.4 Conclusions

The Proposed Project does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Therefore, for the purpose of this report, the Proposed Project would not result in construction activities or associated impacts.

4.2.2 Operational Impacts

The proposed IVMP would continue to comprehensively approach vector control through various techniques, including surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics. Operation of on-road fleet vehicles, watercraft, aircraft, portable equipment, and small equipment would result in air pollutant emissions, as evaluated below.

4.2.2.1 Guideline for the Determination of Significance

Based on the County Guidelines (2007), operational impacts would be potentially significant if they exceed the quantitative screening-level thresholds for criteria pollutants as listed in Table 4.

4.2.2.2 Significance of Impacts Prior to Mitigation

Table 6, *Estimated Daily Operational Emissions*, presents the summary of estimated operational emissions for the Proposed Project. Operational emission calculations are provided in Appendix A.

Table 6
ESTIMATED DAILY OPERATIONAL EMISSIONS

Category	Pollutant Emissions (pounds per day)					
	ROG	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Land Surveillance and Application/ Management	5.90	137.03	11.71	0.08	1.97	1.66
Water Surveillance and Application/ Management	1.60	4.14	2.03	<0.01	0.33	0.33
Air Surveillance and Application/ Management	0.02	0.31	74.63	0.15	1.04	0.68
Total Daily Maximum Emissions	**7.52**	**141.48**	**88.37**	**0.23**	**3.34**	**2.67**
Screening-Level Thresholds	*75*	*550*	*250*	*250*	*100*	*55*
Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

Source: Calculations using emission factors from CARB EMFAC2017, ORION Off-Road database, and EPA AP-42 (USEPA 2000; calculation data is provided in Appendix A).
ROG = reactive organic gas; CO = carbon monoxide; NO_X = oxides of nitrogen; SO_X = oxides of sulfur; PM_{10} = particulate matter 10 microns or less in diameter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

As shown in Table 6, emissions of criteria pollutants and ozone precursors during IVMP implementation would not exceed the daily screening thresholds. Therefore, the Proposed Project's operational emissions would not result in a violation of the NAAQS or CAAQS and impacts would be less than significant.

4.2.2.3 Mitigation Measures and Design Considerations

Impacts would be less than significant; therefore, no mitigation measures would be required.

4.2.2.4 Conclusions

The Proposed Project's operational emissions would not exceed the County screening threshold levels. Therefore, operation of the Proposed Project would not result in a violation of the NAAQS or CAAQS and impacts would be less than significant.

4.3 CUMULATIVELY CONSIDERABLE NET INCREASE OF CRITERIA POLLUTANTS

4.3.1 Construction Impacts

Under the Proposed Project, the IVMP would continue to comprehensively approach vector control through various techniques. No construction is proposed as part of IVMP implementation. Although construction of habitable structures, stationary sources, or infrastructure are not proposed, construction-type activities (such as grading, vegetation clearing, etc.) are proposed. Those activities are analyzed below under Operational Impacts.

4.3.1.1 Guidelines for the Determination of Significance

The following threshold is used for the assessment of cumulative construction impacts:

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the San Diego Air Basin is non-attainment under an applicable Federal or State Ambient Air Quality Standard (including emissions which exceed the SLTs for ozone precursors)?

4.3.1.2 Significance of Impacts Prior to Mitigation

Implementation of the IVMP does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Therefore, for the purpose of this report, the Proposed Project would not result in construction activities or associated impacts.

4.3.1.3 Mitigation Measures and Design Considerations

Impacts would be less than significant; therefore, no mitigation measures would be required.

4.3.1.4 Conclusions

The Proposed Project would result in no construction activities or associated impacts.

4.3.2 Operational Impacts

Based on the County Guidelines (2007), a project would result in a cumulatively significant impact if the project results in a significant contribution to the cumulative increase in criteria pollutants and ozone precursors. In accordance with the guidelines, a project that does not conform to the Attainment Plan and/or has a significant direct impact on air quality with regard to operational emissions of nonattainment pollutants would also have a cumulatively considerable net increase. Also, projects that cause road intersections to operate at or below a level of service (LOS) E and create a CO hotspot would also create a cumulatively considerable net increase of CO.

4.3.2.1 Guidelines for the Determination of Significance

The following thresholds are used for the assessment of cumulatively considerable net increases in air pollutants during the operational phase:

Would the project conform to the Regional Air Quality Strategy and/or have a significant direct impact on air quality with regard to operational emissions of PM_{10}, $PM_{2.5}$, NO_X, and/or VOCs, which would also have a significant cumulatively considerable net increase in these emissions?

Would the project cause road intersections or roadway segments to operate at or below LOS E and create a CO hotspot that would result in a cumulatively considerable net increase of CO?

4.3.2.2 Significance of Impacts Prior to Mitigation

As described in Sections 4.1 and 4.2, the Proposed Project would be consistent with the Attainment Plan and would not exceed the County's screening-level thresholds. In addition, the use of ground vehicles to travel between County offices and vector sites is considered an ongoing use of the IVMP. Accordingly, the Proposed Project would not cause intersections or roadway segments to operate at or below LOS E. As discussed in Section 4.4.2 below (Sensitive Receptors), the Proposed Project would not create a CO hotspot that would result in a cumulatively considerable net increase of CO. Therefore, operation of the Proposed Project would not create a cumulatively considerable net increase in criteria pollutants associated with IVMP operations and impacts would be less than significant.

4.3.2.3 Mitigation Measures and Design Considerations

Impacts would be less than significant; therefore, no mitigation would be required.

4.3.2.4 Conclusions

Cumulative impacts associated with the Proposed Project's operational emissions of criteria pollutants and ozone precursors would be less than cumulatively considerable.

4.4 IMPACTS TO SENSITIVE RECEPTORS

4.4.1 Guidelines for the Determination of Significance

Would the project expose sensitive receptors to substantial pollutant concentrations?

The following guidelines of significance are used by the County to address the above question:

> *Would the project place sensitive receptors near CO hotspots or creates CO hotspots near sensitive receptors?*
>
> *Would project implementation result in exposure to TACs resulting in a maximum incremental cancer risk greater than 1 in 1 million without application of Toxics-Best Available Control Technology or a health hazard index greater than 1 and, thus, be deemed as having a potentially significant impact?*

4.4.2 Significance of Impacts Prior to Mitigation

4.4.2.1 CO Concentrations (CO Hotspot Analysis)

CO hotspots are most likely to occur at heavily congested intersections where idling vehicles increase localized CO concentrations. The County Guidelines call for a CO hotspot analysis if a project would:

- Place sensitive receptors within 500 feet of a signalized intersection with a LOS of E or F, with peak-hour trips exceeding 3,000 vehicles; or

- Cause intersections to operate at LOS E or F, with peak-hour trips exceeding 3,000 vehicles.

The Proposed Project includes implementation of surveillance and monitoring, source reduction (i.e., physical control), source treatment (i.e., biological and chemical controls), public education and outreach, and disease diagnostics for the purpose of protecting public health, well-being, and economic effects from vectors throughout San Diego County. The Proposed Project does not include the construction or placement of sensitive receptors. Furthermore, the Proposed Project would not require a high number of workers or generate a high number of worker commute trips to and from individual sites that would cause intersections to operate at LOS E or F. Thus, there would be no potential for a CO hot spot to be created. Impacts would be less than significant.

4.4.2.2 Toxic Air Contaminants

Under the Proposed Project, the IVMP would continue to comprehensively approach vector control through various techniques. Implementation of the IVMP does not include the construction or renovation of habitable structures, stationary sources, or infrastructure. Therefore, for the purpose of this report, the Proposed Project does not include construction or operation of stationary sources of TACs. Ongoing implementation would result in the use of heavy-duty equipment and vehicles. These vehicles and equipment could generate the TAC DPM. Generation of DPM from equipment and vehicles typically occurs in a localized area for short periods of time. Because activities and subsequent emissions vary depending on the location and activity being performed, the emissions to which nearby receptors are exposed would also vary. The dose (of TAC) to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance in the environment and the extent of exposure a person has with the substance; a longer exposure period to a fixed amount of emissions would result in higher health risks. Current models and methodologies for conducting health risk assessments are best suited for evaluation of long duration TAC emissions with predictable schedules and locations. These assessment models do not correlate well with the highly variable nature of the Proposed Project. Because the Proposed Project would result in variable emissions occurring in locations throughout the county, the dose of any individual receptor is expected to be minimal. Additionally, the Proposed Project would implement the BMPs described in Section 1.3, above, including limiting of idling time and proper maintenance of vehicles and equipment to reduce air pollutant emissions. Therefore, the Proposed Project would not generate substantial emissions of TACs.

4.4.3 Mitigation Measures and Design Considerations

Impacts would be less than significant; therefore, no mitigation measures are required.

4.4.4 Conclusions

Impacts to sensitive receptors would be less than significant.

4.5 ODOR IMPACTS

4.5.1 Guidelines for the Determination of Significance

Based on the County Guidelines (2007), a project would have a significant impact if it would:

> *Generate objectionable odors or place sensitive receptors next to existing objectionable odors that would affect a considerable number of persons or the public.*

SDAPCD Rule 51 (Public Nuisance) and California Health & Safety Code, Division 26, Part 4, Chapter 3, Section 541700, prohibit the emission of any material that causes nuisance to a considerable number of persons or endangers the comfort, health, or safety of the public. In addition, the County's Zoning Ordinance, Section 6318, states: "all commercial and industrial uses shall be so operated as to not emit matter causing unpleasant odors which are perceptible by the average person at or beyond any lot line of the lot containing said uses." Projects required to obtain permits from SDAPCD, typically industrial and some commercial projects, 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.

4.5.2 Significance of Impacts Prior to Mitigation

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations (SCAQMD 1993). The Proposed Project does not include construction or operation of any of these uses.

Ongoing implementation of various IVMP activities could potentially include diesel equipment operating at various sites or unburned hydrocarbons in equipment exhaust that may generate nuisance odors; however, since equipment would operate at various locations throughout each individual IVMP activity area, and because operation near existing sensitive receptors would be temporary and intermittent, impacts associated with odors would be less than significant.

4.5.3 Mitigation Measures and Design Considerations

Impacts would be less than significant; therefore, no mitigation measures are required.

4.5.4 Conclusions

Due to the nature of the proposed IVMP, there would be no significant odorous air emissions anticipated from construction or operation; therefore, impacts would be less than significant.

5.0 SUMMARY OF RECOMMENDED PROJECT DESIGN FEATURES, IMPACTS, AND MITIGATION

In summary, the Proposed Project would result in the emission of air pollutants during the ongoing implementation of the IVMP. The analysis evaluated the potential for adverse impacts to the ambient air quality due to the Proposed Project emissions. No construction is proposed as part of IVMP

implementation. Operation of on-road fleet vehicles, watercraft, aircraft, portable equipment, and small equipment would result in emissions of criteria pollutants from engine exhaust. As detailed in Section 4.1, the Proposed Project would not conflict with or obstruct the implementation of the Attainment Plan or applicable portions of the SIP. The Proposed Project emissions of criteria pollutants and ozone precursors during IVMP implementation would not exceed the daily screening thresholds, and operational emissions would not result in a violation of the NAAQS or CAAQS. Air pollutant emissions impacts would be less than significant. The Proposed Project would not result in cumulatively considerable emissions of nonattainment air pollutants that would exceed the screening level thresholds. Impacts associated with exposure of sensitive receptors to substantial pollutant concentrations would be less than significant. Impacts from odors would be less than significant.

5.1 MITIGATION MEASURES AND DESIGN CONSIDERATIONS

Because the Proposed Project would not result in significant impacts, no mitigation or design considerations are required.

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7.0 LIST OF PREPARERS

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Appendix A

Emissions Calculation Sheets

Equipment	No. of Units	Frequency of Use (days/yr)	Peak Daily Usage per unit (hr/day or VMT/day)	Total Peak Daily Usage (hr/day or VMT/day)	Total Annual Average Usage (hr/yr or VMT/yr)
Land					
Handheld ULV Fogger	9	1	4	36	36
Maruyama MD155DX	9	10	2	18	180
Buffalo Turbine	1	12	2	2	24
Skid Sprayer	1	36	2	2	72
Dump Truck	1	55	6	6	330
Excavator	1	20	4	4	80
ATV Quad with Plow	1	8	4	4	32
Tractor	1	9	4	4	36
Tracked Dozer	1	12	4	4	48
Woodchipper	1	12	4	4	48
Fleet Vehicle (MDV)	28	101	79	2,209	178,447
Fleet Vehicle (LDT2)	27	87	113	3,050	212,310
Water					
Aquatic Weed Harvester	1	24	4	4	96
Honda Boat Motor - 5hp	1	20	3	3	60
Honda Boat Motor - 9.9hp	1	20	3	3	60
Honda Pond Pump	1	39	2	2	78
Air					
Bell 206B Helicopter	1	14	8.5	8.5	85.3
Robinson R44 Raven II Helicopter	1	10	8.5	8.5	50
Piper Chieftain	1	20	6	6	120
Total					

Equipment	Pounds per Unit									
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Land										
Handheld ULV Fogger	4.51E-02	7.40E-01	1.97E-02	6.54E-05	6.14E-04	6.12E-04	1.89E+00	2.56E-03	3.08E-03	2.87E+00
Maruyama MD155DX	5.55E-02	2.00E+00	3.52E-02	9.45E-05	2.76E-02	2.75E-02	3.31E+00	3.15E-03	4.19E-03	4.64E+00
Buffalo Turbine	1.38E-01	5.11E+00	7.87E-02	2.04E-04	6.69E-02	6.68E-02	8.05E+00	7.83E-03	6.43E-03	1.02E+01
Skid Sprayer	1.38E-01	5.11E+00	7.87E-02	2.04E-04	6.69E-02	6.68E-02	8.05E+00	7.83E-03	6.43E-03	1.02E+01
Dump Truck	1.49E-01	5.44E-01	7.47E-01	2.67E-03	2.71E-02	2.70E-02	2.72E+02	1.34E-02	0.00E+00	2.72E+02
Excavator	7.02E-02	6.63E-01	3.86E-01	1.26E-03	1.94E-02	1.93E-02	1.12E+02	6.33E-03	0.00E+00	1.12E+02
ATV Quad with Plow	7.63E-02	1.19E-01	2.27E-05	4.54E-04	9.20E-04	9.19E-04	2.53E-01	4.74E-03	8.56E-05	3.97E-01
Tractor	4.99E-02	2.94E+00	1.13E-01	4.99E-04	3.98E-03	3.97E-03	5.16E+01	2.82E-03	7.56E-03	5.40E+01
Tracked Dozer	8.33E-02	4.63E-01	4.90E-01	7.71E-04	3.70E-02	3.69E-02	6.58E+01	7.52E-03	0.00E+00	6.59E+01
Woodchipper	1.11E-01	4.26E+00	7.98E-02	2.07E-04	6.04E-02	6.02E-02	7.24E+00	6.29E-03	6.50E-03	9.34E+00
Fleet Vehicle (MDV)	6.43E-05	2.61E-03	2.76E-04	9.62E-06	1.03E-04	4.27E-05	9.72E-01	1.41E-05	2.08E-05	9.79E-01
Fleet Vehicle (LDT2)	4.50E-05	2.19E-03	2.25E-04	7.99E-06	1.02E-04	4.25E-05	8.08E-01	1.09E-05	1.78E-05	8.13E-01
Water										
Aquatic Weed Harvester	8.33E-02	4.63E-01	4.90E-01	7.71E-04	3.70E-02	3.69E-02	6.58E+01	7.52E-03	0.00E+00	6.59E+01
Honda Boat Motor - 5hp	2.07E-01	3.20E-01	9.73E-03	5.18E-05	2.99E-02	2.98E-02	1.82E+00	1.28E-02	2.11E-03	2.77E+00
Honda Boat Motor - 9.9hp	2.07E-01	3.20E-01	9.73E-03	5.18E-05	2.99E-02	2.98E-02	1.82E+00	1.28E-02	2.11E-03	2.77E+00
Honda Pond Pump	1.40E-02	1.86E-01	3.70E-03	2.69E-05	2.28E-03	2.28E-03	6.53E-01	8.67E-04	1.29E-03	1.06E+00
Air										
Bell 206B Helicopter	1.36E-03	1.09E-02	2.92E+00	5.15E-03	3.98E-02	2.59E-02	5.42E+02	1.50E-02	1.74E-02	5.47E+02
Robinson R44 Raven II Helicopter	1.36E-03	1.09E-02	2.92E+00	5.15E-03	3.98E-02	2.59E-02	5.42E+02	1.50E-02	1.74E-02	5.47E+02
Piper Chieftain	0.00E+00	2.00E-02	4.17E+00	1.00E-02	6.00E-02	4.00E-02	7.74E+02	2.00E-02	2.00E-02	7.80E+02
Total										

Equipment	Pounds per Day									
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Land										
Handheld ULV Fogger	1.62	26.65	0.71	0.00	0.02	0.02	68.17	0.09	0.11	103.49
Maruyama MD155DX	1.00	36.09	0.63	0.00	0.50	0.50	59.65	0.06	0.08	83.56
Buffalo Turbine	0.28	10.23	0.16	0.00	0.13	0.13	16.09	0.02	0.01	20.32
Skid Sprayer	0.28	10.23	0.16	0.00	0.13	0.13	16.09	0.02	0.01	20.32
Dump Truck	0.89	3.26	4.48	0.02	0.16	0.16	1,632.54	0.08	0.00	1,634.55
Excavator	0.28	2.65	1.54	0.01	0.08	0.08	448.48	0.03	0.00	449.12
ATV Quad with Plow	0.31	0.48	0.00	0.00	0.00	0.00	1.01	0.02	0.00	1.59
Tractor	0.20	11.78	0.45	0.00	0.02	0.02	206.54	0.01	0.03	215.83
Tracked Dozer	0.33	1.85	1.96	0.00	0.15	0.15	263.01	0.03	0.00	263.76
Woodchipper	0.44	17.03	0.32	0.00	0.24	0.24	28.97	0.03	0.03	37.34
Fleet Vehicle (MDV)	0.14	5.76	0.61	0.02	0.23	0.09	2,147.74	0.03	0.05	2,162.22
Fleet Vehicle (LDT2)	0.14	6.69	0.69	0.02	0.31	0.13	2,464.23	0.03	0.05	2,481.24
Water										
Aquatic Weed Harvester	0.33	1.85	1.96	0.00	0.15	0.15	263.01	0.03	0.00	263.76
Honda Boat Motor - 5hp	0.62	0.96	0.03	0.00	0.09	0.09	5.45	0.04	0.01	8.30
Honda Boat Motor - 9.9hp	0.62	0.96	0.03	0.00	0.09	0.09	5.45	0.04	0.01	8.30
Honda Pond Pump	0.03	0.37	0.01	0.00	0.00	0.00	1.31	0.00	0.00	2.12
Air										
Bell 206B Helicopter	0.01	0.09	24.80	0.04	0.34	0.22	4,603.59	0.13	0.15	4,651.98
Robinson R44 Raven II Helicopter	0.01	0.09	24.80	0.04	0.34	0.22	4,603.59	0.13	0.15	4,651.98
Piper Chieftain	0.00	0.12	25.02	0.06	0.36	0.24	4,642.26	0.12	0.12	4,681.02
Total	***7.53***	***137.15***	***88.37***	***0.23***	***3.34***	***2.67***	***21,477.16***	***0.92***	***0.80***	***21,740.78***

Equipment	Tons per Year						Metric Tons per Year			
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Land										
Handheld ULV Fogger	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.05
Maruyama MD155DX	0.00	0.18	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.38
Buffalo Turbine	0.00	0.06	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.11
Skid Sprayer	0.00	0.18	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.33
Dump Truck	0.02	0.09	0.12	0.00	0.00	0.00	40.73	0.00	0.00	40.78
Excavator	0.00	0.03	0.02	0.00	0.00	0.00	4.07	0.00	0.00	4.07
ATV Quad with Plow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Tractor	0.00	0.05	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.88
Tracked Dozer	0.00	0.01	0.01	0.00	0.00	0.00	1.43	0.00	0.00	1.44
Woodchipper	0.00	0.10	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.20
Fleet Vehicle (MDV)	0.01	0.23	0.02	0.00	0.01	0.00	78.72	0.00	0.00	79.25
Fleet Vehicle (LDT2)	0.00	0.23	0.02	0.00	0.01	0.00	77.80	0.00	0.00	78.33
Water										
Aquatic Weed Harvester	0.00	0.02	0.02	0.00	0.00	0.00	2.86	0.00	0.00	2.87
Honda Boat Motor - 5hp	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.08
Honda Boat Motor - 9.9hp	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.08
Honda Pond Pump	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.04
Air										
Bell 206B Helicopter	0.00	0.00	0.12	0.00	0.00	0.00	20.96	0.00	0.00	21.18
Robinson R44 Raven II Helicopter	0.00	0.00	0.07	0.00	0.00	0.00	12.28	0.00	0.00	12.41
Piper Chieftain	0.00	0.00	0.25	0.00	0.00	0.00	42.11	0.00	0.00	42.47
Total	***0.07***	***1.24***	***0.68***	***0.00***	***0.04***	***0.03***	***282.73***	***0.01***	***0.01***	***284.94***